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ASSESSMENT AND REMEDIATION  
OF READING DIFFICULTIES  
An Evaluation of the SPELD Approach

A thesis presented in partial fulfilment of the  
requirements for the degree of

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## ABSTRACT

This thesis examines assessment and remediation of reading difficulties. A review of recent research on the skilled reading process, reading acquisition, and sources of difficulty provided the basis for listing criteria for assessing reading progress. Using this basis, the approach to assessment taken by the Specific Learning Disabilities Association of New Zealand (SPELD) was then evaluated. Five cases from the Manawatu region were then followed, to illustrate how the approach functions in designing individual remedial programmes. After a discussion of the assessment battery and the cases in terms of reading research, suggestions were made to improve the battery, so that SPELD and schools might work together for the maximum benefit of the students concerned.

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Thesis

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## INTRODUCTION

In New Zealand schools a lively and varied whole language approach to reading instruction encourages many children to enjoy reading (Traill, 1990). Skill in using written language (both reading and writing) is grafted onto oral language which the child has already developed. Tizard and Hughes (1984) found that children develop oral language in the home through conversations with their caregivers. Similarly, McNaughton (1987) produced a range of evidence which showed that high progress readers practise a lot in the home. As Wells (1985, 1986) also described, these children read when they want to, in the context of their interests, developing skills through interaction in an environment where reading is obvious and valued. The children are often read to, and reading and writing materials are available and used. McNaughton (1987) described the reading acquisition process as "the socializations of learning to read", showing that a good reading programme provides for "setting events" such as the prior provision of context (Wong & McNaughton, 1981) which promote learning, using an abundance of books written in language similar to the children's spoken English. McNaughton (1987) conceptualised reading as a developing skill acquired by active learners amid multifaceted socializations. While the child is actively

engaged, the environment must be responsive, or the skill will not grow. Carbo, Dunn and Dunn (1986) showed that teaching is much more effective if it relates to the learner's learning style; for example, the learner's modality strengths, and preference for global or analytical methods, formal or informal furniture, warm or cool temperature, bright or dim light, noisy or quiet conditions, moving around or sitting still, learning with peers or adults or alone, and early or late in the day. In a responsive environment, the child develops strategies which are effective in the ongoing problem-solving known as reading. McNaughton (1987) referred to this ongoing problem-solving as "performance-directed regulation". He argued that to facilitate learning, there must be greater contact and matching between school and home settings and socializations, so that groups of people are not disenfranchised by their different cultures. McNaughton (1987) also argued for a greatly reduced pupil-teacher ratio, to facilitate meaningful interaction at a one-to-one level.

In New Zealand, relatively less classroom time is spent teaching letter-sound associations explicitly (Watson, 1980), as the emphasis is on reading for meaning using contextual clues (cf. Wells, 1991). Letter-sound correspondences are mainly taught incidentally in creative "process writing" in which children use their

own invented spellings to write stories. These spellings are then corrected by the teacher or by volunteer "mother helpers", and then copied by the children when they produce their final copy of the story. The children also gradually develop a dictionary of words for which they have been provided with the correct spelling, so that they develop independence in checking their own spelling. Thus the general classroom programme is in contrast to a structured Code Emphasis or phonics programme, as described by Liberman and Liberman (1990).

Bryant and Bradley (1980) found that children beginning to acquire reading appeared to use separate skills for reading and spelling. Further research by Goswami and Bryant (1990) showed that for approximately the first two years, children appear to use global strategies for reading and analytical strategies for spelling. They are thus able to read words which they cannot spell, and spell words which they cannot read. Early reading appears to use onset (beginning) and rime (the remaining sounds of the word) (Goswami & Bryant, 1990), while early invented spelling appears to use a detailed analysis of the individual sounds in the word. Because this research was conducted in England, where reading instruction emphasises phonics, additional research is needed in other countries, where a different approach is taken.

Carbo et al. (1986) emphasised the need to tailor teaching to the learner's modality strengths. No one method works well for everyone. In fact, some methods are best avoided with certain learners. The following statement from Carbo et al. (1986) about phonics could just as easily be applied to any method:

"There are some students who must learn with phonics, some who cannot learn with phonics, some who need only a small amount of it, and still others who are capable of becoming excellent readers without learning any phonics at all" (p.54).

Skilled reading requires both decoding and listening comprehension skills (Gough & Tunmer, 1986). As McNaughton (1987) observed, successive research evidence has shown that high progress readers go beyond the teaching received, to build a set of strategies which will enable them to read a variety of material.

For the child in New Zealand who has difficulty reading, the main source of help is the Reading Recovery programme instituted by Clay (1979). It is not however the intention of this thesis to examine in detail this programme, which has already been evaluated (e.g. Glynn, Crooks, Bethune, Ballard & Smith, 1989). Although many children are assisted by this programme and by other remedial help offered in schools, there still remain children who have not been helped, or alternatively, they

or their parents may consider that they need further help.

Some of these people turn to the New Zealand Federation of Specific Learning Disabilities Associations (henceforth referred to as SPELD) for assistance. SPELD is a private organisation which offers assistance to people who are experiencing problems with learning. The nature and extent of the client's skills and learning difficulties are examined by using a history form and a SPELD assessment battery (known as the SPELD test). Based on this assessment, individual tuition is given (if required) by a trained teacher, either at the teacher's home or at the school.

This thesis examines the question of reading difficulties, and how best to develop a remedial programme to improve a person's reading skills. Many approaches have been developed, but the main concern in this study is to examine current theories of reading development and assessment and sources of reading difficulty, and to relate these theories to the programme of assessment and remediation which is conducted by SPELD. Although the programmes offered by this organisation are broader than just reading or other academic skills, the main thrust of this thesis will be to examine their approach to the assessment and remediation of reading difficulties. Because the

assessment forms an integral unit, all the components will be reviewed, to assist in clarifying the SPELD approach.

Although the initial SPELD assessment battery is one set package, reassessments during the course of a case are tailored to the client's progress. SPELD teachers are trained in a variety of methods which they choose to employ according to the needs and strengths of the client, as identified by the assessments.

Hammill (1987) listed four issues to consider in assessment. These issues are also appropriate to consider in the course of this thesis:

1. Purpose: Is the assessment intended to diagnose students, monitor progress, or lead to instructional decisions?

2. Domains for measurement: What are the appropriate domains, given the progress made recently in research on reading?

3. Techniques: Which techniques are appropriate? Should we use tests, interviews, direct observation, analysis of what the student produces ... ?

4. Interpretation: How can the measures and techniques be interpreted? What is the reliability and validity of

the measures? How can we evaluate results from norm-referenced or nonreferenced, process measures?

The following chapter (1) provides an overview of the study. Chapter 2 reviews current theories of reading acquisition, skilled reading, reading difficulties, reading assessment and remediation. Chapter 3 describes the SPELD approach to assessment and remediation, and considers it in the light of current research. By way of illustration, several cases are described in Chapter 4. Chapter 5 discusses the results of a questionnaire which was given to practising SPELD teachers, to gauge their attitudes towards the SPELD assessment battery. Chapter 6 reviews the cases, focussing on their progress in reading in the light of current theories, to determine to what degree the SPELD approach provides a sound basis for instructional decisions. This analysis also provides an opportunity for reviewing all the assessments which are produced during each case. Finally in Chapter 7, this thesis considers how the SPELD programme of assessment and remediation might be improved, to provide better service to the clients, and how service delivery might best be effected. Consideration is also given as to what SPELD assessment and remediation has to offer to the New Zealand schools, and how SPELD and schools might work together for the maximum benefit of the learner.

## 1. OVERVIEW OF THE STUDY

Several methods have been employed in order to evaluate the SPELD approach to assessing and remediating reading difficulties. First, the recent research contributing to theories of skilled reading, reading acquisition, reading difficulty and assessment was reviewed. This review, located in Chapter 2, provides the theoretical context for the study. The review was not intended to be exhaustive; rather, the intention was to provide an overview of current approaches, based on sources that have appeared since the late 1970s.

Next, the SPELD assessment battery was examined. This assessment has been used by SPELD testers and teachers since the 1970s, but to date has not been subjected to any thorough critical review from theoretical, psychometric and pragmatic perspectives. This analysis of the SPELD assessment is found in Chapter 3. The assessment draws on several traditions; for example, psychometric testing and process elements. For many components the salient feature is the learner's approach to the task, and the salience of the task to reading acquisition. Where quantitative data were available, such data were evaluated according to criteria acceptable to the psychometric field (e.g. *Standards for Educational and Psychological Testing*, 1985; Anastasi, 1988).

Although psychometric assessment is routinely conducted in New Zealand schools in the form of the group Progressive Achievement Tests (Elley & Reid 1969, 1971), psychometric assessment is not prominent in the individual assessment and remediation of children's reading difficulties in New Zealand schools at present (see for example Clay, 1985). For this reason, the quantitative aspect is not the sole focus. As much consideration is given to the choice of tasks; that is, whether the chosen tasks are relevant to behaviours which recent research has indicated to be salient to reading acquisition.

Johnston (1984) contended that the psychometric paradigm was inappropriate to reading assessment. He advocated an individual, process-oriented approach, emphasising the learner rather than the instrument, similar to Clay's (1985) approaches to reading assessment. When the focus is on the reader, performance may be unreliable but valid, contrary to classic measurement theory. For example, Johnston (1984) mentioned that a person's ability to read the same word could fluctuate according to the surrounding context, especially in early reading acquisition. Performance varies, but it is a valid measure of the person's reading performance, and a useful indicator to inform future instruction.

The third, pragmatic aspect of the study was to use a case-study methodology to document the progress of

several SPELD client interventions, as examples of how the SPELD assessment functions to assist teachers in designing, implementing and monitoring a remedial programme. These cases are described in Chapter 4.

### 1.1. Approaches to Researching the SPELD Battery

The SPELD assessment battery was investigated theoretically (having regard to both reading research and psychometric theory) and pragmatically (through repeated experience in administering the battery, and through detailed tracking and presentation of a few case studies). The SPELD battery was compiled by Seabrook in the 1970s. Seabrook (1990a) reported that she chose items for the battery which her training and experience in speech and language therapy, child development and special education in New Zealand and overseas made her consider salient to assessing learning difficulties. For the purpose of this study, these components were then subjected to a detailed analysis on the basis of the psychometric literature (e.g. Anastasi, 1988; Buros, 1978; Conoley & Kramer, 1989; Vincent, Green, Francis, & Powney, 1983) to ascertain their reliability and validity. The overall validity of using such an assessment battery as a basis for educational programming was also considered (e.g. Arter & Jenkins, 1979; Coles, 1978; Lerner, 1989). Finally, the validity of the

various components was examined in the light of recent research on reading (as reviewed in Chapter 2).

Practical experience with the assessment battery was gained in administering it to SPELD clients from November, 1989 onwards, and writing reports on the basis of these administrations to assist teachers and parents in designing remediation for the students.

A questionnaire (see Appendix A) was designed and distributed to a regional sample of twenty practising SPELD teachers, to determine how useful they found the assessment battery's components as a basis for designing and implementing a remedial programme. The questionnaire did not consider the users' knowledge of measurement requirements, as SPELD teachers do not receive a course in psychological assessment. Rather, the intention of the questionnaire was to quantify how helpful the teachers found the various components of the test in designing remediation. As well as a statistical summary, the questionnaire provided a small amount of qualitative data about how the teachers designed remediation. Results of the questionnaire are described in Chapter 5.

## 1.2 Case Study Monitoring

To monitor and document the process of a SPELD assessment and remediation, several client cases were followed. These cases are described in Chapter 6.

The subjects were students whose families had approached SPELD for assistance. All had had serious difficulties with one or more aspects of the school curriculum, and were in need of extra assistance, in their families' estimation. For practical reasons, the cases selected were all residing in the Palmerston North area, but the problems which they present can be considered typical of the range which SPELD handles. They were selected to represent the main age range which SPELD assists, ages 6 - 15 years. Because a large majority of SPELD clients are male, all of the cases chosen for this study are male. Like the vast majority of SPELD teachers, all the SPELD teachers included in this study are female.

The first subject was an archival case, as he had already finished lessons with SPELD. Data came from his SPELD test results, SPELD lesson plans for his last two years, and his school Progressive Achievement Tests (Elley & Reid, 1969a, 1969b, 1971).

The remaining subjects were new cases who were still receiving SPELD tuition at the time of writing this thesis. Data for them were collected from: SPELD test results, SPELD lesson plans and student exercise books, and interviews with students, parents and SPELD teachers. In order to monitor the progress of these students, and to determine how much the test results were being used to design a remedial programme specific to the student's needs and abilities, a monthly progress chart for each

student was designed and completed. This chart (See Appendix B) showed:

whether a particular component was being addressed, what material was being covered within the component, and whether the student appeared to be making progress in that component.

Although these case studies do not constitute a controlled experiment, this tracking methodology does enable repeated observations of each subject, which supplement the simple pre- and posttesting using the assessment battery. The methods employed in this study thus enable a consideration of both quantitative data (from testing) and qualitative data (from testing, monitoring, examining the students' permanent products in their exercise books and in their initial writing sample, and talking with students, parents and teachers).

Ballard (1986) and many others have argued in favour of observational studies of individuals in natural settings for educational research. Qualitative and quantitative methods involving the repeated or continuous study of individuals are becoming more common in child language research (e.g. Tizard & Hughes, 1984). Acquiring reading skill is an individual process, and only by taking a detailed look at how an individual is improving in strategies and performance can progress be adequately demonstrated. Similarly, Seymour (1986) suggested that

remediation of reading difficulties be undertaken on an individual basis, preceded by a cognitive diagnosis.

## 2. READING AND ITS ASSESSMENT: A REVIEW OF RECENT THEORY AND PRACTICE

Reading acquisition extends along a continuum from emergent literacy to skilled reading (Bryant & Bradley, 1985). Any reader will be at different points on this continuum for different material, depending on the background knowledge which he or she brings to bear on the material being read. Throughout the continuum, Vygotsky's concept of the "zone of proximal development" is relevant to both instruction and assessment (Vygotsky, 1962). According to this concept, we all possess various skills to varying degrees. For any skill or aspect of development, there are portions which the person can manage independently. There are portions which the person cannot manage, even with help. And there are portions which the person can manage with appropriate help; this last category describes the "zone of proximal development", which is the growing edge of any skill development. Close observation and assessment is necessary to define this zone, giving children the freedom to exercise the skills they have already acquired in a context they find interesting, and providing assistance to help them on to further development. Clay (1985) aptly describes the role of assessment in furthering the learning process:

"Sensitive and systematic observation of young children's reading and writing behaviours

provides teachers with feedback which can shape their next teaching moves. Teaching can then be likened to a conversation in which you listen to the speaker carefully before you reply." (p.6)

While there is not yet a definitive model of the entire process of reading development, recent research is uncovering the salient factors in early reading acquisition. Thanks to convergent evidence in cognitive psychology, the skilled reading process is also becoming more transparent. Before considering assessment, it is helpful to consider the evidence available about both ends of the reading continuum. The skilled reading process will be examined first, as it encapsulates all the functions in a mature form, then the early stages will be considered, to see how we set out along the path. Finally, the role and form of assessment will be discussed, once the path is clear.

### 2.1 The Skilled Reading Process

Reading is primarily a linguistic skill (Vellutino, 1979) whose components are processed interactively (McClelland, 1987); successful use of written language (reading and spelling) is generally superimposed upon successful use of oral language (listening and speaking). From oral language is derived the ability to use syntax and extract meaning from both words and sentences. The successful reader reads fluently and with enjoyment, using a range of strategies which are deployed more or less prominently

according to the nature of the material being read (e.g. Hulme, 1981; d'Arcais, 1987).

The skilled reading process can be understood as an interactive linking of several components. Based on evidence from studies of normal and brain-injured subjects, Ellis and Young (1988) have provided a functional model of reading aloud, showing how it relates to comprehension of the spoken word (See Figure 2.1 overleaf).

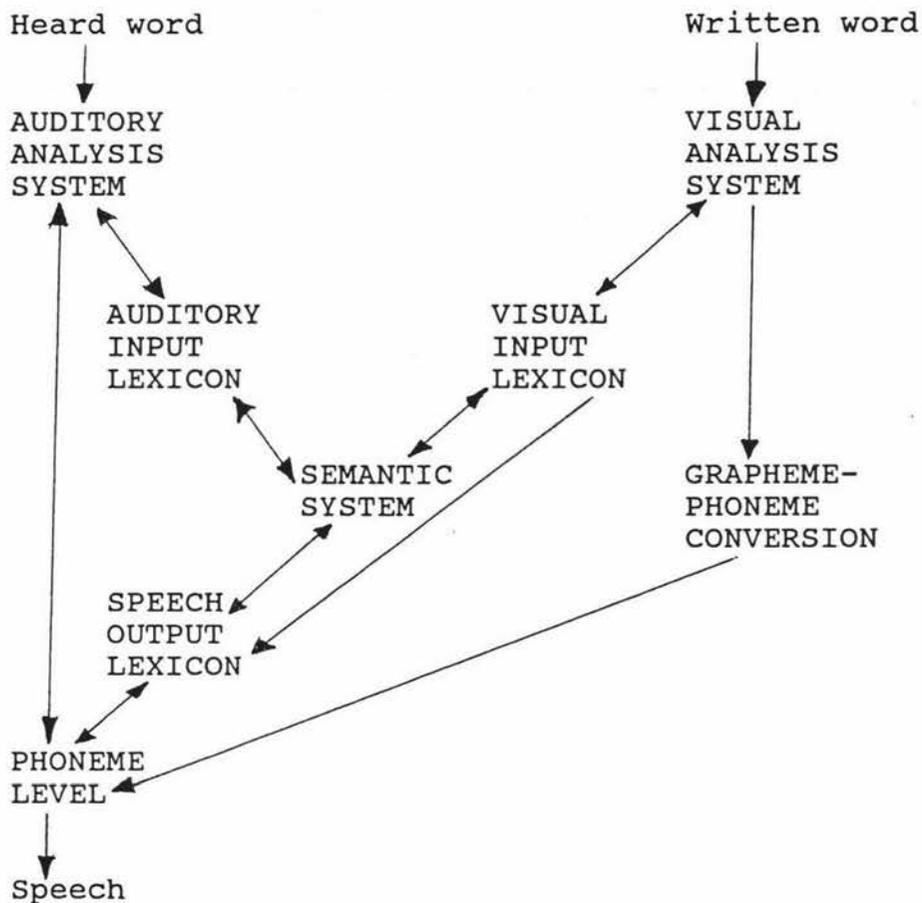


Fig. 2.1. Functional model for the recognition, comprehension and naming of written words in reading (Ellis & Young, 1988, p.192).

As sound waves from speech reach the listener's ear, the auditory analysis system activates representations of familiar heard words from the auditory input lexicon as appropriate, so that the heard word is recognised. Once it is recognised, this activates the semantic (meaning) representation in the semantic system, so that the word

is then understood. The top left corner of the model - including the heard word, auditory analysis system, auditory input lexicon and the semantic system - is thus concerned with how we grasp spoken words and attach meanings.

Similarly, the top right portion of the model proceeds from a visual input, say black lines on a white page. Using this input, the visual analysis system activates representations of familiar letters (and eventually portions of words or entire words, as reading becomes more skilled), so that the word is recognised by the visual input lexicon. Once it is recognised, this then activates the semantic representation, so that the word is understood. Alternatively, if the word is not recognised, the skilled reader can still invent a pronunciation for it, using knowledge of the alphabetic principle (letter/sound relationships), called "grapheme-phoneme conversion". This "sounding out" route is often used by children, who can then cycle back from the sound of the word to its meaning via the auditory analysis system, the auditory input lexicon and the semantic system, as described above. Experimental research reviewed by Hulme (1981) supports a dual-route model of reading, whereby words are accessed by both visual and phonological routes. Furthermore, electromyographic studies (Hardyck & Petrinovitch, 1970) showed that fluent readers were able to suppress subvocalisation when

reading simple material, but needed the support of subvocalisation to assist comprehension or memory of more difficult passages. It seems that as difficulty increases, greater sensory input is required to maintain performance. Hulme (1981) similarly found that memory for unfamiliar designs was improved by physically tracing round the shapes.

The lower portion of the model indicates the various routes from recognised words to speech production. In one route, the listener recognises the incoming words, then generates an appropriate response via the speech output lexicon, appropriate sounds for these generated words at the phoneme level, and then speaks. Alternatively, unrecognised words can still be pronounced by a reader who is skilled at managing grapheme-phoneme conversion, and the sounds produced from the phoneme level may then be recognised from the heard input via the auditory analysis system, the auditory input lexicon and the semantic system. It is evident from this model that reading processes depend heavily on the level of the individual's oral language development.

A model of text comprehension would also have to include strategies for syntactic processing, and fitting the ideas into a schema (Bartlett, 1932) using background knowledge and inferencing from the text.

The Ellis and Young (1988) model is similar to the dual-process model of Coltheart (1980) in that it provides for both a direct visual route and an indirect phonological route. The auditory, phonological component of skilled reading appears to have two functions:

- as a word-attack mechanism for less familiar words, and
- as a backup system to reinforce visual processing when skilled readers are tackling difficult material, which must be processed more slowly to facilitate comprehension.

Patterson and Coltheart (1987) suggested that in skilled readers, analysis is activated immediately and automatically at all levels - orthographic, phonological, semantic, syntactic, and pragmatic - and that this activation, although redundant, is less costly than having to decide which level to activate. They suggested that the phonological representation is always available, but that we only attend to it when necessary for comprehension and to assist short-term memory. Current research using detailed EEG scanning linked to magnetic resonance imaging (Gevins, in press, cited in Weiss, 1990) also suggests that activity requiring immediate memory employs many areas of the brain simultaneously. Gevins (in press) considers that the brain is constantly revising its models of reality and using these revised models as a basis for the next moment's cognition.

Research conducted and reviewed by Goswami and Bryant (1990) appears to negate the dual-route view of reading. In their view, differences between readers reflect differences in a continuum of the development of reading acquisition, in which phonological awareness is preeminent. This view is similar to that of Stanovich (1986a) and Snowling (1987).

Recent research points to interaction and feedback between and within levels of processing (McClelland, 1987), and morphosyntactic or logico-semantic features rather than a simple phonemic buffer (Black, Coltheart & Byng, 1987). Furthermore, eye fixation studies indicate that processing overlaps; when a skilled reader is reading aloud, the voice naturally lags behind the eye, with ambiguities of pronunciation already resolved by the following context. Similarly, length of fixation, pattern of fixation, the number of fixations on a target, and the relation of the duration and number of fixations to the surrounding context all point to overlaps in processing and a varied use of strategies as required (Rayner & Pollatsek, 1987). Multisensory methods are often recommended as remediation for weak readers; it seems that strong readers also need to use a range of processing strategies, especially with difficult material. Through experience with reading, good readers have learned to attend to salient material and inhibit input which could distract from the meaning of the text.

Successfully employing strategies appropriate for the text being read, they combine morphemes, words and successive propositions with background knowledge to produce a text model of meaning (Perfetti, 1985). Hence assessment of reading must consider the level of skill in "decoding, inferencing, understanding text structures and conventions, language, reading purposes and the use of strategies and self-monitoring" (Orasanu, 1986).

## 2.2 Emergent Literacy and Early Reading Acquisition

Long before children enter school, the foundations for reading are being laid down, in that the child is developing oral language. Fortunate is the child who is raised amid affection, in a home where books abound, where parents and siblings enjoy reading and read to the child often and talk about books, rereading them to facilitate deeper comprehension (Yaden, 1988), listening to and encouraging the child's comments (Wells, 1985), and enabling the child to practise decontextualised language (Wells, 1985). Reading to a young child facilitates the development of:

- phonological awareness (awareness of sound patterns in words); for example, of rhyme from learning nursery rhymes (Maclean, Bryant & Bradley, 1987),
- enjoyment of books and reading (Wells, 1985),
- awareness of story grammar,
- concepts about print (Clay, 1985),

- more complex syntax (Chafe, 1985),
- vocabulary, and
- listening comprehension (Mason & Allen, 1986).

With all this background, the child is well equipped and eager to begin to learn to read. Indeed, Robinson (1986) argued that reading to children while pointing to the words teaches them to read. A similar approach is widely used in shared book reading in schools throughout New Zealand; the teacher reads a large format book ("big book") to the class, pointing to the words, then the teacher and the class read together.

Recent research has identified causal factors in reading acquisition: phonological awareness, syntactic awareness, decoding, and listening comprehension. Gough and Tunmer (1986) proposed a "simple view of reading" which identified decoding and listening comprehension and their product as the proximal factors in reading comprehension. This conceptual model has now been extended into a components of variance model (Tunmer, 1990, as illustrated in Figure 2.2 following). This model, discussed in detail in Tunmer and Hoover (1990), is supported by longitudinal studies by Tunmer, Herriman and Nesdale (1988) and Tunmer (1989). According to this model, exposure to language activities and the ability to decentre from content to language properties contribute to metalinguistic ability, and these contributions

facilitate the development of phonological, syntactic and pragmatic awareness. These then enable the person to engage in phonological recoding/decoding and listening comprehension and hence reading comprehension.

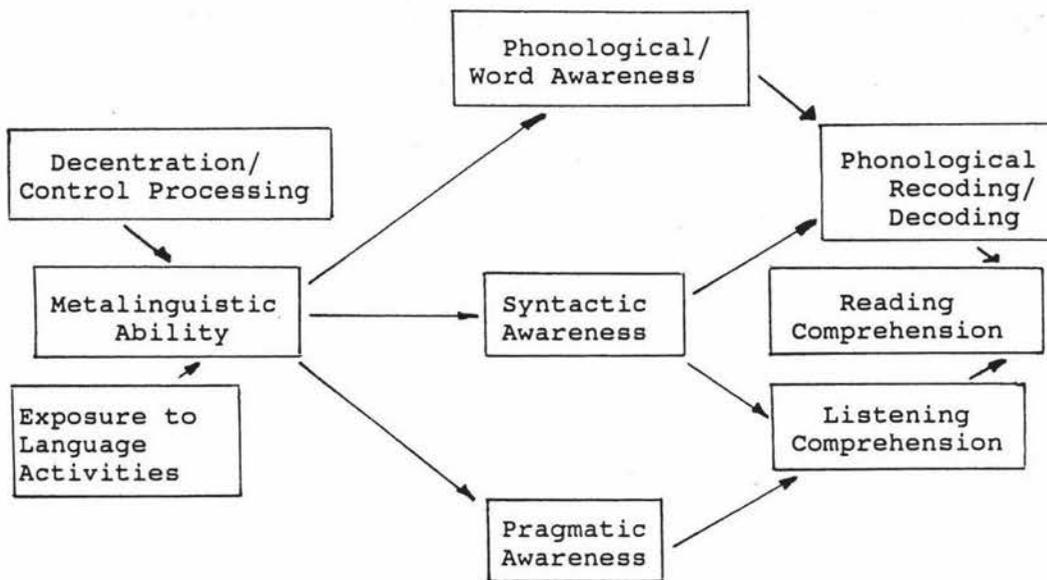


Fig. 2.2. The Cognitive-Developmental Model.  
(Tunmer, 1990)

Levels of decoding and comprehension are clearly identified as proximal causes of reading success or failure. These two crucial processes operate, as Vygotsky (1962) detailed, from the particular to the general (that is, decoding of specific words then generalising to letter-sound correspondences and morpheme and word chunking), and from the general to the particular (that is, learning approximate word meanings from context and gradually focussing them more finely). The brain appears to operate in both ways, and to integrate them:

- "Bottom-up" processing begins with the detection of features such as vertical, horizontal and diagonal lines, integrates these features into recognised letters through

excitation and inhibition processes and connections that develop through experience, then with further experience with written language integrates letters into morphemes and words and links this information with lexical and syntactic information from memory.

- Meanwhile, "top-down" processing superimposes cognitive organisation on the processing; incoming material is compared with existing knowledge (for example language structures, schemata, orthographic code), and the reader constructs meaning as reading proceeds (Just & Carpenter, 1987). The Tunmer model of reading illustrated in Figure 2 incorporates these interactive processes (cf. Jorm, 1983a; McClelland, 1987). Similarly, Lipson and Wixson (1991, after Wixson & Peters, 1984) considered that an interactive definition best summarised the current stance of reading research:

"Reading is the process of constructing meaning through the dynamic interaction among the reader, the text, and the context of the reading situation." (p.13)

Research evidence is accumulating in support of the Cognitive-Developmental model. Gough and Tunmer (1986) found decoding and listening comprehension "necessary and jointly sufficient for reading"; they could thus be described as proximal causes, as their model shows. The contribution made by metalinguistic skills is less well established. While decoding/phonological recoding development does, in fact, depend on phonological

awareness, syntactic and pragmatic awareness appear to contribute indirectly to more effective listening comprehension ability by facilitating intra- and inter-sentential comprehension monitoring skill (Tunmer, 1991). Phonological awareness will be considered first. Goswami and Bryant (1990) listed three forms of phonological awareness: awareness of syllables, awareness of onset and rime, and awareness of individual phonemes. They found that awareness of syllables is rarely a problem even with young children (Liberman, Shankweiler, Fischer & Carter, 1974), awareness of phonemes comes later as a byproduct of practice with reading and spelling, and awareness of onset (beginning sounds in words) and rime (the end sound pattern in words) is critical to the development of early reading. The causal role of phonological awareness is well established:

- phonological awareness precedes reading (MacLean, Bryant, & Bradley, 1987), and
- training in phonological awareness improves reading (Bryant & Bradley, 1985; Maclean, Bryant & Bradley, 1987). Bryant, Maclean and Bradley (1990) found that young children's rhyme and alliteration scores were related to their reading progress two years later, even after controlling for linguistic skills, intelligence and social background. The effect thus appears to be both robust and highly specific, not just a correlate of general language ability.

Syntactic awareness also appears causally related to learning to read (Tunmer, Nesdale & Wright, 1987), although training studies have not yet been reported. Mann's (1986) review of research in syntactic development concluded that the question of syntactic difficulties was not yet resolved, and suggested (cf. Stanovich, 1986a) that such difficulties could be a result of restricted reading experience, or a result of the restricted verbal memory which is often found in cases of reading difficulty (cf. Vellutino, 1979). In their longitudinal study, Bryant, Maclean and Bradley (1990) found that syntactic awareness and sentence imitation did not predict reading progress after they controlled for intelligence and social background. In Bryant et al.'s (1990) study, phonological awareness and syntactic awareness correlated roughly equally with later reading achievement. However, as shown in Figure 2.2, syntactic awareness is also related to listening comprehension through its effects on comprehension monitoring. It is therefore no surprise that syntactic awareness does not account for as much variance in reading as phonological awareness after general language factors have been entered into the regression equation (Tunmer, 1991). At this point, however, when some research appears to indicate that syntactic awareness is important to reading acquisition, it is probably a good idea to include a

measure of syntactic awareness in a battery to assess reading problems.

Pragmatic awareness, the ability to monitor intersentence comprehension, appears unrelated to phonological recoding but pertinent to more advanced reading (Tunmer, Herriman & Nesdale, 1988). Development of the various metalinguistic processes - phonological and word awareness, syntactic awareness, and pragmatic awareness - appears to be contingent upon cognitive development similar to the Piagetian stage of concrete operations, the ability to decentre (Tunmer, Herriman and Nesdale, 1988).

Once reading is underway, these processes all develop further, as consequences of reading experience; good readers quickly outstrip poor readers, even in the first year of reading (Stanovich, 1986a). Verbal working memory becomes more efficient, phonological recoding becomes automatic, vocabulary and general knowledge and lexical organisation are enhanced, and comprehension blossoms (Tunmer & Rohl, in press).

Learning to read is a developmental process, and each of the processes involved is developmental. Phonological awareness, for example, develops gradually, perhaps beginning with an awareness of rhyme (shown to be the easiest phonological awareness task - Stanovich, Cunningham & Cramer, 1984; Yopp, 1988), then syllables

(Fox & Routh, 1975; Liberman, Shankweiler, Fischer & Carter, 1974; Treiman & Baron, 1981), then pronounceable portions of syllables (Tunmer & Rohl, in press), and finally isolated phonemes, many of which are unable to be pronounced in isolation (Tunmer & Rohl, in press). "Explicit phonological awareness appears to be a necessary but not sufficient condition for acquiring grapheme-phoneme correspondence rules"; letter name knowledge is also required (the latter, although an excellent predictor of beginning reading achievement, "is not thought to be causally related to reading achievement") (Tunmer & Rohl, in press).

Recent research has thus shown the following as causal factors in early reading acquisition: phonological awareness, syntactic awareness, decoding, and listening comprehension. Letter name knowledge appears to interact with phonological awareness to facilitate the acquisition of grapheme-phoneme correspondence rules. Oral language development and cognitive development must also be at a level where an introduction to written language is possible.

### 2.3 Sources of Reading Problems

As Jorm (1983a) pointed out, for a long time researchers looked at reading problems without knowing much about the normal process of reading acquisition or skilled reading. Rather than give a history of those abortive attempts,

this review will concentrate on different strands of recent research, to describe the factors which are currently under investigation and being found to contribute to reading difficulties. Then different approaches to assessing reading will be described in the later pages of this chapter, and again related to current research.

Research is proceeding actively on several different fronts. Neuropsychologists are examining the brain, both its activity (e.g. studies using electroencephalography and positron emission tomography) and its anatomy (e.g. studies of the brains of deceased dyslexics). Subtyping is popular (e.g. Rourke, 1985; Hooper & Willis, 1989). Whereas earlier research sought to find one factor responsible for a person's learning problems, in current research the contributing factors are conceptualised to be multiple and interactive (Jorm, 1983a; Plomin, 1989; Stanovich, 1986a). For example, take the observation that reading difficulties "run in families". Is this a genetic problem (DeFries, Fulker & LaBuda, 1987; DeFries, Vogler & LaBuda, 1985)? Is there an environmental problem, such as inadequate teaching or parents who do not read to their children or listen to them read (Ehri e.g. 1989; Wells, 1985)? Has the reading programme been presented in such a way that the child is unable to assimilate it? Studies by Carbo and others (e.g. Carbo, 1980, 1983a & b; Price, Dunn & Sanders,

1981; Wheeler, 1983) found that beginning and poor readers showed a strong preference for tactile and kinesthetic learning, and much lower preferences for learning using the visual or auditory modalities. Children of six or seven years appeared to develop the ability to learn in the following order: kinesthetic, tactile, visual and auditory. If the teaching programme emphasises the last two modalities before the child is ready, the child will have difficulty, if a strong modality preference is part of that child's learning style. No matter where the problem starts, it soon has multiple dimensions, and the various factors interact.

Hooper and Willis (1989) listed many systems of classifying subtypes of reading disability. Although the various classifications proposed are different, a common thread appears to be the division into: auditory-linguistic deficits, visual-spatial deficits, and mixed difficulties (cf. Boder, 1970, 1973; Pirozzolo, 1981). Bakker (1979) added a developmental aspect to his conceptualisation, assuming that reading appeared more visual-perceptual and less linguistic in the early stages, and more linguistic and analytical as the material becomes more complex. Bakker (1979) accordingly considered that some dyslexics continue to use the right-hemisphere mediated visual-perceptual strategies, while others have an overreliance on left-hemisphere

linguistic-semantic strategies. Carbo, Dunn and Dunn (1986) found that people who showed higher arousal in the right hemisphere learned better under the following conditions, and advocated that classroom programmes provide for flexibility, so that people who learn in this style can be accommodated: global rather than analytical strategies, low rather than high light, sound rather than quiet, mobility and tactual stimulation rather than sitting still without tactual reinforcement. People who showed a right preference also learned better when they ate as they learned, preferred to learn with peers rather than with adults or alone, and were less persistent than people who showed a higher arousal in the left hemisphere.

Mature reading requires both hemispheres each making their distinct yet interactive contribution. Hemispheric dominance studies (e.g. Bakker, Moerland, & Goekoop-Hoefkens, 1981) have begun to support this conceptualisation, while Van Strien, Bakker, Bouma and Koops (1988) have begun to show that some kinds of dyslexia have familial antecedents.

As well as these types of reading disability per se, there are also reading disabilities which arise because the person lacks supporting skills; the most prominent among these are oral language (e.g. syntax and vocabulary) and memory. Without this "supporting cast",

listening comprehension, and hence reading comprehension, could not exist.

Now that research has identified causal factors in reading acquisition, it seems logical to use these factors as a basis for assessing reading progress and problems. Vellutino (1979) considered dyslexia (the inability to handle written language) as a deficit in verbal processing, while Liberman and Liberman (1990) listed many studies which attested to the preeminence of phonological awareness in enabling progress in reading.

As for the origin of such problems, some studies have seemed to indicate a possible genetic basis for reading problems (DeFries & Decker, 1982; Lewitter, DeFries, & Elson, 1980). Ehri (1989) considered reading problems to arise from environmental constraints. As Stanovich (1986a) and Plomin (1989) pointed out, genetic and environmental influences could be interacting. The fact that four times as many boys as girls have reading problems (Vellutino, 1987) points to a possible genetic or biochemical link with reading difficulties. On the other hand, Hyde and Linn's (1988) review found that gender differences in verbal ability were so small that they concluded that they probably do not exist.

In earlier decades, especially from the 1950s to the 1970s, there was active research concerning perceptual or motor difficulties, and visual and perceptual-motor training programmes were attempted, trying to "cure"

people with reading problems. These programmes were, however, found to be irrelevant to reading. Even the American Academy of Ophthalmology (1987) published a policy statement stating the futility of visual or psychomotor training instead of an educational programme to improve the reading of a person who was having difficulty. On the other hand, the American Optometric Association (1987) affirmed that their members had a role to play in correcting eye defects (such as farsightedness and ocular motility) which could make reading less comfortable for a person.

Regarding the relation between visual-perceptual skills and reading, a meta-analysis by Kavale (1982) found that visual memory and visual discrimination were most significantly related to reading and to word recognition. Even after IQ was partialled out, visual discrimination was still highly related to reading. One research stream (e.g. Snowling, 1985) has revived Boder's (1970, 1973) conceptualisation of dysphonetic (having difficulty with letter-sound integration) and dyseidetic children (those with visual perceptual problems). Snowling (1985) for example describes procedures for assessing both the visual and the phonological skills of readers.

Feagans and Merriwether (1990) used Gibson's (1966, 1979) perceptual theories and his letter-like forms as a basis for experimentation. Following studies by Lyon and Watson (1981) and Satz and Morris (1986), Feagans and

Merriwether (1990) found that children with learning disabilities with visual discrimination problems at age 6 or 7 years performed more poorly in reading and general achievement throughout the elementary school years than nondisabled children and also more poorly than other learning disabled children. Feagans and Merriwether (1990) underlined the importance of using theoretically based, ecologically sound experimentation and longitudinal study to test the hypothesis that there is a subgroup of people with reading difficulties who have visual discrimination problems. Using the Gibson letter-like forms enabled them to investigate the types of difficulty which were causing problems for their subjects.

On the other hand, Gattuso, Smith and Treiman (1991) found that the ability to classify visual objects by common parts did not usually relate to reading and spelling skill in their adult and child subjects, whereas classifying speech by common parts (phonemes) was related to reading and spelling ability. The task used by Feagans and Merriwether (1990) appeared to relate more closely to reading than the visual task investigated by Gattuso, Smith and Treiman (1991). Also, the subjects of Gattuso, Smith and Treiman's (1991) study were kindergarten and elementary children and adults; no selection criteria were given, but their reading skill was tested. The subjects in the Feagans and Merriwether

(1990) study were selected as belonging to one of three groups: learning disabled children with visual discrimination difficulties, other learning disabled children, and a cohort of normally achieving children. The progress of all the children was tracked over the elementary school years. Gattuso, Smith and Treiman (1991) specifically discounted a general perceptual deficit as a source of reading difficulties, based on their own and previous studies (e.g. Vellutino, 1987). Feagans and Merriwether (1990) cited the evidence of their own and foregoing studies (e.g. Kavale, 1982; Lyon & Watson, 1981; Satz & Morris, 1981; Spreen & Haaf, 1986) to illustrate that a subtype of dyslexic children exhibited persistent difficulties with visual discrimination.

Other researchers have found evidence of difficulties with: sequential processing (Shapiro, Ogden & Lind-Blad, 1990), right-left orientation and rhythm (McGivern, Berka, Languis & Chapman, 1991) in reading-impaired children, as compared with age-matched control children. McGivern, Berka, Languis and Chapman (1991), using blind experimenters to test Grade 1 - 3 children, found that reading-impaired children of all age groups were less able to discriminate patterned pairs of tones (Seashore Rhythm Test, Halstead, 1947) and had difficulties with left-right orientation (Blau Torque Test, 1977). Although the groups were selected by teachers rather than

the experimenters, results for the two groups were differentiated, even when the Standard Error of Measurement was included. Although the older (age 10 - 11 years) children made fewer errors on the Seashore Rhythm Test than the younger children, and their performance was closer to the age-matched control children, they still made slightly more errors than the 6 - 7 year children whose reading was not impaired.

Although these results hint at a lack of hemispheric specialisation or integration, and difficulties with auditory temporal pattern recognition, they do not indicate the nature of the link (if any) between these deficiencies and poor reading performance. Nor do they indicate whether such deficiencies can be remediated. Although McGivern et al. (1991) recommended the Seashore Rhythm Test (Halstead, 1947) as a screening device for dyslexia, further research is needed to understand how this performance is related to reading performance.

Mann (1986) entertained several different views as to the origin of deficient phonological awareness and language processing. Environmental constraints such as large families and low socioeconomic status may reduce the child's opportunities to acquire language, or this language may be dissimilar to the prevailing language of the classroom. Genetic and neurological influences may be implicated in the correlations between reading difficulties and premature birth, and reading problems

that "run in families". There may be a maturational lag in the development of language or phonological processes (as shown especially in the predominance of boys, who develop more slowly, among those who have reading problems). Finally, those with reading difficulties may have experienced less reading instruction (cf. Matthey, 1990; Stanovich, 1986a). Reviewing these various factors, Mann (1986) concluded that there may be a maturational lag in language development in some children which prevents them from developing phonological awareness despite apparently suitable experience.

Tunmer and Hoover (1990) considered three variance models "which attempt to account for differences in decoding and listening comprehension". They found insufficient support for Ehri's contention that reading problems arise from the environment (1984, 1986, 1987, 1989) and the theory of Liberman, Shankweiler and their colleagues that reading problems arise from a deficit in handling the phonological elements of language (e.g. Liberman, Shankweiler & Liberman, 1989), but included elements of these in their cognitive-developmental model (shown in Figure 2.2). As Stanovich (1986a) pointed out, the causal relationship is actually reciprocal; if the model illustrated all the causal relationships, it would resemble a ball of string! Once the person is able to read, all the other facets develop more quickly. These spinoff, "Matthew" effects from practice in reading

contribute rapidly to the development of cognition and working memory. Stanovich (1986a, following Merton, 1968) referred to these as "Matthew" effects, after the Gospel according to Matthew: "For unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken away even that which he hath" (XXV:29). As Stanovich (1986a) pointed out, a person's difficulties become progressively less specific as time passes, and the person is left behind in: phonological awareness, vocabulary development and pragmatic awareness, syntactic awareness, language processing and metalinguistic ability, general knowledge, and eventually general cognitive ability. These increasingly widespread deficits contribute to what Stanovich (1986a) referred to as failure of motivation and Chapman (1988) described as a reduced academic self-concept.

Thus, when assessing reading problems, it is essential to examine the person's skills in the areas which have been shown to be salient to reading acquisition: phonological awareness, syntactic awareness, decoding, and listening comprehension. In order to prepare for a comprehensive remedial programme, however, it is necessary to look more broadly at the person's skills and attitudes, as the causes and effects of reading failure can be widespread. Whether the original cause is neurological (e.g. Gaddes, 1985; Lerner, 1989), genetic (DeFries, Fulker, & LaBuda

1987), environmental (e.g. Ehri, 1989), speech and language disorders (Stackhouse, 1985), visual-perceptual (Feagans & Merriwether, 1990), a combination of these or another factor altogether, the important point for the person now is to determine the person's level of skills and needs at the present time, and to design a remedial programme accordingly (cf. Tunmer, 1990). Because reading is a complex cognitive skill, it is appropriate in cases of reading disability to examine not only the components of reading and global reading performance, but also supporting components such as auditory and visual perception and memory, and oral language, and the person's medical history (which may for example contain ear infections in the preschool years when language should be developing) and social environment (e.g. teaching history and the availability of reading activities in the home).

#### 2.4 Issues in the Assessment of Reading

Clay (1985) makes several strong pleas regarding assessment. First, it must contain close observation of what the child can and cannot do, with no help from the observer. Feuerstein (1979), Vygotsky (1962), Campione (1989), and Carney and Cioffi (1990) would disagree, saying that we need to observe also how the child learns when given cues. This "dynamic" or "assisted" assessment can reveal how easily the child will move on from the

present level of achievement, and also what sort of clues are the most helpful for assisting the child.

Second, reading assessment must be conducted early. Clay has instituted reading assessment for all children at the sixth birthday in New Zealand, after a year at school. Stanovich (1986a) would probably regard this as too late, as good readers would already be far ahead of poor readers. Timing is problematic, as we try to balance the urgent need for early remediation against the dangers of early labelling.

Third, assessment must actively look for the strategies the child is using. Finally, repeated assessment must analyse the individual's progress in using strategies.

Before considering types of assessment in detail, several general points must be raised. As with any assessment, there are issues relating to measurement (*Standards for Educational and Psychological Testing*, 1985; Anastasi, 1988). The *Standards for Educational and Psychological Testing* (1985) argued strongly for tests to be based on sound scientific research, for this research base and testing procedures to be explicitly described in an accompanying manual for the test, and for users to have a sound professional training and expertise in the area they are examining. Two major considerations in testing, reliability and validity will be described in greater detail.

1. Reliability: Is the instrument consistent with itself, and repeatable within a short space of time or with a similar task or set of items?

2. Validity: Does the instrument or process really measure what it claims to? Is that attribute a worthwhile one to be examining? Is the measure a "clean" test of the attribute, uncontaminated by extraneous factors (Tunmer & Nesdale, 1985)? Is the measure based on a sound theory of reading? Does the measure have the potential to contribute constructively to teaching? *Standards for Educational and Psychological Testing* (1985) considered validity "the most important consideration in test evaluation" (p.9), and validity will therefore be a preeminent consideration in this present study.

As with any assessment, there are also practical issues. For example, Vincent et al. (1983) listed: ease of administration and the length of time needed, ease and accuracy of scoring, and the age group for which the measure is suitable. *Standards for Educational and Psychological Testing* (1985) lists similar specific criteria for the design, administration and scoring of standardised instruments.

There is also the question of the type of assessment to choose, relevant to the age of the learner and the purpose of the assessment. Is the intention to evaluate

classroom progress, investigate the need for remediation, decide on educational placement, or research reading? For reading research, a task must be cleanly differentiated, but a more global measure closer to the integrated nature of reading would be more useful in the classroom (cf. Treiber & Lahey, 1983). Clay (1985) advocated the Running Record - an exact record of what the child says while reading aloud, which can then be analysed to reveal strategies which the child is using, and a pattern of strengths and weaknesses.

Perhaps the form of assessment can be classified as follows.

1. For classroom use: A global measure of the natural reading task, such as a running record from a book at the level where the child is currently reading is frequently used in New Zealand. The child can choose material from a range of alternatives, to maximize performance by providing conditions of good motivation.

2. For educational placement: Book level is a crude measure. In educational systems, placement for remedial help is usually dependent upon a formula such as reading a certain distance behind age or grade level. Placement may depend on performance on one or a series of standardized tests (and these may well be alien to the child's experience), or on performance on typical school

reading material (as for the Reading Recovery programme, described in Clay, 1985).

3. For designing a remedial programme: As well as a global sample of the child's reading, it is helpful to have samples of how the child performs on measures of the factors found to be causal in reading acquisition. By seeing how the child's reading is developing, the reading specialist can design a programme suited to level and needs, without wasting time teaching what is already mastered. Tunmer (1990) emphasised the need to determine specific skill deficiencies as a basis for designing an individual remedial programme.

4. For reading research: As mentioned, in order for results to be interpretable, tasks selected must be as "clean" as possible, to enable factors to be separated.

Early (preschool) assessment of children with a view to preventing later reading difficulties has not been mentioned. Although no such predictive measure exists, neither Bryant (1985) nor Tunmer, Herriman and Nesdale (1988) consider it necessary. If phonological awareness is a crucial skill, why not give all preschool children opportunities to play with language; for example, by learning nursery rhymes and songs and making up poems? Lundberg, Frost and Petersen (1988) conducted a training study using metalinguistic games and exercises with Danish preschoolers. With this explicit instruction,

phonological awareness increased. The training had modest effects on rhyming and word and syllable awareness, which seem to develop with a minimum of instruction (cf. Mann, 1986; Liberman, Shankweiler, Fischer & Carter, 1974); the effect on phonemic segmentation was, however, dramatic. The experimental group demonstrated a clear advantage in reading and spelling until the study finished when the children were in Grade 2. Assessment was used in this study not to select children into the programme (intact preschool classes were used) but to monitor progress in specific skills (prereading ability, letter knowledge, language comprehension, vocabulary, rhyme recognition, syllable synthesis from broken words presented orally, segmentation of oral sentences into words, syllable segmentation, deletion of initial phonemes, phonemic segmentation, synthesis of phonemes, Raven's Progressive Matrices, mathematics, reading, spelling). The tests of intelligence and mathematics were included in order to illustrate that the children's unusual achievement was specific to the extra training which they had received. There is a group of preschool children, however, who should receive assessment of language skills, if later reading failure is to be prevented - those who for various reasons have speech difficulties (for example, deaf children, children who have had many ear infections in the preschool years, and brain-damaged children). For

these children, a language assessment and speech therapy are essential, for if their own language is not clear, they will have a shaky foundation for using written language. Describing a complete language assessment is, however, beyond the domain of this thesis. (See for example Cantwell & Baker, 1987; de Seriere, Heeney, & Rutledge, 1987; Dowson, 1987; Eisenson, 1986; Bamford & Saunders, 1985; Klein, 1985; Stackhouse, 1985; Sparks, 1984; Mueller, Munro, & Code, 1981.) An assessment of a child with a severe reading difficulty may well need to include elements of language assessment in order to define the extent of the child's problems. Snowling (1985) sums up the assessment procedure with a child who is having severe difficulties with written language:

"Standardized tests are important for determining whether a child has a specific learning disability. Nonstandard procedures are important for determining possible reasons for difficulties, and to identify individual teaching needs."

While it is not clear that the two types of assessment can be used for the above purposes exclusively, both types can prove helpful, along with the close observation that both Snowling (1985) and Clay (1985) advocate. Stackhouse (1985) details a programme of assessment for children whose speech disorders have led to difficulties with written language, and lists remediation techniques.

In brief, assessment of reading achievement and processes can include: standardised tests, tasks to sample specific factors in reading, interactive approaches (including branching computer testing programmes), and observation of reading behaviour, in order to demonstrate skill levels, strategies, strengths and weaknesses. These types of assessment will be considered separately, except that testing using computer programmes is considered to be beyond the scope of the present study.

## 2.5 Standardised Tests

Standardised tests are tests which have been developed with standard instructions, items and procedures. They are often accompanied by norms (for example, reading ages) which have been developed with a sample of a population, and a manual which explains how the test and norms were developed, and how the test is to be administered, scored and interpreted. Extended reviews of standardised tests of reading can be found in Salvia and Ysseldyke, 1988; *Mental Measurements Yearbook* (e.g. Conoley & Kramer, 1989); Vincent, 1985; Vincent, Green, Francis & Powney, 1983; Raggett, Tutt & Raggett, 1979. Standardised tests can usefully serve several purposes, depending on which test is used, and what the assessment need is. They can be variously used for: group screening, individual testing to diagnose strengths and weaknesses, and comparison of individual scores to known

norms. For only the last purpose is a standardised test necessary, and then the most helpful reasons for using norms are for identifying needs and for ranking. Each of these will be briefly discussed.

1. Identifying Needs. The children who lag furthest behind their classmates can be shown to be in need of remedial attention, according to the current definition of which segment of the school population is to be helped. This standard definition does, however, ignore individual differences in ability.

2. Ranking. A standardised test is an objective, relatively precise and convenient measure of how one child's proficiency compares with another's - on that particular measure, and compared to the readers on which the test was normed.

Overall, the score is not tremendously helpful, for it does not lead directly to decisions about educational programming, except in a general way to indicate the level of progress and the level of graded reading material which could be appropriate for the child. In view of the influence which background knowledge has on vocabulary and comprehension, however, even the concept of graded reading material becomes somewhat problematic. Standardised tests, because they have undergone a lengthy development process, usually have reliability information, a researched gradient of item difficulty, and a collection of items which the test designer

considers salient to reading. A retest using a well-developed alternate form of the same test can give a quantitative estimate of the child's progress since the first test. The standardised test is easy to administer and scoring is objective.

While some of the earlier standardised tests provided only words or sentences in isolation to read, more recent tests such as the Neale Analysis of Reading (Revised, 1988) provide passages in connected prose. Each story follows a progression with a standard story grammar; the most advanced passages are non-fiction, in keeping with the reading needs of more advanced readers. Linked with each passage are comprehension questions. Both the passages and the questions are written in natural-sounding language; presenting the test resembles an enjoyable session such as a child and a parent or a child and a warm teacher might have, with the child reading and the adult asking questions. The test thus provides an enjoyable opportunity to assess the child's reading, listening comprehension, and oral language skills. By looking globally at reading, it provides a structured opportunity to assess: the child's reading strategies including the use of context, the child's skill in decoding and comprehension, and the child's strengths and weaknesses (e.g. comprehension of fact, ability to make valid inferences, attitude to reading).

The Neale Analysis (1988) also includes tests of reading subskills: letter naming and sounding, phonemic segmentation and blending. All the tests employ real words. Using real words "muddies" the task, as the child could be reading them successfully using either phonological or visual skills, and the tester would not receive as much information about strategies as if pseudowords were used.

The Neale Analysis appears, however, to be a reasonable test of global reading accuracy and comprehension of connected prose, and seems to appeal both to children and to testers. It would be helpful in diagnosis before designing an individual remedial programme, and for indicating reading levels for research, when using a design which matches subjects according to reading level. For the purpose of designing a remedial programme, the testing of subskills is probably not detailed enough, however. If "the validity of a (reading) test rests initially on the degree to which the reading behaviour sampled predicts performance in other reading situations" (Gardner, 1978), the Neale Analysis appears valid for connected prose, and resembles the reading that children who read at the tested levels would tend to do. The norms are Australian; local norms could, however, be developed. Matthey (1990) points out the dangers of computing reading norms according to chronological age, and contends that it makes more sense to compute reading

ages according to grade norms. In New Zealand, the problem largely disappears. Because children generally enter New Zealand schools on their fifth birthday, age and grade norms are concurrent in most cases. This fact, while simplifying the collection of norms for reading ages in New Zealand, does not remove the difficulty with the norms for the Neale Analysis, which were collected in Australia.

The Neale Analysis offers qualitative information as well as quantitative. Recording what the child says while reading provides clues to strategies, while subskill tests provide more information on decoding skills. Thus the Neale Analysis considers both reading for meaning and decoding. Although most reading that we do is silent (and many comprehension measures are conducted in silence, especially with older children), oral reading yields more information for diagnostic testing.

Standardised test material can also be used in additional ways for clinical purposes. The passages in the Neale Analysis, for example, could be used for retelling instead of using the set comprehension questions, to check language production and processing, and verbal memory and organisation. The questions provide an opportunity for cued recall.

## 2.6 Tasks to Sample Specific Factors in Reading

As well as collecting a global sample of the child's reading, the teacher or researcher will probably want to investigate various reading-related factors individually as well. Such investigation must of course be completed within a reasonable time, so that the child does not become too tired. For reading research, after a global measure has established groups that are approximately equal in reading level, then one or more tasks are given to investigate the factors in question; for this purpose, a "clean" task is essential.

For diagnosis before designing remediation for a child with problems in reading, it makes sense to sample the factors that have been found to affect reading acquisition: phonological awareness, syntactic awareness, decoding, and listening comprehension.

Snowling (1987) defines the needs of dyslexics:

"The predominant view to date is that dyslexia is associated with phonological difficulties originating within spoken language processes ... [Dyslexic children] have specific problems with verbal memory, verbal labelling and other aspects of auditory processing. They do not have the phonological skills required to learn to read at the critical time" (pp.142, 148).

Arguing that there is a subgroup of children who are unable to abstract the alphabetic principle for themselves at the time when opportunities for acquiring reading are being presented, Snowling (1987) proposed that various behaviour patterns result. The normal pattern is that children who receive reading instruction

and continued practice develop competent and fluent reading. Children with general developmental delay can learn to read after much practice and patient teaching. Children whose phonological awareness is developmentally delayed may eventually painstakingly learn to read. However, if their visual and semantic skills are stronger, they may develop atypical dyslexic reading and dysphonetic spelling, unless they receive a programme in which phonic teaching is emphasised. Children with specific phonological deficits may continue to have auditory and verbal problems, including oral language and reading. Bradley and Bryant (1983) considered that children at risk for reading difficulty need to be identified at an early age (say four to five years). Such children would show deficits in rhyming, and would need help with categorising sound groups. Another approach would be to offer such training to all children prior to reading instruction, as was successfully done by Lundberg, Frost and Petersen (1988).

Thus, in the case of severe reading difficulties, oral language must also be investigated (Snowling, 1987; Stackhouse, 1985). This approach to assessment, looking at components which research has shown to contribute to skilled reading and reading acquisition, and then proceeding to suggest types of tasks which could be used to forecast or diagnose reading difficulties, resembles the approach taken by Mann (1986).

### 2.6.1 Phonological awareness tests

Yopp (1988) determined the reliability, validity and relative difficulty of ten common tasks administered to young children (aged 5 years 4 months to 6 years 8 months), and also found that two factors underlie them: processes which appear to require memory, and those which do not. Using converted means (obtained by averaging the percentage correct for all subjects for each test), Yopp (1988) found that rhyme recognition or production (Yopp, 1988, modelled on Calfee, Chapman & Venezky, 1972) was the easiest task (converted mean = .714), followed by auditory discrimination (Wepman, 1973, converted mean = .699), phoneme blending (Roswell-Chall, 1959, converted mean = .652), word-to-word matching (Yopp 1988 modification of Wallach & Wallach, 1976, converted mean .631), and sound isolation (Yopp modification of Wallach & Wallach, 1976, converted mean .589). Tests of phoneme counting, phoneme segmentation and phoneme deletion were found to be more difficult for the children, particularly the Bruce (1964) phoneme deletion task (converted mean .265).

Multiple regression revealed that prediction of early reading acquisition is enhanced by using a test from each factor. Rhyming and auditory discrimination were found to be outside the two main factors. Several of the tasks were highly correlated; for example, segmentation

and blending. The two factors are apparently separated by the load which the task places on memory; Yopp (1988) provides a useful table listing the tests by factor and the cognitive processes involved. The two factors are strongly correlated. She concluded that using two phonemic awareness tests, one requiring memory and the other not, provided greater predictive validity for the initial stages of reading acquisition than using a single test. Of the tests she examined, she found that the Yopp-Singer (1988) phoneme segmentation test had the best combination of reliability and validity for a simple test, and the Rosner (1975) test of phoneme deletion appeared the most valid measure of a phonemic awareness test requiring memory. While a modification of the Wallach and Wallach (1976) sound isolation task accounted for the greatest variance (52%) in performance in sounding and blending pseudowords, its reliability (Cronbach alpha coefficient, a measure of internal consistency) of .84 was lower than that of the Yopp-Singer (1988) phoneme segmentation test ( $r=.95$ ), and the two were found to be highly correlated.

#### 2.6.2. Syntactic awareness tests

Ryan and Ledger (1984) and Bialystok and Ryan (1985) defined metalinguistic tasks in terms of analysed linguistic knowledge and cognitive control, and applied these dimensions to tests of syntactic awareness. Three

types were examined: evaluating and explaining the grammaticality or ungrammaticality of sentences, repetition of deviant sentences, and sentence completion or anagrams. These will each be considered in turn.

Evaluating and explaining the grammaticality or ungrammaticality of sentences emphasises analysed linguistic knowledge. Although task demands range from moderate to high (ranging from judgment of acceptability, to location, to correction, with explanation of unacceptability the most difficult), the same degree of control is required for each. These tasks resemble school grammar exercises.

Other tasks involve repetition of deviant sentences or nonsense or substitution of another word for a target word (which may violate semantic or syntactic rules). These tasks emphasise cognitive control. They resemble the patterned practice often found in second language teaching, except that there the substitutions tend to make sense!

Sentence completion and sentence anagrams require both knowledge and control. Bialystok and Ryan (1985) gave examples of each task, and explained how modifications could increase the demands on knowledge or cognitive control.

As evaluation of syntactic awareness tests is a fairly new field, comparative data for reliability and detailed analyses of relative difficulty are not yet available,

and validity data are only beginning to appear (for example, Tunmer, Herriman & Nesdale, 1988).

#### 2.6.3. Assessment of Decoding

In this study, decoding will be understood to mean the use of grapheme-phoneme correspondence for word recognition (This is strictly known as phonological recoding). It has often been assessed using either a prose passage or a list of real words. In a word list however, phonological decoding could be confounded with visual recognition of a known word, while in a prose passage context clues would also be available. The purest test of decoding, then, is a list of pseudowords. The list can be ordered by difficulty, and a comparison can be made with a similar list of real words, similarly ordered, in order to compare the child's performance on material he may have seen before with totally new material. This task is described in Tunmer and Nesdale (1985) and Snowling (1985).

#### 2.6.4. Assessment of Comprehension

At last, some would say, a real test of reading! For this is indeed the goal of reading, to go from print to meaning. Obviously a global measure is desirable, as has been described, with retelling or cued recall to assess comprehension. Multiple choice questions, while the least demanding, are efficient for group screening.

The cloze procedure, which can be used to assess syntactic awareness if function words are deleted, can be used to monitor comprehension if content words are deleted. Holdaway (1980) described variations in the cloze procedure suited to group or individual instruction and assessment.

As well as a global assessment, looking at components of comprehension is helpful in diagnostic testing. So far some of these components have already been considered: phonological and syntactic awareness and decoding.

It is also necessary to assess the vocabulary and background knowledge which the child brings to the comprehension process, and the ability to select the main points of a passage. The Vocabulary and Information subtests of the Wechsler Intelligence Scale for Children - Revised (WISC-R) provide graded lists of vocabulary and general knowledge questions, and the Wechsler Memory Scale - Revised (WMS-R) provides prose passages for retelling with a scoring key. Technical data for these tests are provided in the manuals and they are reviewed in the *Mental Measurements Yearbooks* ( e.g. Buros, 1978; Conoley & Kramer, 1989). The teacher may, however, prefer to use material closer to that used in the classroom, with which the child has perhaps a greater opportunity for success, as suggested by Clay (1985).

### 2.7 Global Assessment of Reading

Global reading skills are often assessed in New Zealand classrooms by taking a running record (Clay, 1979) of the child's reading. The ability to detect the main points of a passage can emerge through retelling or conversing about the book (as is practised in shared book reading in New Zealand classrooms), or by having the child underline the main ideas.

Just & Carpenter's (1987) review showed that psychometric studies of comprehension testing have identified various factors in comprehension, but results tend to be highly correlated. A global assessment of comprehension thus appears warranted, except in cases where a closer diagnosis is desired for the purpose of designing remediation.

### 2.8 Interactive Assessment

Carney and Cioffi (1990) proposed an interactive model of comprehension testing, whereby the main concepts and necessary vocabulary are first taught, in order that the child may be sure of having a schema available. Only then is the child required to read material on that particular topic for assessment. This method resembles Feuerstein's (1979) general approach to assessment, and also resembles the shared book experience which is prevalent in New Zealand classrooms.

The interactive method assesses not only the ability to comprehend the passage at hand, but also helps the assessor to learn how best to teach the child (cf. Campione, 1989). Carbo, Dunn and Dunn (1986) also underlined the importance of considering the person's learning style, and Carbo (1981) has provided an instrument for evaluating the learner's reading style.

### Conclusion

Now that research has identified causal factors in reading acquisition and is developing a better understanding of the skilled reading process, we are in a position to develop salient assessment procedures, bearing in mind the developmental nature of the reading acquisition continuum, and the purpose for which the assessment is being designed. The following chapter considers the assessment package used by SPELD (New Zealand), including its relevance to current research in reading acquisition, and its appropriateness as a basis for designing remediation.

### 3. ASSESSMENT OF AN ASSESSMENT: THE SPELD APPROACH

"Unless the testing informs instruction, it is hard to justify." (Janssen, 1989)

"One of the greatest problems facing educators today is that of developing appropriate assessment procedures, ones that contribute to establishing meaningful educational programs." (Tindal & Marston, 1986, p.55)

"The diagnosis and treatment of severe reading disabilities require an intensive clinical case study, including supplementary information on sensory capacities and motor development, medical and health history, complete educational history, data on home and family background, and a thorough investigation of possible emotional difficulties." (Anastasi, 1988, p.436)

Because problems in reading appear to have several different causes which may be found in combination, Anastasi (1988) recommended a wide-ranging assessment for individuals who have exhibited persistent reading difficulties. When considering remediation, it makes sense to consider most those areas where remediation is possible, although a wide-ranging assessment may turn up additional difficulties (such as poor coordination) which need a special programme in their own right. Assessment of reading should concentrate on the factors which have been found by research to be salient to reading acquisition.

Tindal and Marston (1986) also argued for a complete, well-rounded assessment of a person experiencing possible

learning difficulties (cf. Anastasi, 1988), and the use of a "consistent measurement system" (Tindal & Marston, 1986, p.58) to permit evaluation of progress and programme. Along with Heron and Heward (1982), they recommended that assessment contain: a diverse testing battery (including intelligence tests, achievement tests, perceptual motor tests and process tests), interviews (with parents, teachers and students), checklists, classroom observation and a review of school progress. Salvia and Ysseldyke (1988) identified assessment as serving five main purposes: referral, screening, classification, instructional planning, and evaluation of pupil and programme effectiveness. SPELD uses a history form, interviews with parents and/or pupils and test performance to identify the individual's strengths and weaknesses, make referrals if indicated (e.g. to an optometrist), plan for remediation, and assess progress. The same battery is used for initial assessment and reassessment, although the reassessment tends to omit some of the tests if their implementation appears unwarranted in the particular case (e.g. if the person was already at or beyond the ceiling for that test.)

Tindal & Marston (1986) considered that in education systems assessment is used primarily to identify and classify children (e.g. as learning disabled). In SPELD this is not a major focus. The clients who come to SPELD have already identified that they have a problem (e.g.

falling behind in school). Rather than classify clients, the SPELD assessment's main emphasis is to discover and investigate the person's strengths and weaknesses as a basis for developing an educational programme at the initial assessment (cf. Carbo, Dunn & Dunn, 1986), and to evaluate progress at the reassessment.

This chapter will list criteria for evaluating an assessment of reading skills, then examine the rationale of the SPELD approach. The next step will be to undertake a detailed look at the SPELD approach to assessment, to determine how well it conforms to the criteria established for assessment.

### 3.1 Criteria for Assessing Reading Skills

Children with reading difficulties are a heterogeneous group, manifesting different difficulties from each other (Bradley, 1983) and at different ages (Bryant, 1982). Bryant (1982) argued that learning difficulties may stem not from a lack of ability, but from the failure to deploy strategies effectively; ability may be "masked by disorganisation". Fyfe and Mitchell (1985) gave guidelines to enable teachers to establish a formative assessment of reading strategies, based on a task-analysis of typical reading tasks: search-do (e.g. using telephone directories, using a dictionary), comprehend-do

(e.g. reading directions, filling in a form), and personal-response reading (e.g. reading a story). These categories are of course not completely separate, but some categorisation enables one to select items to tap sources of difficulty that have been found to occur in different types of tasks. Fyfe and Mitchell (1985) observed the tasks undertaken by older pupils, but a similar task-analysis approach could be used with younger pupils and the tasks they undertake. Fyfe and Mitchell (1985) did not consider separate reading skills, although their approach did emphasise the need for comprehension, including evaluation of the material read. Such higher level comprehension skills are often not considered in the assessment of reading difficulties, but these are skills which students require if they are to succeed in education.

Bradley and Bryant (1982) described the purpose of assessing reading difficulties:

"We need to ask ... not just what the ... weaknesses are, but precisely what effect these weaknesses have on learning to read ..."  
(p.192).

Treiber and Lahey (1983), in reviewing behavioural approaches to learning difficulties, argued for a broad assessment based on tasks similar to those required in the classroom (cf. Fyfe & Mitchell, 1985), and focussed on molar rather than molecular behaviour; unless molar

approaches do not work with the particular individual, they claimed that molecular assessment is unnecessary. They considered such behaviours as writing words and oral reading to be molar behaviours, while phonic discrimination and visual discrimination were to be regarded as molecular analyses. They did, however, state that research showed that oral reading has independent components: for example, comprehension, oral speed and oral accuracy (Lahey, McNeese & Schnelle, 1977, cited in Treiber & Lahey, 1983). These components correspond to the decoding and listening comprehension identified by Gough and Tunmer (1986) as essential to reading, along with the fluency of access which Mann (1986) cited. Treiber and Lahey (1983) recommended that assessment include: standardised achievement tests, many samples of written work from the classroom, and daily classroom observation. Tunmer (1990) advocated a detailed assessment as a basis for designing a remedial programme, in order to identify the "specific skill deficiencies".

The previous chapter identified factors salient to reading acquisition which should be included in such a detailed assessment. Tasks sampling these factors - phonological awareness (e.g. of rhyme, syllables, and letter sounds), syntactic awareness, decoding and listening comprehension - should form the basis of reading assessment, along with a global assessment of

reading accuracy and comprehension. As well as examining the level to which the person possesses these various skills, it is pertinent to examine the strategies which the person is using (Bryant, 1982; Schmeck, 1988), and how effectively these are being used.

Swanson (1988) argued for an information-processing rather than a psychometric approach to assessment. He proposed that assessment should appraise the components shown in Figure 3.1.

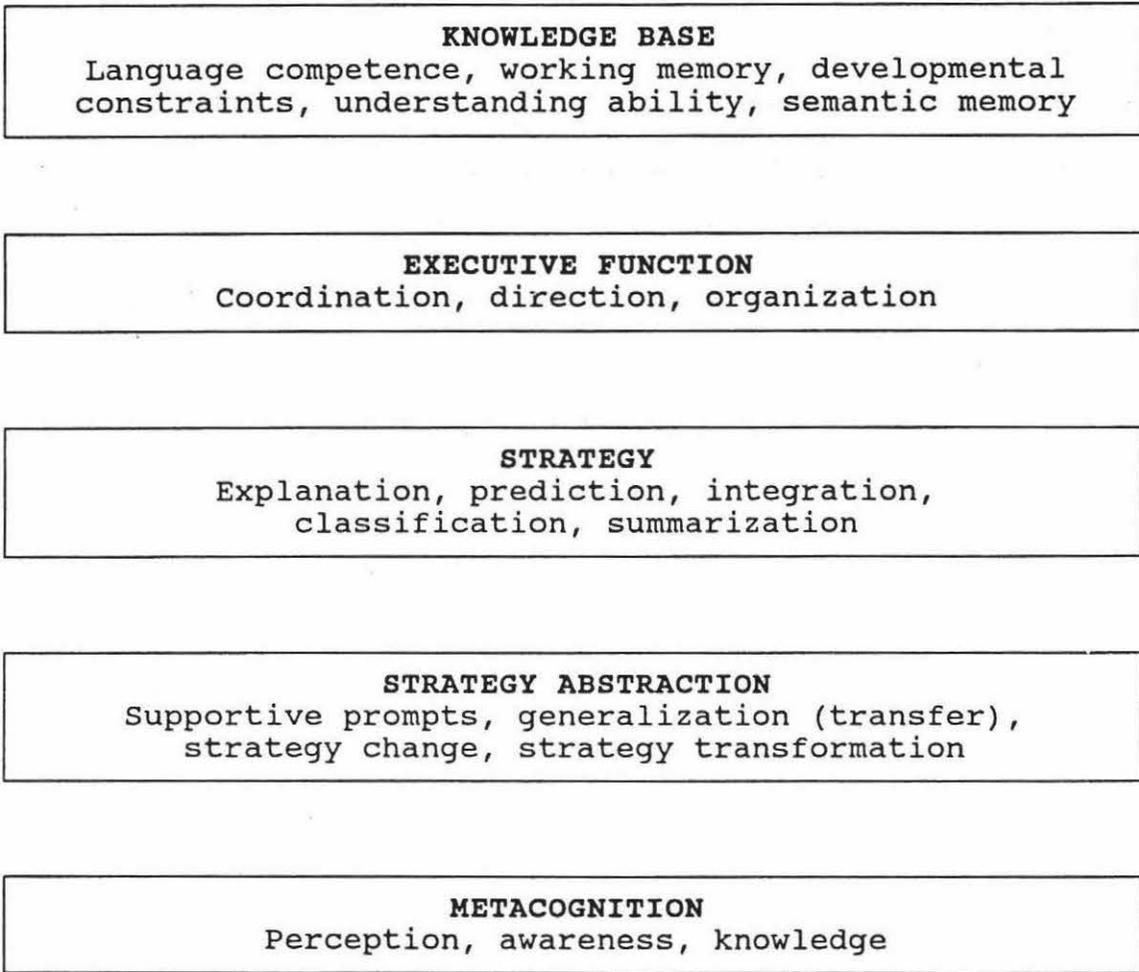


Figure 3.1. Information-processing components (Swanson, 1988).

Like Bryant (1982), Swanson (1988) found that research suggested that children with learning disabilities appeared to have difficulty coordinating these various components into a complex act such as reading, and deploying strategies appropriately. When Swanson (1988) referred to "perception", he was indicating not simple

perception, but perception of the requirements of the task at hand.

Summing up the criteria for assessing a reading assessment, it is important to consider:

- the theoretical and empirical evidence which suggests that the component under assessment is causally related to reading,

- the psychometric and other measurement-related considerations that can be used to evaluate an assessment,

- the strategies which the person is using,

- how well the person is coordinating these components into the act of reading, and

- whether the components and relations under examination can be trained in some way.

### 3.2 The SPELD Approach

The present chapter will study the assessment and remediation programme provided by the New Zealand Association for Specific Learning Disabilities (SPELD). The programme will be examined for its appropriateness in the light of current research. As well as considering the appropriateness of the assessment in evaluating the reading process, the validity of the approach as a basis for designing a remediation will be considered. Insofar as possible, the components will be examined to determine their reliability, the suitability of the items chosen,

and scoring procedures. For norm-referenced components, the norms will be considered, and for other components the scoring methods will be examined. Although the main focus of this thesis is on reading, all the components of the SPELD assessment will be considered, as it forms an integral unit. In order to maintain the focus on reading, however, more space and depth will be devoted to the components which appear to have a direct bearing on the reading process.

SPELD (New Zealand) is a private organisation founded in Christchurch in 1971 (SPELD, 1985). It trains its testers (who have already completed SPELD teacher training) to administer the SPELD test and its teachers (who have already completed teacher training acceptable to the New Zealand Ministry of Education) to deploy a range of methods to help people with learning difficulties. SPELD testers are required to have acquired a C grading from the New Zealand Council for Educational Research (which is available after undertaking training in psychology, including graduate training in psychological assessment), to have completed the SPELD teachers' training course (75 hours of specialised training, which is considered to be equivalent to a second-year polytechnic or undergraduate paper), then to have undertaken training in administering the SPELD battery, and completed a period of supervised practice before being allowed to administer the battery

without supervision (SPELD Professional Committee, 1991). It is desirable for the SPELD tester to have had experience as both a classroom and a SPELD teacher, in order that the programmes suggested by the tester may be practicable. These stringent requirements for the professional training of testers both in assessment and in learning difficulties are in agreement with the specifications laid down for testers in the *Standards for Educational and Psychological Testing* (1985).

There are many more SPELD teachers than SPELD testers. According to SPELD (1985), in 1985 there were approximately 500 SPELD teachers tutoring approximately 3500 students, but probably at the same time there were only about forty testers, many of whom had previously been SPELD teachers.

The SPELD approach to assessment is to look at the "whole person", how that person learns, and which skills and knowledge have been accumulated. The SPELD history form (See Appendix C) and test battery attempt to provide a broadly-based diagnostic assessment of learning difficulties for people who have had persistent problems with some or all of the following:

- coordination,
- reading,
- spelling,
- mathematics,

- listening comprehension,
- auditory attention, perception, and memory, and
- visual attention, perception, and memory.

Coordination is assessed, not because the organisation believes that assisting coordination will aid in academic progress, but in order to determine whether the person needs remediation in coordination for its own sake. The SPELD assessment encompasses both norm-referenced testing (e.g. *The Neale Analysis of Reading Ability*, 1988) and non-normed material specific to tasks which are considered by the organisation to be salient to the learning process. The assessment looks at both molecular (e.g. phonics, rhyming) and molar (e.g. decoding and comprehension) behaviours which contribute to reading acquisition.

The assessment process has several stages. First the client or family makes an initial contact with SPELD requesting assistance. They then attend an introductory meeting which focusses on learning disabilities and the process of individual assessment and remediation. At this meeting they may obtain a history form, which they then complete. This form is given to a tester, who makes an appointment and conducts the assessment. (An assessment record form, attached as Appendix D, shows the stages of this assessment.) The tester then writes a report for the client or family. The report (See

Appendix E) contains test results, a brief description of the client's learning strengths and weaknesses, some recommendations as to approaches for teaching the client, and finally recommendations for placement (e.g. a school or home programme or a SPELD teacher), along with any other referrals or suggestions that may be considered necessary (e.g. speech therapy assessment, physiotherapy). This report is given to the client or family (depending on the age of the client) and, if there is to be a SPELD teacher, copies of the history form and assessment report are forwarded to the SPELD teacher, to enable him or her to plan a programme for the client. The SPELD teacher designs and carries out an individual programme with the client, usually for one hour a week. Depending on circumstances, these lessons may be given at the teacher's home, at the client's school, or at a community facility, and may occur within school time, after school or in the evening (for adolescent or adult clients). Reassessment is recommended at the end of one year, but may be conducted earlier if the teacher or parent so wish. A sample of the form used for a reassessment report is attached as Appendix F.

A few clients receive an intensive course of two or three weeks, receiving SPELD lessons each weekday morning for three hours, and may be reassessed soon after the completion of this intensive course. One of the cases to be presented in the following chapter received an

intensive course during the time that he was being observed for this thesis.

The SPELD approach to assessment and remediation focusses on both skills (cf. Tunmer, 1990) and strategies (cf. Nisbet & Shucksmith, 1986; Kirby, 1988), because people who have been reading ineffectively have been using ineffective strategies, and may need specific and explicit teaching to discover better ways of learning to learn (i.e. metacognitive strategies), that work well for them. As Feuerstein illustrated with his work in instrumental enrichment (1979), important gains can be made by assisting the learner to recognise relevant cues (cf. Bryant, 1982).

### 3.3 The SPELD Assessment Programme

Briefly, the SPELD assessment programme consists of an initial assessment and retesting. Initial assessment includes:

- a history form (See Appendix A),
- a sample of the client's unaided written language (cf. Treiber & Lahey, 1983),
- the SPELD assessment battery (known as The SPELD Test), and may involve
- WISC-R cognitive assessment.

Cognitive assessment is routinely done at some branches, occasionally done in other branches (including Manawatu),

and not done at all in branches where no one is qualified to do it. The rationale for conducting cognitive assessment is to determine whether the client falls within the normal range or above. On the other hand, if the client is functioning at a low level, he or she may be referred to other help which is available in the community. While the practice of cognitive assessment (and of an exclusion definition for learning disabilities) is being seriously questioned (e.g. Lezak, 1988), this practice is continuing in SPELD at a national level. The routine use of the WISC-R is recommended to ascertain a pattern of cognitive strengths and weaknesses. Lufi and Cohen (1988) took a similar line, recommending:

- that the WISC-R not be used on its own to differentiate between learning difficulties and emotional disturbance,
- that the WISC-R be used to understand patterns of cognitive functioning and to help in designing remediation, and
- if it is used in diagnosis, that it be used with other diagnostic tools.

Lezak (1988) wrote decisively against the global use of IQ tests, but considered that they do have a role to play in ascertaining cognitive strengths and weaknesses.

It is beyond the scope of this thesis to analyse in detail the Stanford-Binet or the WISC-R. The reader who

is interested is referred to the *Mental Measurements Yearbooks* (e.g. Buros, 1978), and to Anastasi (1988). Ballard (1984) seriously questioned the use of Stanford-Binet or WISC-R testing for placement decisions or forecasting of academic performance (as a child's IQ can vary during the school years), particularly with New Zealand children, and St. George and Chapman (1987) found that the reliability of the WISC-R was less for a New Zealand sample than Wechsler (1974) had found with the American standardisation sample and reported in the manual. Using item analysis, St. George and Chapman (1987) also found that some items in the subtests were misplaced, when used with a New Zealand sample. No large-scale norming of the WISC-R or Stanford-Binet tests has been conducted in New Zealand. In SPELD (Manawatu), a client is rarely turned away as a result of cognitive assessment, and cognitive assessment is rarely conducted. While Ballard (1984) also questions the validity of IQ testing in that it relies on theoretical constructs and does not lead directly to suggesting a teaching programme, such testing has never been used in SPELD to define the teaching programme; that is the function of the SPELD battery.

Initial assessment is intended to:

- give background information on the individual's health, development and difficulties, including any

remediation already attempted, and how successful this was,

- provide a sample of current functioning, and
- enable analysis of strengths and weaknesses as a basis for remediation, if needed.

Retesting consists of an abbreviated SPELD test (skills which were adequate at the initial test are not generally reassessed), to assess progress and provide the teacher with further indications of strengths, weaknesses and current levels of functioning; the teacher can then adjust the approach as necessary to suit the student's current needs. When the student and teacher mutually decide that the student can function without further remediation, an exit retest may be given to record a final sample of functioning.

In the SPELD approach, assessment is intended to be closely connected to the remediation which is developed from it. Seabrook, who compiled the assessment, explained (1985):

" ... SPELD teaching and SPELD assessing form a unit. They depend upon each other. A SPELD teacher cannot work according to a SPELD programme without obtaining the results from the SPELD assessment ... On the other hand the assessment alone is of limited value unless it is applied in an effective programme related to the tester's findings."

This approach appears similar to that advocated by Tunmer (1990):

"Clearly, to design effective remedial treatment it is necessary to determine the specific skill deficiencies that are preventing problem readers from learning to read competently, and then to do something about it." (p.112)

### 3.4 The History Form (See Appendix C)

This form has several purposes:

- to provide basic contact data (name, address, etc.),
- to list any health problems which could have bearing on the difficulties (e.g. vision, hearing, antenatal or perinatal trauma, illness or injury which could affect cognitive functioning),
- to describe the individual's development,
- to describe current academic and social functioning,
- to record any remediation and help already received, and
- to enable the tester to begin to understand the individual and his difficulties.

A careful reading of the history form enables the tester to begin to think of hypotheses about the learning difficulties which can be explored further in testing.

As well as physical problems (Clients are urged for example to have vision and hearing tested before seeking assessment, to rule out or correct defects which could be impeding the person's progress - cf. Bond, Tinker, Wasson & Wasson, 1984), illnesses and difficulties in

educational history and strategies, there are biochemical correlates which can be involved in learning difficulties, neurological inefficiencies and psychomotor problems. Geschwind (1983) found an unusually high frequency of allergies such as hay fever, asthma and eczema in families of dyslexics, and significant interrelationships with "food allergies, disorders of the immune system, left handedness, childhood migraine, and developmental dyslexia." Bergland (1985) emphasised the preeminence of biochemistry in brain function.

When the brain is understood in this way, it is not surprising that allergies and illnesses can have profound effects on cognition, nor is it surprising to find sex-related differences in functioning. The SPELD history form asks about antenatal and perinatal problems, vision, hearing, illnesses, accidents, academic strengths and weaknesses, and behaviour patterns, in an attempt to build an overall picture of the person.

### 3.5 The SPELD Test Battery

In keeping with the SPELD philosophy of looking at the whole child, the SPELD battery is a broadly-based behavioural sample (cf. Anastasi, 1988). Seabrook, the compiler of the test (in the 1970s) was trained and experienced in speech and language therapy, child development, physiotherapy and special education in New Zealand, England and America (Seabrook, 1990a), and drew

on this background when compiling the test. It is not surprising, therefore, that the battery deals mainly with psychomotor behaviour and verbal tasks. The administration of the specific learning disabilities screening battery (referred to in this thesis as the SPELD battery) was intended by Seabrook (1990b) to follow an administration of the WISC-R cognitive assessment. From the date of the compilation of the test battery in the early 1970s until 1990, the SPELD test consisted merely of a collection of items, which were given to each new tester who trained at the SPELD Centre in Christchurch. In 1990, SPELD published the test battery as a testing kit, complete with brief notes on the battery and on general testing considerations. As well, each section of the battery has a few introductory comments, and the tester is told what to look for in each section. The introduction reiterates Seabrook's emphasis on the neurological-psychological functioning of the individual as the source of "specific learning disabilities", as contrasted with environmental sources of difficulty such as "wrong class placement, socio-economic and cultural deprivation, emotional problems, changes of school, and inconsistent methods" (Seabrook, 1990b). The introduction and comments do not, however, constitute a manual such as is required to be provided to accompany psychological or educational testing material (*Standards for educational and psychological testing,*

1985). Absent are the usual notes about test development, norms, reliability, and validity. Instead there are two pages which give the rationale for the selection of items, as being essential to diagnosing the needs of the student (similar to the approach which Coles, 1978 and Arter & Jenkins, 1979 found to be deficient.)

Although some of the material in the battery is taken from other sources (such as the Stanford-Binet 3rd revision, 1960; Malcomensius, 1967; Slingerland, 1970), there is only a brief reference to this fact in the introduction, where these tests are described as "internationally accepted" (Seabrook, 1990b). Several New Zealand authors have however questioned the use of the Stanford-Binet and WISC-R tests with New Zealand subjects (e.g. Ballard, 1984; Chapman & St. George, 1984 and 1987). Slingerland (1970) received uncomplimentary reviews in Pumfrey (1983) and Salvia & Ysseldyke (1988), questioning its reliability and validity. Malcomensius (1967) did not even rate a mention in those publications. Material taken from these sources is not acknowledged as such in the battery itself. Nor is there any indication of how the norms were derived. Some material appears to have been lifted directly or with minor modifications from, for example, the Stanford-Binet 3rd revision (1960), complete with the American norms collected in

the 1950s. The instructions have, however, been changed, and so there are several reasons to be wary of these norms. In discussing assessment procedures in the SPELD battery, Seabrook (1990b) stated that many SPELD teachers from throughout New Zealand had input into the battery, and she acknowledged the help which she had received.

Obviously, such suggestions do not constitute a norming of the battery for New Zealand however, nor did Seabrook (1990b) make any claim that New Zealand norms had been collected. As for any additions and deletions which may have been suggested, the Battery generally appears to be fairly similar to the compilation which was produced in the 1970s.

The components of the battery are listed in Table 3.1 which follows. They will be described in more detail in the separate sections for each which are located later in the chapter.

Table 3.1 Components of the SPELD Battery

1. Psychomotor Skills

- laterality: hand, eye, foot and ear preferences (cf. Harris, 1958),
- gross and fine coordination and balance,
- body image, eye tracking and rhythm, and
- eye/hand coordination and the placing of material on the page.

2. Auditory Skills

- auditory memory for sentences (*Stanford-Binet*, 1960) and numbers (digit span, cf. *Stanford-Binet*, 1960)
- auditory discrimination of words (cf. Wepman, 1973).

### 3. Tests of Phonological Awareness

- phonic skills (phonemic segmentation),
- writing dictated sentences,
- auditory syllabification,
- Carver Word Recognition Test (1970),
- rhyme production,
- sound blending and decoding,
- letter names and sounds (Neale, 1988), and
- writing letters from hearing sounds.

(Note: Although the last two tasks are located in the battery under "visual skills", they appear to belong to this section.)

### 4. Rote Sequencing and Arithmetic

- rote sequencing (alphabet, months, days, counting, tables).

### 5. Visual Skills

- visual discrimination of letters, numbers and words, (Slingerland, 1970),
- discrimination of letters and sounds (Neale, 1988) (also a phonological task),

- delayed recall of words/designs/numbers presented visually (Malcomensius, 1967; Slingerland, 1970), and

- timed copying of difficult words.

#### 6. Language Skills

- syntactic sentence arrangement (Stanford-Binet, 1960),

- vocabulary (*WISC-R*, 1974), and

- global informal assessment of speech and language.

#### 7. Spelling Skills

- spelling (Schonell, 1955).

#### 8. Reading Skills

- oral reading accuracy (Neale, 1988),

- oral reading comprehension (Neale, 1988), and

- listening comprehension (using the Neale, 1988 although it was not designed for this).

Because this is rather a long list of components, the SPELD testing session takes about one and a half to two hours. Even a cursory examination of this list reveals that the SPELD test is largely composed of items which have been taken from published, standardised tests. Some of these items are entire standardised tests (e.g the *Carver Word Recognition Test*, 1970; *Schonell Graded Word Spelling Tests*, 1955) while others are selections from tests such as the *Stanford-Binet Intelligence Scale*

(Third Revision, 1960). A standardised test has been carefully developed, with norms obtained according to a standard administration (standard instructions, a standard set of items, standard procedures) (Anastasi, 1988). Thus these isolated items cannot be regarded as standardised tests in this context, as the environment of the items has been changed, once the test is not given in its entirety or in the prescribed order. As well as the obvious fact that the norms for many of these tests were developed in a different time (e.g. prior to 1955, 1960, or 1974) and in a different place (e.g. England or the United States), there are ethical and legal issues involved in taking material from other tests without permission and promulgating it in a different form. The use of these items in this form has not been shown to be valid or reliable, and the use of the norms developed with this material in a different environment and context is not valid. Das (1989) made the following comments regarding the *WISC-R* (1974); a similar caveat would apply to the *Stanford-Binet* or any other composite test which has been designed to be used in its entirety:

"The *WISC-R* subtests are not meant to be used by themselves as their individual reliabilities vary widely; this is well known in the literature." (pp.888-889)

St. George & Chapman (1987) studied the *WISC-R* items with an 11-year-old New Zealand sample using a New Zealand adaptation of the *WISC-R* suggested by Tuck, Hanson and

Zimmerman (1975). They found that some items were misplaced for difficulty, that reliability estimates for the New Zealand sample were lower for the Verbal, Performance, and Full Scale IQ than those reported for the WISC-R norming samples (Wechsler, 1974), and that IQ and subtest scores tended on the whole to be slightly higher than the mean values listed in the manual (Wechsler, 1974). This last result probably resulted from the underrepresentation of low IQs in the New Zealand sample, compared with the standardization sample used for the norming of the WISC-R as reported in the manual (Wechsler, 1974). Gender differences did not appear marked in the New Zealand sample (St. George & Chapman, 1987). The apparent lower reliability for the WISC-R with the New Zealand sample gives cause for concern if the test is used as a basis for placement decisions, especially when considered together with the concerns regarding the instability of individual IQs during preschool and school-age development raised by Ballard (1984). Ballard (1984) also cited evidence which casts doubt on the ability of WISC-R and other IQ or achievement tests to predict academic achievement, and pointed out that the WISC-R manual (Wechsler, 1974) fails to state a rationale or discuss the validity of the test. If the construct ("intelligence") supposedly being measured cannot be defined, Ballard (1984) then suggested that perhaps such tests simply rank people according to

how well they respond to a standard set of items. This definition runs into problems, however, both because modern societies such as New Zealand tend to be pluralistic with different groups holding different values to be important (Miller & Davis, 1981), and because it is likely that there are differences between the standardisation sample and present-day New Zealand children (e.g. in reading, where the teaching methods and curriculum differ, so that differences could be expected in subtests which tap general knowledge and vocabulary). While data by Tuck et al (1975), Silva (1982), and Chapman and St. George (1984) provided some evidence supporting the WISC-R's validity in measuring the ability of New Zealand children, in that it displayed similar operating characteristics in both places, all called for larger scale norming and item analysis studies in New Zealand, and questioned the appropriateness of the norms. Ballard (1984) cited evidence to show that both the WISC-R and the Stanford-Binet were psychometrically deficient, even in their own context, and unsuited to individual placement decisions. He argued also against classifying children for educational programmes on the basis of supposed ability or disability, and supported instead direct assessment of "the difficulties children have with specific academic tasks ... [including] ongoing evaluation of the appropriateness and quality of the teaching materials and strategies provided" (p.30).

While the SPELD testing kit is still advocating routine use of the WISC-R before the SPELD battery is administered (at a second session), in the Manawatu the policy is not to use the WISC-R routinely, as there appears little justification for it. When it is used, it is designed to give additional evidence about the child's performance on specific types of tasks. Numerical scores, or even categories (as suggested in the manual) are not reported to the parents. Instead, the report focusses on strengths and weaknesses in the child's performance.

Because the WISC-R is not used in its entirety, the Manawatu tester is then placed in the invidious position of having to report subtest scores on the Arithmetic and Vocabulary subtests out of the context of the WISC-R, as decried by Das (1989). These two subtests, while not directly related to current New Zealand curriculum (Basic School Mathematics for example places more emphasis on concepts than on number facts in the early years, whereas the WISC-R Arithmetic subtest is a test of counting and computational word problems), do bear some resemblance to academic tasks, and are hence more aligned to the approach advocated by Ballard (1984) than would be a routine use of the WISC-R in its entirety. Although vocabulary acquisition has been shown to be related to reading (Nagy & Anderson, 1984; Stanovich, 1986a), it behooves the assessor who is investigating reading

progress to measure reading directly (cf. Ballard, 1984) as well as by its components and concomitants, and this is what the SPELD battery does.

Although the SPELD battery is used with a wide range of ages, from preschoolers to adults, for some items there is no indication which level to use, or whether an item is to be omitted. As far as can be deduced from the Testing Kit, however, the criteria for administering items are summarised in Table 3.2 following. The basic principle is to start at a level which will be easy for the child, and stop where the child is unable to continue, to identify the skills which the child possesses, and the level reached.

Table 3.2 Basal/Ceiling Rules for Administering the SPELD Battery

<u>Subtest or Section</u>	<u>Basal/Ceiling Criteria</u>
1. <u>Psychomotor Skills</u>	Do all. This section is more salient for children than for adolescents and adults.
2. <u>Auditory Skills</u>	
- memory for sentences	Begin a year below chronological age and give both sentences for that age. If the child is unable to repeat accurately, drop to the level below. If accurate, continue to go up the levels, until the child is unable to repeat either sentence for an age level. Score as the last successful level.
- digit span	Begin with the lowest level. Continue until the child is unable to repeat accurately.

The child is given the second sequence within a level only if he fails the first.

- auditory discrimination

Give all. Small children (age not specified) may answer yes/no instead of same/different.

### 3. Tests of Phonological Awareness

- phonic skills

Give all unless child shows proficiency. In that case, give only "difficult words" (not specified). Always give all the vowel sounds.

- dictated sentences

Say each sentence twice. Give the sentences in the child's age level, continuing until the child is unable.

- syllabification

Give all.

- *Carver Word Recognition Test*

Give all. Although designed for children up to 8 years 6 months, it is a helpful test for diagnosing difficulties in older poor readers.

- rhyming

Begin at the beginning and continue until child is unable.

- sound blending and decoding

Give all.

- letter sounds

Give all.

### 4. Rote Sequencing

Give all. Some tasks are modified for different ages. Score for the *WISC-R* Arithmetic subtest is recorded here (American 1974 norms).

### 5. Visual Skills

- visual discrimination

Give all of the visual discrimination of letters, numbers and words.

- letters and sounds

Ask children age 7 years and over to name letters of the alphabet visually presented,



separate). This Committee has responsibility for the testing kit. During these discussions, Seabrook (1991) and other members of the Professional Committee indicated procedures which could be implemented with adults (for example using questions rather than observing performance in the psychomotor tests). Testers were advised to "use common sense" in implementing the battery - hardly a standardised procedure! In discussing the battery, similar items rather than actual items will be used for illustrative purposes where possible, in order to protect test content.

Examining the list of tasks in the SPELD battery shows that they proceed from the particular to the general, and from the less academic to the more academic, an order which would probably appear less threatening to individuals who could feel uncomfortable with academic tasks. The game-like nature of the coordination tasks at the beginning (e.g. throwing and catching a ball, playing cards, hopping and skipping) is enjoyed by many children, and helps to put them at ease with the testing situation and the tester, and therefore inclined to perform at their best (Seabrook, 1990b). On the other hand, for a child with coordination problems, it is not the best way to begin. Flexibility in the order of tasks would be helpful, and is recommended in the new testing kit

(Seabrook, 1990b). The language testing looks first at components, then uses the *Schonell* (1955) test to check spelling and the *Neale Analysis* (1988) to observe global reading and listening performance.

The following sections consider the components of the battery individually.

#### 3.5.1. Psychomotor Tasks

The early sections of the test - lateralisation, gross and fine coordination, and directional sense - explore the person's hand, eye, foot and ear preferences and basic psychomotor functioning. The early items in the battery (cf. Harris, 1958) are designed to reveal the preferred hand for practised actions (such as writing) and unpractised actions (such as winding wool onto a ball), for gross and fine coordination (such as throwing a ball and cutting with the scissors, respectively). Looking through a cardboard tube at a distant object illustrates the preferred eye for distance viewing, while looking through a pinhole in cardboard at a near object illustrates the preferred eye for close vision. If these are not the same eye, there may be problems with binocular fusion which could be affecting the child's ability to read. The child could also have difficulty copying from the blackboard. Some children reveal problems of this sort by closing or covering their weak eye while reading; a consultation with an optometrist

may be indicated. A prior consultation with an optometrist, as recommended by SPELD, is helpful to rule out or correct problems in vision.

The coordination tests can reveal neurological weakness or immaturity; for example, the action of putting fingers to thumb in sequence should be achieved smoothly and with no mirroring of the action by the other hand. Although mirroring is normal in young children, it should not persist beyond about eight years of age (Gaddes, 1985 gives this age as a cutoff for finger localisation). Gaddes (1985) cites a longitudinal (Kindergarten to Grade 5) study by Satz and his colleagues (1978) which found a finger localisation test the best predictor of later reading competence in a large battery of psychomotor tests: Gaddes (1985) found an association between retarded reading and finger localisation in both or the right hand in learning disabled children and adults; this frequent co-occurrence could point to a dysfunction in the left parietal area. Keogh (1982) on the other hand proposed that movement disabilities be considered in their own right, rather than as adjuncts or indications of cognitive learning disabilities, and that perceptual-motor programmes for their remediation be designed as ends in themselves, to enhance the individual's ability to participate in social and leisure activities. According to Keogh (1982) and Wall (1982), although children may have difficulties in several different

areas, it does not necessarily follow that perceptual-motor disabilities are linked to learning difficulties. Similarly, Kinsbourne (1986) cautions against extending the search for correlates of learning disability too far. So far, no perceptual-motor programme has been shown to ameliorate academic learning difficulties per se (Keogh, 1982; Salvia & Ysseldyke, 1988). Anastasi (1988) mentioned that psychomotor abilities were far from unitary; Fleishman and Quaintance (1984) identified eleven factors. Most of the psychomotor items in the SPELD battery (e.g. hopping, skipping, tandem walk, placing fingers to thumb, eye tracking) appear to have little relevance to academic performance (e.g. reading). However, inasmuch as motor skills affect a child's self-esteem, they are worth working on by the SPELD teacher, for their own sake. A child who feels more confident is more apt to try to succeed, both at sport and at schoolwork.

The psychomotor testing, being more like a game, often serves to put the child at ease; whether it serves other functions is a moot point. Harris (1970) offered evidence to support a relationship between mixed handedness and reading disability, but no relationship between mixed eyedness or crossed dominance and reading disability. Hiscock and Kinsbourne's review of research on laterality (1987) concluded that mixed laterality was of doubtful significance to diagnosis. Bond, Tinker,

Wasson and Wasson (1984) described the laterality research as mixed, with no difference in the incidence of mixed or poorly developed laterality between groups of good and poor readers. Salvia and Ysseldyke (1988) pointed out that perceptual motor testing is questionable for several reasons: no technically adequate tests exist, perception is difficult to define, and therefore to test, and no support has been found for contending that perceptual-motor skill is a prerequisite for acquiring academic skills. Much of the research has been correlational, or has suffered from inadequate design (Hulme, 1981). Hulme (1981) however found that tracing improved memory for nonsense syllables and for the learning of arbitrary names for visual symbols in retarded readers, and that clumsy children had more difficulty with tracing and were therefore at a disadvantage in retaining complex material.

While the perceptual-motor testing may not be directly related to reading, it is easy to see that motor inefficiency would also affect the motor act of writing. If writing is physically difficult for a child, he or she would tend to shy away from practising it, and would therefore not progress as well. As teachers of junior classes are well aware, handwriting is generally easier for young girls than for young boys, and the girls tend to excel at written language from a young age as a result.

Gaddes (1985) stated that boys tend on average to be inferior to girls at writing until about age nine or ten years, and stated further that these differences were considered to result from different patterns of neural maturation in boys. The evidence regarding laterality, learning disabilities and sex differences is not clear, however. Gaddes (1985) reported that a study of normal boys and girls aged 6 - 13 years (he did not state whether the study was cross-sectional or longitudinal) found no sex differences in the majority of tasks (visual naming, description of use of an object, repeating digits forward and backward, constructing sentences, identifying objects by name or description, reading names of objects, pointing to objects). In the following tests, girls were superior up to age nine years: copying writing, oral reading, reading descriptions and pointing to objects, visual-graphic naming, writing to dictation, and articulation. On word fluency and spelling, girls showed prolonged superiority. Even when boys and girls produced similar levels of performance on the tests, it is still possible that they used different strategies or abilities to achieve the same result. For this reason, strategy assessment as recommended by Swanson (1988) is necessary. While Keogh (1982) pointed out that no definition of movement disabilities has been devised, and that there exist no standardised measures of clumsiness, it would

appear appropriate to develop separate norms for boys and girls when such measures are constructed.

Gross motor tests contained in the SPELD battery include: hopping (tested for each foot), tandem walk, throwing and catching a ball, and skipping. These tests assess motor development for the right and left of the body, and its integration, as well as rhythm and balance. The skipping step also demonstrates motor planning and sequencing.

This collection of tests assesses primarily what Keogh (1982) refers to as "movement-of-self". More advanced is the "movement-with-others" required in games and dancing. As Keogh (1982) pointed out, movement is supported by perceptual and cognitive activity, and takes place within a "personal-social surround". It is thus necessary to tease out in assessment the various factors which could be contributing to the problem. Wall (1982) defined physical awkwardness as a discrepancy between the movement accomplished by the person and the movement attained by the majority of the child's peers. Wall (1982) showed how motor development resulted from an interaction of genetic and environmental factors, and how those who excel at movement tend to become more proficient as they are selected for teams or dance training, while those who are less skilled receive progressively less practice, and also experience negative social effects through repeatedly not being chosen. Thus the "Matthew effects" which Stanovich (1986a) identified

for reading difficulties apply to difficulties in other areas as well. The resulting low self esteem can leak into all areas of endeavour.

Wall (1982) described a programme of assessment and remediation for physically awkward children at the University of Alberta Motor Development Clinic. They used the Henderson adaptation of the Stott Test of Motor Impairment (Henderson & Stott, 1977; Henderson, 1984), along with other items (not described). While this assessment considered many of the same motor skills as the SPELD assessment, scoring was made more exact. The child's performance was compared to norms developed with large groups of local children. After this initial screening with the Stott-Henderson test (1984) and the results of the Canada Fitness Awards tests (1980), some children are not assessed further, but are returned to regular education. Other children are further assessed using detailed observational checklists for key components of the skills being assessed. The clinic also offers interviews and counselling, and a few children receive a special instructional programme. This assessment programme is obviously much more developed than that employed by SPELD for motor activities.

Rhythm is also assessed using an alternating tap of the right and left index fingers. As Mosse (1982) pointed out, lack of rhythmic ability interferes with reading and speaking. Arrhythmic reading loses the meaning, and

arhythmic speech is difficult for others to follow. Because a rhythmic pattern is a sequence, people with a rhythmic disorder (which is often based on brain damage from a head injury or birth trauma) often also have difficulty with all sequencing, and hence have difficulty with language work. Mosse (1982) underlined the importance of testing rhythmic ability for children with reading problems. Miles (1983) however considered that it was not a sequencing disorder per se, but difficulty with ordering verbal or symbolic material which troubled people with reading or spelling difficulties; in this view he was close to the position reached by Vellutino (1979). Difficulties with rhythm do, however, appear to invade the language domain.

Body image testing in the SPELD battery assesses the person's ability to find his own right or left hand or foot, and to identify the right or left hand or foot of a person facing him. While the ability to identify consistently the left side of a page has obvious implications for reading, writing and spelling, it is the position rather than the association with the term "left" which is most important. The ability to identify right and left is more important for physical education, and ultimately for social and leisure pursuits such as games and dancing. From time to time the distinction between

right and left may be needed in order to follow classroom instruction.

In the SPELD battery, eye tracking is tested, not because a SPELD teacher will give eye exercises (this is not generally done), but in order to determine whether the child has an eye problem which needs professional attention from an optometrist or eye specialist. Bradley (1980) described as common sense that the hearing and eyesight of a person with reading difficulties be checked.

Eye/hand coordination is checked by having the child copy geometric figures three times each: circle, square, triangle, diamond. The ability to draw these forms develops with age (cf. Terman & Merrill, 1960). In the Stanford-Binet (1960), copying a circle is placed at age three years, copying a square at age five years and copying a diamond at age seven years, and three trials are given as they are in the SPELD battery. Copying a triangle does not appear in the Stanford-Binet (1960), and the marking key although similar to the Stanford-Binet (1960) is not identical to it. This subtest has been taken from a published test, but not from the Stanford-Binet (1960), although it is very similar. This is not a pure test of just one function; the tester looks also to see how the child used the available space, to check spatial organisation and planning, as well as the quality of figure drawing:

- whether lines are firm or wiggly,
- whether corners are matched up well,
- whether the figures are drawn around or as separate lines,
- whether the child has difficulty drawing lines in a particular direction (young children have difficulty drawing diagonal lines but this difficulty should not persist in older children or adults), and
- whether the left and right of the figures are drawn equally well.

Figure drawing (and other tests in the battery) can also indicate the child's experience, strategies, and attitude to his work; for example, whether he draws with care, or overly painstakingly, or in a fast, slapdash manner. The tendency to persevere may also be shown. Generally children work well at the SPELD test and appear to enjoy it. If they have problems with geometric copying and spacing of work, they are unlikely to be able to produce attractive written work and projects, and will need explicit guidance from a remedial programme.

### 3.5.2. Auditory Tasks

The battery contains a series of auditory tasks. The first test is for auditory memory. Miles (1983) was convinced that dyslexia was a memory problem. Torgesen (1988) found that a subgroup (approximately 20%) of 9 -

11 year old children diagnosed as having learning disabilities had stable (over four years) performance deficits in memory span tasks. Similar subgroups were reported by Lyon (1985), who found that 13% of his learning disabled sample had deficits in memory span, and Speece (1987), whose sample yielded 15% with similar problems. Ackerman, Dykman and Gardner (1990) found that severely reading disabled children were slower than mildly reading disabled children in counting from memory and naming alternating digits and letters. Although the severely disabled children also had poorer phonological sensitivity, shorter digit spans and lower Verbal IQs, these variables did not account for additional variance in performance on the Wide Range Achievement Test - Revised (Jastak & Jastak, 1984). Similarly, Mann, Cowin and Schoenheimer (1989) found that poor readers were unable to interpret sentences as accurately as good readers because poor readers were less able to maintain phonological material in working memory; poor readers performed similarly to younger children matched to their reading ability. Including memory span tasks in a learning disability screening battery thus appears warranted.

Auditory memory is assessed in the SPELD battery by having the client repeat sentences and strings of numbers of increasing length (the latter digit-span test uses forward strings and strings to be repeated backwards).

Items are taken from the Stanford-Binet (3rd revision, 1960) or slightly changed. The norms used are also taken from this source. Although there appears some validity for including this task in the battery, the plagiarism is not to be recommended, and the norms are now out-of-date as well as geographically inappropriate (the Stanford-Binet norms were collected in the United States). For strings of digits forward, the American norms are also culturally inappropriate, as American telephone numbers have employed seven digits for years, whereas New Zealand has just embarked upon this practice. For this reason, it would be expected that New Zealand children's performance prior to 1991 would have been less practised on digits forward than the performance of their American counterparts.

Like the items, the instructions are changed slightly from the Stanford-Binet (1960). This change presents another reason why the norms cannot necessarily be taken as appropriate.

For auditory memory for sentences, the items for ages four, eleven and thirteen years are taken from the Stanford-Binet (1960), either exactly or with minor modifications. The source of the items for ages five to twelve years and fourteen to fifteen plus years is not known. Sources are not acknowledged within the individual subtests of the SPELD battery. The sentences to be repeated are unrelated to each other, and gradually

increase in length. Children who have problems with rhythm are again at a disadvantage in this test, as they may change, add or omit words or change word order without realising it.

In the case of auditory memory for sentences, the tester is advised to begin the test one year below the child's chronological age, then proceed upwards or downwards depending on the child's success. This procedure is similar to the procedure used to select levels for the Stanford-Binet (1960).

For auditory memory for digits forward, the items for ages seven to twelve years are very similar to the Stanford-Binet (1960). For digits backward, the items for ages seven and nine years are similar to the Stanford-Binet (1960). Items for other ages (that is, for four to seven years and adult for digits forward, and for ages twelve years and adult for digits backward) follow a similar pattern, using fewer or more digits, to suit the ages being tested, extrapolating from the Stanford-Binet (1960) norms, a straightforward but rather questionable procedure. Because there is no indication how this test was designed, there is no basis for knowing whether these norms are appropriate. Certainly, no norms have been developed with the population of New Zealand schoolchildren and adults, with whom this test is being used. However, this test does appear to differentiate between levels, and can thus perhaps be used both to

determine whether a person has problems with auditory memory for connected material, and to ascertain whether progress has occurred. Because there are no data about the validity of the norms, it would not be justified to state on the basis of the findings of this test alone that the person has difficulty with auditory material.

Both the sentence repetition and digit span tests yield an age score (although there are problems with these scores, as has been noted). Clinical observational data are also produced; for example, the type of error made, the sorts of difficulties the child appears to be having, and the strategies used. The sentence repetition task often shows that the child is skilled at paraphrase; a short sentence is easily repeated, but with longer sentences the vocabulary is lost but the gist remains (as Bransford and Franks demonstrated with normally achieving university students in 1971). Although the sentences are carefully lengthened by adding a syllable each time, standardisation for age appears to have been arbitrarily assigned rather than empirically developed, except for those items which have been taken from the Stanford-Binet (1960), and then the level of difficulty of particular items can not be assumed to be equivalent in different populations (Anastasi, 1988; cf. Chapman & St. George, 1987; Ballard, 1984).

Extending the sentences by adding syllables is rather an oversimplified method of increasing the load on memory,

as there are several variables operating at once: length, topic, syntax. Are the schema and structures used familiar to the child? The types of error made can, however, assist the tester in determining which source of difficulty is salient to a particular child.

The problem of multiple variables could be partially overcome by presenting a series of sentences on the same topic. This approach would decrease the memory load on the task, and be closer to the way we normally use language. In fact, as Just and Carpenter (1987) pointed out, we are constantly building a schema (Bartlett, 1932) according to context as we listen; changing topics with each sentence interferes with natural language processing and appears an unfair test of the child's ability. Analysis of difficulty would benefit from the insights of Kintsch and his colleagues on propositional representation (cited in Just & Carpenter, 1987), and a consideration of the topics addressed by Just & Carpenter (1987): lexical structure, syntactic structures and processing, semantic analysis, and referential representation. Obviously much work remains to be done before a satisfactory sentence repetition task is designed. The basic idea, however, of investigating the ability to remember connected text, does appear to have practical application; for example, the ability to follow instructions or conversation, or to understand a story being read. However, even in the foregoing

situations, we are more often required to extract and remember the gist of something than to repeat connected text word for word, and the test should perhaps reflect this reality. The SPELD battery formerly contained a prose passage which was given orally to children of 10+ years for retelling, but it has been dropped from the battery.

Stanovich (1986) reviewed the research on short-term memory. He found a link between short-term memory tasks and reading ability well supported, and found support for this correlation in two well-supported hypotheses: deficits in phonological coding and an inability to use memory strategies. Clinical observation during the SPELD testing session enables the tester to see whether or not either or both of these two hypotheses is more salient for the child being tested, and to recommend accordingly remediation appropriate to the child's needs.

The next auditory subtest uses pairs of similar words to assess auditory discrimination (cf. Wepman, 1973). Although this subtest resembles the Wepman (1973) in that pairs of words are spoken and the child is required to state whether they are the same or different, there are only twenty-four pairs of words, and no norms are used. The subtest merely assesses auditory discrimination of sounds in words. Whereas Wepman (1973) intended his test to be used with five- to eight-year olds, SPELD gives its subtest to all clients. According to Bamford and

Saunders (1985), normally hearing children of age three years can discriminate most if not all phonemic contrasts which an adult can detect. On the other hand, when Hulme (1981) reviewed studies of auditory discrimination, he found mixed evidence regarding correlations between difficulty on the Wepman Auditory Discrimination Test (1958, 1973) and poor reading. Many studies showed such a correlation, but the source of difficulty was not identified, and many studies did not control for differences in I.Q. As Bradley (1980) and Hulme (1981) pointed out, a paired comparison procedure necessitates several steps, any one of which (or a combination) could be causing the difficulty:

"each pair of items must be attended to, retained, compared and a vocal same/different response made. Thus, we cannot conclude that poor test performance necessarily reflects poor speech perception." (Hulme, 1981, p.37)

Hulme (1981) and Naidoo (1972) found similar patterns of errors among normal and poor readers. Dykstra's (1966) review of seven tests of auditory discrimination found a low positive relationship to reading achievement, but no better than an intelligence test. Similarly, Morency and Wepman (1973) found that using the Wepman (1973) with first-grade children (age 6 years approximately) predicted reading and word knowledge in grades four, five and six by correlations of .20 to .29. Although the manual for the Wepman (1973) gives test-retest and alternate form reliability coefficients in the .90s, no

data are given regarding the sample or the time interval involved. Nor are any data available regarding the normative sample. Thus it appears that this procedure, although reliable, bears only a tenuous relationship to reading, and the task samples too many variables at once. The validity of using such a task in assessing sources of reading difficulty is thus questionable.

Auditory discrimination has traditionally been included in assessments of reading problems, probably because it is considered intuitively to have a bearing on listening comprehension. Yopp (1988), in determining the reliability, validity and relative difficulty of ten phonological awareness tasks, found that they could be separated into two factors, except that rhyming and auditory discrimination lay outside the two factors. This finding supports the SPELD decision to place auditory discrimination as a separate subtest. A poor result on this subtest may indicate a need for a full hearing test; other indications that the tester watches for are: whether the child's speech is unclear, and whether the child has had ear infections, particularly in the preschool period when oral language is developing. Webster, Bamford, Thyer and Ayles (1989) however found no significant differences in psychological, educational or behavioural functioning between children with treated chronic secretory otitis media and normal children, using several standardised tests and two tests of auditory

functioning. Webster et al. (1989) did however choose children whose otitis media was not present at the time of the study, and did find weak but distinct differences in functioning in the expected direction, particularly in reading age. As their experimental and control groups only contained ten children each, their results must be treated with caution, although the design rigorously excluded potential extraneous factors.

The child may also appear to have difficulty following instructions during the testing session. If the child appears to have hearing difficulties in the quiet room where the individual testing is held, it is probable that he or she would have even more difficulty in the classroom. SPELD does not generally conduct classroom observation, but Treiber and Lahey (1983) recommended it for all assessments of learning difficulties, to assist in planning remediation.

Yopp (1988) considered the psychometric properties of a variety of phonemic awareness tests, including the Wepman (1973) auditory discrimination test. Hills (1981) recommended a reliability coefficient of at least .85 if test scores are to be used to make decisions about individual programmes and placement, while Jensen (1980) and Salvia and Ysseldyke (1988) suggested at least .90. It appears from the evidence reviewed that an auditory discrimination task is not of high relevance to reading achievement; although correlations have generally been in

the expected direction, it seems less relevant to reading than some of the other components of the battery. Similarly, Yopp (1988) in investigating various phonemic awareness tests and their predictive correlations to subjects' subsequent rate of learning to read novel words, found that the Wepman (1973) auditory discrimination test had the lowest correlation of all the tasks examined, a mere .27. It also had low correlations with the other tests of phonemic awareness which were examined, and therefore cannot be taken to indicate a person's general level of phonemic awareness. Although auditory discrimination may seem intuitively to have a bearing on listening comprehension, which has been shown to be highly salient to reading achievement (Gough & Tunmer, 1986), it makes more sense to measure listening comprehension directly rather than infer it from an auditory discrimination task. As far as phonemic awareness goes, it would be better to examine it more directly, as in the tasks in the following section. Yopp (1988), using a task analysis of the phonemic awareness tests she examined, defined phonemic awareness as "the ability to manipulate individual sounds in the speech stream". (p.173) Auditory discrimination does not require this, but reading does. (cf. Backman, 1983, who found low correlations between auditory discrimination and the following tests of phonemic awareness: phoneme counting, phoneme blending, and phoneme deletion).

Similarly, Snowling (1987) stated that reading researchers generally believe that severe reading difficulties are associated with phonological difficulties which begin in spoken language processes. Thus when a person presents with reading difficulties, it is imperative to assess the phonemic (or phonological) awareness which the person has acquired. Several of the subtests in the SPELD battery tap such awareness, and it is these which shall next be considered.

### 3.5.3. Tests of Phonological Awareness

Although the term "phonological awareness" is not used in the SPELD battery, it is an appropriate term to use for the next subtests. The subtests to be discussed in this section include: phonic skills, dictated sentences, auditory syllabification, the Carver Word Recognition Test, rhyme production, and sound blending and decoding. The assessment of skill with letters and sounds will also be discussed in this section, although it is presented in the section on visual skills in the SPELD battery, because relating letters and sounds taps phonological awareness.

These tasks vary in difficulty. Studies have shown that even three- or four-year old children are able to recognise rhyme (MacLean, Bryant, & Bradley, 1987; Knafle, 1973, 1974; Lenel & Cantor, 1981). Awareness of syllables also typically begins fairly early (Wagner &

Torgesen, 1987). Kirtley, Bryant, MacLean and Bradley (1989) showed that five-year olds could distinguish the beginning sound (onset) and the end group (rime) of words. Complete awareness of individual phonemes appears to come later, and possibly as a spin-off of reading skill and instruction (Wagner & Torgesen, 1987).

The tests to be considered in this section include: phonic skills, writing dictated sentences, auditory syllabification, the Word Recognition Test (Carver, 1970), rhyme production, sound blending and decoding, and letter names and sounds.

Phonic Skills. Although this subtest is included with auditory discrimination in the SPELD battery, it will be grouped with phonological awareness in the present analysis.

In the phonic skills subtest, the person is required to isolate a sound from a given word. There are four lists of words, presented orally. These lists require the person to state, respectively: the first sound, the middle sound, the last sound, and the first two sounds that go together (i.e. blends and digraphs). Although there are not two sounds in digraphs (e.g. sh, ch) they are included in this section, and generally the testees have no difficulty with this. The tester says the word, and the testee is to repeat the desired sound. Although this test is not strictly speaking phonemically pure, it

is a practical diagnostic test which serves to alert the tester and teacher to the basic decoding skills which the person may or may not possess. As in other sections of the battery, the main purpose of this test is to establish the child's level of functioning to stipulate a beginning point for remediation (or to assess progress, if it is a retest). This test is not normed, but yields practical information for teaching purposes. The test kit specifies to give the entire test to each person, but in the writer's experience this is a waste of time. If the person proves proficient at the first section (initial sounds), the tester can then pass on to the middle sounds, then the final sounds, and finally the initial blends, using a few words to check each section for proficiency. In each section, there are some words which the person is likely to know, and other words which occur less frequently. Sometimes testees can manage familiar words but not unfamiliar words (these may assume for them the status of nonsense words, since they are unfamiliar). Many SPELD clients can isolate only beginning sounds, and a few are unable to manage even these.

This test yields more than simply a decision as to whether the person possesses the skill (as in a criterion-referenced test, as defined by Anastasi, 1988, except that the SPELD battery does not specify a criterion which the person must reach to be considered to

have mastered the skill). Because the lists contain a number of words, the tester can also ascertain whether the person is improving in the skill as the list progresses, and gaining automaticity, and how readily the person is improving.

The length of the word lists (containing 24, 14, 20 and 12 words, respectively) appears to provide a reasonable sample of the domain, long enough to determine whether mastery is present, whether it can be developed, and how difficult the process is likely to be. The domain itself, sound isolation, has been shown to be related to reading acquisition; Yopp (1988) found a .72 correlation between a similar sound isolation task and the subsequent rate of learning to read novel words. The learning test had a test-retest reliability of .96 (Yopp, 1988), and the sound isolation task had the highest correlation with subsequent learning to read novel words. All of these correlations were obtained using intervals up to two months, with participants being assigned various tests in random sequences. The learning test was always given last. Using a stepwise regression analysis, Yopp (1988) found that the sound isolation task accounted for 52% of the variance in learning rate. These results appear to indicate the importance of determining the level of a person's skill at sound isolation, as an indication of their potential to improve their reading skills, and hence provides evidence for the validity of including

this particular task in a screening battery for people who are having difficulties with learning in school. This test appears a helpful measure of the person's ability at decoding, which Gough and Tunmer (1986) found to be one of the two proximal factors in reading comprehension (The other was listening comprehension).

Writing Dictated Sentences. The next phonological task is writing short dictated sentences. The tester says each sentence twice, and the person being assessed writes the sentence. This task provides an indication of the person's ability to relate letters and sounds in context. The person is required to convert from an auditory modality (hearing the words), to a visuomotor modality (writing and seeing the words). This is not a purely phonological skill, as some of the words are recognised and retained as a visually recognised collection of letters rather than by "sounding out", especially words which are not spelled as they sound. Writing from dictation is a fairly sophisticated skill, but one which has practical applications: writing lists and taking notes, for example, as well as process writing in the classroom (which the child "dictates" to him/herself). Liberman and Shankweiler (1979) argued that "the ability to segment the sound stream into phonetic units at an early age is highly predictive of

later reading achievement" (cited in Snowling, 1987).

The dictation test shows:

- whether the child can segment the sound stream into words,

- whether the child can use letter/sound relationships to build words (Children can often be heard to say words slowly while attempting this task),

- whether the child uses conventions such as punctuation and capital letters, and

- whether the child confuses letters or sequencing in writing.

It also provides a sample of writing, thereby illustrating the ability or difficulty which this task presents as motor behaviour, and whether there are reversals or inversions in the letter formation.

Norms are provided with the sentences, but as no data are given regarding the source of the material, it is impossible to determine how appropriate these are. All that can be said is that the sentences do appear to become more difficult as the test progresses, and they do appear to have an age/experience differentiation, but how accurately this differentiation relates to the age of children in New Zealand schools is indeterminate. Because the validity of the norms is indeterminate, no information is available on reliability.

On the other hand, there appear to be good grounds for including such a task in an educational screening

battery. The task has relevance to practical tasks, and to tasks which the child undertakes in the classroom.

This task is a good indication of how the child is progressing with reading acquisition. As Juel (1991) found from reviewing empirical evidence, reading acquisition appears to proceed in three stages, no matter how it is taught, or even if it is not taught at all. The three stages are: using selective cues, using spelling-sound strategies ("sounding out"), and automatic fluent processing (independent reading). If the person is using selective cues, a word may be written as part of a word (e.g. r for red). If spelling-sound strategies are being used, the person will laboriously sound out the words while writing. Finally, at the automatic stage, the person just writes the words, either correctly or with spelling errors (and these errors are also informative). Typically, common words such as "the" are quickly acquired to the point of automaticity through much repetition, whereas content words, which occur far less often, are slower to follow - but they are the ones which must be decoded accurately to receive the meaning of the passage.

The dictation task also shows the person's strategies, and the approach to a task. Does the person work very slowly, or rush? How is the writing? The arrangement of the material? What does the person do when an unknown word is encountered? The task obviously shows how the

person's spelling is progressing, but other skills as well. In this task as with most in the battery, the information on process is more important than the age norms. As far as process goes, this task is helpful both for assessment and for planning instruction.

Auditory Syllabification. In this task, the tester pronounces words, and the child taps the syllables and identifies how many the word includes. This test, which also indicates rhythm (as the child taps the word), is generally well done. Liberman, Shankweiler, Fischer and Carter (1974) found that breaking words into syllables was not difficult for most children. Similarly, Snowling et al. (1986) found that all the dyslexics they studied could segment syllables, but had difficulty with rhyming and phonemic segmentation. Most did not have difficulty with auditory discrimination. Children who have difficulty with syllables or auditory discrimination are usually those with pervasive speech or hearing difficulties, or rhythm difficulties. The SPELD assessment is wide-ranging, to assess a range of conditions and functioning levels, not just reading difficulties. Syllabification is not generally a helpful indicator, however, as most people appear to pick it up automatically (cf. Snowling et al., 1986) and the task thus has a low ceiling. In cases where a person has difficulty, the ability to break words into syllables

appears to develop as the person's knowledge of decoding improves (as shown at the reassessment). No norms are provided with this task; it is purely a measure of how many syllables the person can detect, and as such can show whether the person has improved between the initial assessment and the reassessment. No psychometric data are available.

Word Recognition Test (1970). The next test is the Word Recognition Test, by Carver (1970). The manual specifies that the test takes from fifteen to thirty minutes to administer, and is untimed. Test materials consist of a manual and a test booklet.

The test consists of fifty items. Each item is a row of words and non-words, from which the testee is to select the word which the tester pronounces. The test purports to assess "aural and visual factors in word recognition" (manual, p.9) from the earliest stages of letter recognition to a level normally attained at about 8 years 6 months. The test can be administered to individuals (as SPELD does) or to groups. The author advises that for younger children or poor readers the groupings should be smaller. Scores are simply and objectively found by totalling the number right out of fifty, and reading the word recognition age from the norms supplied in the manual. Carver (1970) divided the ages into ten stages, which he described in the manual. Experience of

administering and scoring the test has revealed that these stages are not as helpful as an analysis of the actual errors which the testee makes. The items are helpful in revealing exactly which sort of confusions the testee is having. An error analysis chart is provided on the back of the test booklet. A sample item illustrates how the items reveal different types of difficulty. For the target word "red", the alternatives are: rid reb ted rep red rig. Thus this item would show whether the person was: using just the first letter to identify a word, or just the ending, or confusing medial vowels, or confusing b/d or d/p. Error analysis from various items reveals whether an error is systematic (e.g. an e/i or b/d confusion) or just a slip on an occasional item. The test booklet, manual and scoring method are clear and easy to follow. Materials are of plain appearance, printed in black on white paper. Clear instructions are provided, and the test is easy to administer and score. Face validity is good because the tester provides real words for the testee to find. The test is rather like a puzzle, and testees appear to work quite contentedly on it.

The test appears to have been carefully constructed. Carver explains in the manual (1970) how item analysis was used to determine both the facility and the discrimination of each item. Although all the items are gradated in difficulty, thirty-eight items were selected

to reflect a reading level around 6 to 6 1/2 years, with 22 easier and harder items added to extend the range of the test from 4 years 0 months to 8 years 6 months. This procedure was chosen, Carver explained in the manual (1970), because he considered 6 to 6 1/2 years to be a "crucial area of the early stages of word recognition" (p.11).

The Word Recognition Test was developed by studying: its relationship to the Burt (Rearranged) Word Reading Test (1967) and the Schonell Graded Word Reading Test (1955), its upper level, the distribution of median scores, and the relationship between median score and chronological age (manual, p.20). Correlation between the final Word Recognition Test scores of the 79 junior children in the original sample and their scores on the Schonell test was .90, while the Word Recognition scores of 168 children used in a validation study demonstrated a .823 correlation with their Burt reading test scores. The Word Recognition Test was found to discriminate well the reading ability of children at different chronological ages; the norms were empirically derived, showing a reasonably steady progression through the ages, using a standardisation sample of 1005 children. Scores and ages were grouped to avoid an unreal precision, and yet the items were designed to be "sensitive to the early stages of word recognition" (manual, p.21). While the method for selecting the standardisation sample is not described

in the manual, it is apparent that it contained a range of ages, as median scores obtained by the various ages are listed in the manual.

The final form of the test showed a split half (odd even) reliability of .954, and a Kuder Richardson reliability of .983. The correlation between the main 28 items and the 22 easier and more difficult items was .908. Test-retest reliability was not given, and is probably not relevant in the case of a developing skill. The simple scoring procedures should yield high scorer reliability. Thus the reliability of this test appears excellent.

The developing scores relative to the ages in the standardisation sample provided validation for the norms, as did the correlations between the Word Recognition Test and the Burt and Schonell tests. These correlations proved high both in the standardisation sample and in a sample of 168 retarded readers. Further validation was provided by the fact that the test, developed with British school children, yielded similar results with representative samples ( $n = 147, 144$ ) of Grade I and II children in Calgary, Canada. The high correlations with the Burt and Schonell tests provide evidence of criterion-related validity. Although no validation studies have been conducted in New Zealand, all the target words are known to New Zealand children (content validity), and SPELD testers have found this test a valuable procedure for checking a person's word

recognition skills (construct validity). The test appears well designed, is quick and easy to administer and score, and yields not only a normative score (whose validity for New Zealand is unknown) but also a wealth of information about the skills which the person does or does not possess. The test is also suited to monitoring progress, as both the norms and the error analysis can be repeated at the reassessment. The manual also points out that the test can also reveal the person's attitude and approach (e.g. rapid or slow, anxious or calm, careful or careless, thorough or impulsive in the checking of alternatives). Overall, this test appears a valuable addition to an assessment of progress in word recognition, the "foundation of the reading process" (Gough, 1984, p.225). While it is generally accepted that comprehension is the goal of reading, without accurate word recognition it cannot occur (Stanovich, 1991). The information from the Word Recognition Test is valuable to the teacher, as an indication of both the progress the person has made in reading, and the strategies being used.

Rhyming. The next subtest in the SPELD battery is a brief rhyme production task. The person is required to say a word which rhymes with a word pronounced by the tester. It has been impossible to determine where the items in this test came from. Investigation has shown

that the items do not come from any of the three sources cited in the introduction to the battery (i.e. Stanford-Binet, 1960; Slingerland, 1970; Malcomensius, 1967). Through the years, the items have changed, and the current list contains two groups of three words, for under 7 years and for 7 years and older, respectively. Instructions for the tester to use are supplied. As there is no indication where the items came from, or how they were derived, there is no way of saying whether they are appropriate.

On the other hand, it is appropriate to discover whether the person possesses rhyming skills. Such skills, evidence of phonological awareness, are important as predictors of reading achievement (Lundberg, Frost & Petersen, 1988), and knowledge of rhyming assists reading progress (Maclean, Bryant & Bradley, 1987). Bryant, Maclean and Bradley (1990), using a longitudinal study, showed that young children's rhyme and alliteration scores specifically predicted their reading achievement up to two years later, even after controlling for differences in intelligence, language skill and social background. A measure of rhyming ability is therefore highly relevant to the assessment of reading difficulties.

However, when any production tasks are used to test people, a comment from van der Wissel (1988) could be pertinent: people who have difficulty with the task may

be impeded not by restricted ability in the task at hand (in this case, rhyming), but by a hampered production of words and speed of naming. Under time pressure in a crowded classroom, such children may "clam up" even more, and therefore practise less, and be left even further behind. (These are the "Matthew effects" described by Stanovich, 1986a.) Although the tester tries to create a positive, encouraging atmosphere, hampered production could still be a problem; possibly a rhyme recognition task such as employed by Bradley (1980) would give such children a better chance of being able to demonstrate the skill they possess. As Ehri (1986) and Stanovich (1986a) have described, fluent access to one's store of words develops as a "spin-off effect" of experience in reading. Since poor readers have had less experience, their access to verbal memory is less fluent. It would be helpful to assess both receptive (Bradley, 1980) and productive rhyming, to be able to see more exactly how much progress the child has made. Eventually, the child will have to be able to generate rhyming words easily, if rhyming is to assist with the child's own needs for reading and spelling, but a rhyme production task is too difficult for many poor readers, and a rhyme recognition test would be a useful adjunct to the battery. Scoring for this task is simply poor/satisfactory/good/very good, depending on how many words are correctly rhymed, but the actual words produced are also recorded, and this latter

information is more valuable than the scoring, as it gives the teacher an indication of how the person's skill is progressing. The scoring system provided does not make sense, as the words are arranged according to ages, and surely the person's skill should develop with age and experience, so that a six-year old who rhymes three words correctly should not receive the same rating as a twelve-year old who correctly rhymes three words. A comment on how quickly and fluently the person retrieves the desired rhymes would also seem pertinent.

Sound Blending and Decoding. The sound blending and decoding tasks are the opposite of each other: putting sounds together to make words, and taking words apart to form sounds. (for example, putting sh-op together to form shop, and taking shop apart to form sh-op). Five words are given for blending, and five for decoding. The tester notes whether the person can manage this skill, and any errors. This subtest is similar to blending and decoding diagnostic tests supplied with the Neale Analysis of Reading Ability (1988). Decoding skill has been shown (Gough & Tunmer, 1986) as essential to reading comprehension. Wagner and Torgesen (1987) proposed that the ability to blend phonemes assisted and was assisted by the acquisition of reading skills. Phonological difficulties of the sort tested by the phonological awareness subtests of the SPELD battery are often found

to be associated with reading failure. Thus to build valid remediation, it is essential to establish how far the child has progressed in these skills. Although reading research appears to have established some basis for including such tasks in a battery to assess reading, no technical psychometric data are available for this portion of the battery.

Letter Names and Sounds. Although the SPELD battery places this subtest in a section on visual discrimination (because some of the material is presented visually), it will be discussed here, as the relation between letters and sounds is a portion of phonological awareness, known to Liberman, Liberman and Shankweiler (1989) as "the alphabetic principle". Although the relationship between individual letters and sounds is a "molecular" rather than a "molar" task (Treiber & Lahey, 1983), yet it seems appropriate in cases of reading difficulty to conduct a full enquiry into how the person is handling letter/sound relationships. As with the previous subtest, this subtest is handled in both directions. The person is required to state the names and sounds of the letters (using the order given in the Neale Analysis, 1988), and then to write the individual letters corresponding to the sounds dictated by the tester. Stating names and sounds of randomly arranged letters is also part of the diagnostic procedure for Reading Recovery (Clay, 1979),

except that in Clay's procedure the child has a choice whether to name or sound the letter. By requiring the letter name and the sound, the Neale (1988) test provides a more complete indication of what the child has learned. The test of writing twenty letters from their sounds appears to have been developed by Seabrook. No quantitative information is collected, as this test is used only to determine which letters and sounds the person can relate, rather than how many.

Letter-name and letter-sound knowledge have been shown to be related to reading acquisition. Tunmer, Herriman and Nesdale (1988) cited "several studies showing that letter-sound knowledge is intimately related to the acquisition of basic reading skills", and Walsh, Price and Gillingham (1988) reported on the importance of early skill at rapid letter naming for subsequent progress in reading. Children with reading problems are often found to know the names of all or most of the letters, as these are used frequently in the classroom, but are less clear about the sounds of letters, and are therefore unable to use their letter-name knowledge to assist their reading and spelling. As Tunmer, Herriman and Nesdale (1988) explained,

"some minimal level of phonological awareness may be necessary for children to profit from letter-name knowledge in the acquisition of phonological recoding skill."

These tasks appear akin to the classroom tasks of reading and spelling and are thus appropriate for that reason (cf. Treiber & Lahey, 1983). However, Cunningham (1982) pointed out that it is more important for students to be able to apply letter/sound knowledge to actual reading than to perform it in isolation.

Although the letter-name/letter-sound test is taken from the Neale Analysis (1988), no psychometric data are available for the diagnostic section. The letters appear to be arranged in rows which could cause visual confusion (e.g. p d b g q y), and hence could give an indication of this.

Summing up the subtests for phonological awareness, it appears that the battery contains a full set of tasks to examine this aspect of reading acquisition.

Some of the material consists of a published test (Carver, 1970) or material from a published test, but no reliability or validity information is available concerning their use with New Zealand children or adults. For the items which are not standardised tests or parts of tests, there is no indication how the items were selected. Responses are recorded on the record sheets (Appendix D) and summarised in a test report (Appendix E) which is sent to clients and the SPELD teacher (if any). The record sheets provide space for the client to make written responses (e.g. for the dictated sentences), and

for the tester to record the client's oral responses and make notes about the client's performance: vocabulary used, manner, strategies, clarity of speech, etc. Because the tester keeps a full record of responses, this record is available to the tester when (s)he writes the report.

As noted, the new testing kit represents an attempt to standardise the procedures and content of the SPELD battery, and thus make a small contribution to reliability. However, the reliability of the battery remains undetermined, as no reliability studies have been done.

#### 3.5.4. Rote Sequencing

The next section of the battery, for clients of all ages, checks rote sequencing of items commonly covered in schools and also items of social significance: the alphabet, months, days of the week, using an analogue clock to tell the time. The alphabet and counting are checked not only from a or 1, but also from different points (e.g. g or 39), as this skill is needed to facilitate dictionary use and finding a page in a book. Again in this section, the emphasis is on the skill which the person has attained, to establish a starting point for remediation. An analysis of errors may also reveal inadequate strategies which the teacher can ameliorate.

Most of the material in this section is similar to material which a classroom teacher might ask.

The score for the WISC-R Arithmetic subtest is also recorded in this section. The latter is the only norm-referenced material in this section, and the reservations expressed earlier regarding foreign and outdated norms also apply here. As well, the WISC-R Arithmetic subtest, consisting of counting and word problems involving calculations, represents only a small portion of the school mathematics curriculum. For this reason, content validity for this test can be criticised, particularly with younger children, as the early years of the New Zealand mathematics curriculum have little emphasis on calculation. The early material in the test, concerned with counting, is however relevant to younger children. Item analysis by St. George and Chapman (1987) found the Arithmetic subtest had only a coefficient of .64 for internal reliability, much lower than the .81 coefficient listed by Wechsler (1974), and well below the .90 cutoff for individual placement recommended by Salvia and Ysseldyke (1988). The performance of their 11-year-old New Zealand sample (a similar age to the American standardisation sample for the WISC-R) was discriminated by this test, and only one item (number 16) appeared slightly misplaced. Results did not greatly differ for girls and boys. The value of this (sub)test in the SPELD battery is more for the indications of performance and

strategies which it provides, rather than the age level per se. For example, it may indicate: whether the person is able to remember and follow instructions, whether the person is having difficulty with concepts, or whether difficulties stem from an inability to remember number facts. As well, the tester can observe the strategies which the person is using: counting on the fingers, repeating part of the problem, checking details. Some clients have developed idiosyncratic methods of coping with problems; for example, counting in bunches instead of learning mathematical tables to assist multiplying. Depending on the child's age and experience, such a strategy could reveal that a person's skills are either ahead of or behind the level expected in the curriculum. The important role of this (sub)test and all the parts of the battery is however to find out where the person is, and to go on from there at a rate which the person is able to handle.

#### 3.5.5 "Visual" Skills

This section of the battery consists of the following tasks: visual discrimination of letters, numbers and words; naming and sounding of letters visually presented; writing single letters from sounds pronounced by the tester; delayed visual recall; and word copying. These

skills are obviously not purely visual; for example, work on letters and sounds has already been discussed in the section on phonological skills, and will not be discussed in this section, although the test kit places it here.

The test kit makes several assertions concerning the value of this "visual" section:

"In the process of learning to read and spell, the child must combine his/her auditory perceptual abilities with the visual perceptual abilities. Both are important... Visual discrimination as a basis of visual perception is a vital component in the learning process. If there is a problem in visual discrimination then it follows that visual sequencing, visual closure, and visual memory will all be affected because the material to be sequenced or remembered is not correct..." (Seabrook, 1990b).

How do these contentions hold up to the scrutiny of empirical research? There are several issues to consider in the rationale for including the "visual" material in a screening battery to detect problems with reading: the importance of visual discrimination (including closure) to reading acquisition or reading difficulty, combining visual and auditory perceptual abilities, the importance of visual memory, and finally visual sequencing. The validity of each shall be considered in turn, and the tasks which are examined in the battery will be described and evaluated.

Discrimination of letters, numbers and words. For letters and numbers, respectively, the tester presents a card with two columns of letters or numbers, and the client is asked to draw a line from the letter/number in the first row to the letter/number in the second row. For discrimination of words, the client is asked to point to the word which looks the same as the first one in the row. Although these procedures appear suitable for only fairly young clients, the introduction to this section in the test kit states that the "battery is intended for assessing children from 6 years ... to young adults" (Seabrook, 1990b).

For years, much research discounted the possibility that visual perceptual difficulties such as problems with visual discrimination influence reading acquisition. Mann, Cowin, & Schoenheimer's (1989) summary of the causes of reading difficulty concluded that "there is general consensus ... that only a few instances of reading difficulty can be traced to a difficulty in visual processing (cf. Rayner, 1985; Stanovich, 1985; Vellutino, 1979)" (p. 76) and that the memory problems of poor readers were confined to linguistic material (both oral and written).

In the last decade, work with subtypes of reading disability and more controlled studies appear to indicate that there is a group of people who do in fact have

difficulty with visual perception, and this difficulty does impede their reading acquisition (Feagans & Merriwether, 1990). Kavale's (1982) meta-analysis of 161 studies examining the relationship of visual-perceptual skills to reading found that visual memory and visual discrimination were the variables most significantly related to reading. Visual discrimination remained highly related to reading even after IQ was partialled out. Furthermore, work by Spreen and Haaf (1986) established that a subtype of learning disabled children who had visual-perceptual problems continued to display these problems into adulthood. Feagans and Merriwether (1990) suggested that it was necessary to pinpoint a specific type of visual deficit, and used letter-like forms developed by Gibson, Gibson, Pick and Osser (1962) to differentiate those visual discrimination problems which would cause difficulty with reading (e.g. rotations, reversals, and line-to-curve and curve-to-line transformations) from those which would not. Feagans and Merriwether (1990) used only those transformations needed for discriminating letters. Their (1990) study contained four groups: learning disabled with high error rates in visual discrimination, learning disabled with low error rates in visual discrimination, non-learning disabled with high error rates, and non-learning disabled with low error rates. Difficulties in visual discrimination decreased reading achievement in both high

error groups. In non-learning disabled children, the effect appeared to disappear in the second year of the study, but in the next year (the end of elementary school), the decrement reappeared. In learning disabled children, the decrement grew (cf. the "Matthew effects" described by Stanovich, 1986a).

It thus seems that this problem may have long-term consequences to reading progress, and that its effect is not limited to early reading achievement. This fact would support SPELD's decision to use this subtest with all age groups, but perhaps there should be items with smaller print and longer words, to be used with older age groups. Some adolescent and adult SPELD clients consider that they are having difficulty remembering or discriminating visual verbal or symbolic material, but the test items are too easy to detect their difficulties. As some clients are less articulate about the sources of their difficulties, it would be desirable to have some more difficult items for older clients. Whether a person has difficulty is, of course, relative to the demands of his or her study or employment situation.

Goolkasian and King (1990) noted that dyslexic and average readers differed in attention to stimuli presented in different locations in the visual field. They found that dyslexics were superior at letter detection at peripheral retinal locations, but average

readers were better at foveal and parafoveal locations; perhaps average readers are better able to focus their visual attention, and this is why reading comes more easily to them. It is noted that all the readers in the Goolkasian and King (1990) study had normal or corrected visual acuity.

Visual processing is an area which requires further research. It would appear premature to recommend that visual material not be included in a screening battery to detect actual or potential problems with reading acquisition.

Letter Naming and Letter-Sound Relationships. Tests of letter naming and letter-sound correspondence are also included in the battery in the visual discrimination section, and these have been discussed in the "phonological awareness" section of this thesis. It is helpful to reiterate in passing, however, that visual discrimination does impinge upon this task, however. The letters to be named and sounded are visually presented, and the arrangement in the Neale Analysis (Neale, 1988) does probe visual discrimination (e.g. p d b g q y). The tester can note whether the person hesitates or makes errors caused by visual discrimination difficulties. If the person is having such difficulties, they will tend to occur also in other sections of the test, such as

spelling and writing dictated sentences. It is also appropriate to note whether the person notices and corrects such errors. Even if the errors are corrected, such problems will be slowing the person's rate of handling written material, and will be making reading less comfortable, and therefore less likely to be practised (Stanovich, 1986a).

"Visual" Memory. This subtest gives the child an opportunity to reproduce, after a delay, material which has been presented visually. The material consists of designs, words or numbers, and is taken from Slingerland (1970) and Malcomensius (1967). Some of the designs are from the Stanford-Binet (1970). The materials are presented in three age groups: 6 - 7 years, 8 years, and 9 - 12+ years.

Although the materials appear to progress in difficulty from one age group to the next, these materials do not have data on reliability and validity (except for those from the Stanford-Binet, 1970, and these are taken out of context). Vincent, Green, Francis and Powney (1983) give negative assessments of Slingerland (1970) and Malcomensius (1967). The tasks do, however, give an indication of the memory strategies being used by the person; for example, saying words, drawing shapes in the air. From the strategies which clients have been observed to use, it is evident that this is a not a pure

test of visual memory, but rather of memory strategies (or lack of strategies). For older clients, whose strategies may have become covert, it is helpful for the tester to ask the person how (s)he is doing the task. The task can also reveal the state of development of the person's awareness of letter-sound relationships. It also gives an indication of the sort of materials which the person handles most easily: numbers, designs or words. For the person with a well-developed knowledge of letter-sound relationships, words are often the easiest, but this is often not the case with SPELD clients. (SPELD clients often display the verbal difficulties which Vellutino (1979) identified as the basis for dyslexia.) This memory task is perhaps an example of the sort of diagnostic minutiae which Arter and Jenkins (1979) and Treiber and Lahey (1983) would prefer to avoid, but it does appear to be helpful in indicating the skill and strategies which the person is using. For these reasons, the writer would hesitate to remove it from the battery, even though there are no supporting psychometric data.

Word copying. This task, on the other hand, is obviously relevant to the classroom or everyday life; people frequently need to copy words, from the earliest spelling words to the research notes they need to make to support their work in later education, and the paperwork

that is an integral part of much employment. In this timed section of the SPELD battery, the person is required to copy difficult words onto numbered spaces on the assessment record form (Appendix C). The words are chosen according to the age of the person; three cards are supplied with the kit: 6 - 7 years, 8 - 10 years, and 11+ years. The words on each card are considered too difficult to be in the sight reading vocabulary for that age. The test kit supplies standard instructions, in which the person is encouraged to work steadily and not rush. The kit also gives a rationale for this task, emphasising the relevance to school work (cf. Treiber & Lahey, 1983) and the development of eye-hand coordination, spacing and visual memory. According to the scoring criteria supplied, the tester notes how many letters are copied at a glance, the time taken, and whether the person loses the place on the page or omits words. The time taken is an indication of fluency, but is a combined measure of language fluency and handwriting speed. The tester is also to note whether the person subvocalises while writing, and whether (s)he appears to be using syllables, common endings, blends or parts of words. Again in this task, clinical observation reveals not only performance but strategies.

Scoring criteria also ask that the tester note the quality of the writing, neatness, confusion or duplication of letters. This test provides a sample of

handwriting, and further evidence of how the person arranges material on the page, and how well the person is managing words. A typical performance by a SPELD client on this test would be that the person works by letters rather than sounds, does not use syllables, and is unable to recognise most of the given words. Bradley (1983) noted how difficult the copying task is for backward readers, who have formed little conception of the letter patterns in words. In such people, the distinction between words may be blurred, and they may not understand what they are copying.

This test gives the remedial teacher a useful indication of the difficulty being faced by the child in tackling assignments, which can often involve looking up and copying out material from books. Although the class teacher probably tries to encourage the children to use their own words, this may not be a realistic possibility for the child who is struggling to read. The danger in copying, however, is that it may be done without comprehension, if the child's reading skill is very weak, or the source material very difficult (such as an encyclopedia, for example). If the person is copying without comprehension, or losing the place on the page, the remedial teacher can work on techniques to assist in this skill. For example, the teacher could work on letter groups and syllables using written material, and

also teach the child to use the non-writing hand to keep the place in the material being copied.

It can be seen, then, that although the psychometric qualities of this task are unknown, it is related to the demands of schoolwork, to the difficulties which poor readers experience, and to the design of an instructional programme. In short, there are cogent reasons to include this task in a screening battery for people with reading difficulties.

As far as the "visual" section of the SPELD battery is concerned, it can be seen that most of the tasks are not solely visual (e.g. letters and sounds, "visual" recall), but draw on phonological processing as well. The tasks in this section appear well suited to pinpointing the difficulties which the person is experiencing, and identifying the strategies used to attempt the tasks. Research evidence appears to support the salience of these tasks to an assessment of difficulty with written language.

#### 3.5.6 Assessment of Language Skills

Written language (reading, writing and spelling) is built on a foundation of oral language. Vellutino (1979) believed that impaired linguistic development caused reading disability. While the current research position is that there are several different contributing factors

(and an individual may be hindered by more than one), it is still essential to examine the person's oral language, to determine whether the person has a good basis upon which to build reading comprehension. Gough and Tunmer (1986) identified decoding and listening comprehension as the proximal factors in reading comprehension. So far, in the phonological awareness section of the battery, there has been a well-rounded look at the person's grasp of the letter-sound relationships which facilitate decoding. It is now time to look at oral language reception and production, and to assess the structures and vocabulary at the person's disposal. The first task is to examine the person's grasp of syntax, in a sentence arrangement test.

Sentence Arrangement. This task presents words on cards in a specified order to form scrambled sentences, which the person is to unscramble. As it is not a word recognition test, the tester reads to the person any words which are not recognised. The sentences are graduated both for length and for syntactic difficulty, and are presented in three age groups: 6-7 years, 8-9 years, and 10-13 years. No criteria or cutoff points are specified in the test kit, but standard instructions are supplied. In scoring the tester records the level which the person reached, and the sentences which the person

produced. The latter give indications of the type of syntactic structures which are difficult for the person. The sentences for the 10-13 year level are taken from the Stanford-Binet Intelligence Scale (Terman & Merrill, 1960) for age 13 years. The ethics of taking items from other tests and presenting them out of context has already been discussed several times with other sections of the SPELD battery. The applicability of the norms is also in question, as the language in some of the items now appears outdated and unfamiliar. It is not known where the items for the other age groups originated, and reliability and validity for these items are unknown (as they are for the Stanford-Binet items, since the manual only gives reliability and validity data for IQ scores, not for individual subtests).

On the other hand, there are several points in favour of retaining this task in the battery, although the items should probably be revised. Children generally enjoy this task, which is rather like a game. Although Bryant, Maclean and Bradley (1990) found that the significance of syntactic awareness to reading progress disappeared when IQ and socioeconomic status were controlled for, other research has found that syntactic awareness does contribute to reading acquisition (e.g. Tunmer, Nesdale, & Wright, 1987). Bentin, Deutsch and Liberman (1990) found that unlike normal readers, poor readers were unable to use syntax to assist reading, and severely

disabled readers were unable even to judge the syntactical integrity of spoken sentences. It appears that difficulties with oral language are apparent in at least some severely disabled readers.

Vocabulary. The next task is the Vocabulary subtest of the Wechsler Intelligence Scale for Children-Revised (WISC-R, Wechsler, 1974). If the WISC-R has been administered in its entirety, the score and results are simply included in the assessment. Otherwise, the Vocabulary subtest is administered at this point as detailed in the WISC-R manual (Wechsler, 1974).

The advantage of using a productive vocabulary test like the WISC-R (1974) is that the person then shows the structures, language organisation and word finding capabilities available (bearing in mind that performance may be decreased by test anxiety). The disadvantages of using this particular test are that the norms are out of date and were produced in America rather than in New Zealand. Considering the subtest means and standard deviations, Tuck, Hanson, & Zimmerman (1975) found that the WISC-R (1974) was psychometrically satisfactory for use in New Zealand, but did not report reliability estimates. St. George and Chapman (1987), using item analysis, found that several items in this test were misplaced, and this has also been the experience of the writer in administering this test to over eighty SPELD clients. St. George and Chapman (1987) also found that

the internal consistency reliability estimate of the test was .71, rather than the .86 reported in the manual (1974) for the standardisation sample. This reliability is much lower than the .90 required by Salvia and Ysseldyke (1988) for an individual placement test. On the other hand, the WISC-R (1974) provides for fairly good discrimination except for the few misplaced items (St. George & Chapman, 1987), and clear, easy to use scoring criteria are provided. It is, however, worth repeating Das' (1989) criticism against using WISC-R subtests in isolation. In all fairness, this was not the intent of the compilers of the SPELD battery; their intention was that every person requesting SPELD assessment should receive the entire WISC-R before the specific learning disabilities screening battery.

A test of vocabulary is essential in a battery to measure reading disabilities. Davis (1972) found vocabulary knowledge and reading comprehension to be highly correlated. Conducting research in a New Zealand classroom, Elley (1989) found that children gained 15% on a vocabulary measure after hearing one story read by a teacher without explanation, and 40% when the same story was read to other classes accompanied by explanation. After a different story with different characteristics, the gains were only half as great. Follow-up tests revealed that the incidental learning stayed with the children as well as that accompanied by teacher

explanation, and that low-scoring children (i.e. those with a lower prior knowledge of vocabulary) gained at least as much from the readings as did other children. Features that appeared to enhance incidental learning of vocabulary included: frequency of occurrence of the word, frequency of illustration, and helpfulness of context.

It is evident that a good vocabulary enables a child to understand, and that being read to increases a child's vocabulary; this is one of the "Matthew effects" that Stanovich (1986a) described. The differences in gains from reading with and without explanation was also explored by Wells (1985), who also noted how the stories were interwoven with day-to-day life in some families (cf. Tizard & Hughes, 1984). Similarly, Elley (1989) found that children learned vocabulary better in a story they could identify with and enjoy.

In day-to-day living, language is used in context. The WISC-R (1974) Vocabulary subtest gives no context for the words, and hence represents the most difficult type of vocabulary test possible. The person must know what the word means out of context, and must be able to provide an explanation using the language (s)he possesses. Thus this subtest provides a minimal estimate of the vocabulary of the child, and probably underestimates the child's practical language comprehension. In New Zealand, the child is further hindered by being given a

test whose design and norms are distant in time and space. It is not surprising, then, that St. George and Chapman (1987) found that items were misplaced.

On the other hand, Taylor, Harris and Pearson (1988) suggested that commercial standardised tests such as the WISC-R (1974) are the best method for assessing vocabulary knowledge. The child's constructed answer is preferable to a multiple-choice (such as used by Elley, 1989), as the former also provides a sample of the child's own language. Taylor et al. (1988) considered, however, that a context should be provided, to make the assessment of vocabulary closer to the everyday use of language. Similarly, Treiber and Lahey (1983) insisted that assessment tasks should relate to classroom experience. Possibly the Reading Vocabulary subtest of the Progressive Achievement Tests (Elley & Reid, 1969b, revised 1991) comes fairly close to a suitable vocabulary test, except that it uses a multiple-choice answer format and the context given is unhelpful. Contrary to Elley (1989), other investigators have found that context is often unhelpful in revealing the meanings of unfamiliar words in naturally occurring prose (Duffelmeyer, Robinson, & Squier, 1989; Beck, McKeown, & McCaslin, 1983; Schatz & Baldwin, 1986; Stanovich, 1990). Duffelmeyer et al. (1989) suggest that the construction of a vocabulary test begin with a word familiarity source such as Dale and O'Rourke (1981). Such a source would

need to be developed for New Zealand children, to determine which words they know at various ages.

The ideal test would be a modern New Zealand productive vocabulary test, similar in form to the WISC-R test, but using different words, and with norms developed with New Zealand children. As such an instrument does not exist at present (NZCER, 1990a and 1990b), it would appear that the WISC-R (1974) Vocabulary subtest is the best available instrument for the purposes which SPELD needs: a vocabulary measure which yields an age (to compare when monitoring progress) and gives an indication of the person's language production.

After the Vocabulary test, the tester makes an assessment of the person's speech and language.

Speech and Language Assessment. Seabrook, the compiler of the SPELD battery, was for some years in charge of training all speech and language therapists for New Zealand, through her work at the Christchurch Teachers College. For the battery, she prepared guidelines to assist testers to make a brief speech and language assessment. Obviously such guidelines do not constitute a complete speech and language assessment, and the tester is encouraged to refer the child on to a speech and language therapist if this appears necessary.

The tester already has material on which to base a speech and language assessment, from observing the child's performance during the assessment session: the clarity of the child's speech, whether the child is able to discriminate sounds (both in the auditory discrimination test and in the child's speech), whether the child appears able to understand and correctly follow instructions, whether the child has a reasonable grasp of vocabulary and syntax for his/her age. Seabrook (1990b) also suggested that the tester note the child's speech and language during initial conversation before the formal testing begins. She suggested that the tester observe: speech quality, production of sounds, tone, pitch, speed, rhythm, and the quality of language relative to age. No norms are given. The important point is to assess whether the person's speech and language are adequate for their needs. A referral to a speech and language therapist must be suggested with sensitivity, as many older children, adolescents and adults are unwilling or even unable to change their speech. Language can be developed in the context of reading, creative writing and spelling.

A number of researchers have commented on the need to assess the speech and language of people who are having reading difficulties. Only a few will be mentioned here. Vellutino (1979) considered dyslexia to be founded on language difficulties. Cooper (1985) argued for a

multidisciplinary approach to reading difficulties, including a role for speech and language therapy. Klein (1985) described a programme for assessing and managing persistent language disabilities, and Pirozzolo and Campanella (1981) described a neuropsychological approach. After a two-year study of 100 Australian children, Tunmer (1989) considered listening comprehension and phonological recoding the proximal causes of differences in reading progress, and found phonological and syntactic awareness essential to phonological recoding. He also considered that syntactic awareness made an independent contribution to listening comprehension, and attributed deficient metalinguistic ability to a developmental lag in decentration ability (p. 91). While it may sometimes appear that comprehension and decoding are two separate aspects of reading, in fact they are closely related, as Perfetti and Hogaboam (1975) and Shankweiler (1989) pointed out. Difficulties with speech and language can make it difficult for the child to acquire one or the other, or both, depending on the nature of the difficulties. Of course, saying that the person has language difficulties is not meant to imply that these are necessarily "wired in"; they could result from environmental deprivation (such as not being read to very much or at all). Whatever the cause, the problems are real and must be assessed and managed. The Wairarapa Oral Language

Research and Development Group (1989) described a successful intervention in New Zealand schools to improve oral language in young children found to be having difficulty.

If there is a serious problem with language, it is usually well apparent, both in the history and the parents' comments at interview, and during test performance. Such a problem can impede a child's progress in education and later in employment. Some examples of problems which could have deleterious effects are: an inability to remember what has been said, an inability to understand what has been said, an inability to speak clearly, an inability to put sentences together to make oneself understood. Although most children's reading problems arise from difficulty with word recognition (Perfetti, 1985), people with listening comprehension difficulties also have difficulty with reading comprehension (Gough & Tunmer, 1986). It is thus important to detect such language problems, and as Elley (1989) and the Wairarapa group (1989) have shown, a child's language can be improved, using contexts which are relevant to the child's experience.

The person being assessed is not aware of the speech and language assessment, as it is constructed by the tester from observing indications received throughout the testing session: conversation, auditory discrimination, listening comprehension, following instructions, language

production during the vocabulary test, and pronunciation during the oral reading test which follows.

### 3.5.7 Assessment of Spelling Skills

The tester next administers the Schonell Graded Word Spelling Test (1955) as described in the instructions (Schonell, 1955). This test consists of a list of graded words to spell. The tester dictates each word, uses it in an explanatory sentence, then dictates it again. The child writes the specified words. Schonell (1955) specifies where the test should start for each age, but for people who have reading and spelling difficulties, the tester begins at a lower point than this. Testing continues until the person makes five consecutive errors. Administration takes about five to ten minutes, depending on how many words the child can spell.

To score, the tester divides the number of words spelled correctly by ten and adds five to receive the spelling age in years and tenths, which can then be converted to years and months. Test materials consist of three flimsy sheets of paper. There used to be two forms, Forms A and B, for this test, but Form B is out of print. Apart from brief instructions for administering and scoring the test, no other material accompanies the test. There is no indication of how the test was developed, and no technical data.

The instructions for administration and scoring are clear, but the materials are not durable. The test is easy to administer.

Although this test has been widely used over the years, Vincent, Green, Francis and Powney (1983) pointed out that no data on reliability and validity are available, and that no restandardisation has been conducted since 1955. Although Vincent et al. (1983) considered that standardised measures of spelling ability could be helpful for screening poor spellers and checking remedial progress, they did not consider the Schonell test to be adequate for such tasks. Although the "spelling age" calculated from the Schonell (1955) is used to compare progress, it is more important for the purposes of remediation to analyse the types of error being made; for this use, the technical issues are less relevant. From observing the person's responses on the Schonell (1955), the tester can see whether the person can manage initial consonants, short vowels, consonant blends, long vowels, diphthongs and other common letter patterns.

If a standardised test is desired, Vincent et al. (1983) recommend Young's SPAR (Spelling and Reading) Tests (1976), for which reliability and validity data are presented in the manual.

A diagnostic spelling production test is given in the Neale Analysis (Revised, 1988), but no psychometric data or norms are provided. In New Zealand, the only

standardised test of spelling is the Proof-reading Tests of Spelling (PRETOS) (Croft, Gilmore, Reid, & Jackson, 1981). The PRETOS require the person to discriminate between misspelt and correctly spelt words in paragraphs, then to attempt to spell correctly the words which have been identified as incorrect. These tests enable scores for both recognition and production, whereas the Schonell (1955) test yields information only on spelling production. The PRETOS were written and standardised to provide norms covering March to November inclusive for children from Standard 2 to Form 2 inclusive. The test takes 30 minutes to administer, however, and there is a separate test for each level, so that the tester would have to have a good idea of which level to use with each child, or a great deal of time could be wasted. The people who seek help from SPELD are often not performing at or even near their own grade level. However, these tests could prove useful, even if the tester had to choose a test that was designed for younger children. Such practice would accord with the finding by Bruck and Treiman (1990) that dyslexics' phonological awareness and spelling skills were poorer than those of younger spelling-level matched normal children, but showed similar patterns. All people learning to spell have difficulty accessing individual consonants within a consonant cluster at the beginning of a word.

Bryant and Bradley (1980) found that children can write words which they cannot read; therefore, if we are investigating a person's skill at phonological recoding/decoding, it makes sense to look at spelling (probably using phonological strategies) as well as reading (possibly using visual whole-word strategies). Bryant and Bradley (1980) maintained that children possess a range of strategies, but do not always apply them when they need them. One role of remediation is to encourage and enable them to employ more fully the strategies which they already possess, and to show them where it is appropriate to employ them.

#### 3.5.8. Assessment of Reading Skills

Now that the SPELD assessment has examined various components of reading, it is appropriate to look at the person's global reading performance. For a global assessment of reading skills, the SPELD battery uses the Neale Analysis of Reading Ability - Revised (1988), administered and scored as described in the Manual (Neale, 1988). Administration takes about twenty minutes. This test and its predecessor (Neale, 1958) are commonly used in New South Wales (Australia) to determine whether a child is far enough behind in reading to merit special help (Matthey, 1990). A detailed description of the test and its development is available in the Manual (Neale, 1988) and in Cole (1990).

The Neale Analysis of Reading Ability - Revised (1988) consists of three parts. The Manual contains information concerning the development, description, administration and scoring of the test. The Reader contains six graded stories for the child (for reading ages of 6 - 12 years) to read aloud, presented in each of three colour-coded parallel forms: Form 1, Form 2, and the Diagnostic Tutor Form. The Diagnostic Tutor Form also contains a supplementary passage for secondary students. The Reader also contains Supplementary Diagnostic Tests: discrimination of initial and final sounds, names and sounds of the alphabet (used in the SPELD battery), graded spelling, and auditory discrimination and blending. The Record Sheets consist of colour-coded scoring sheets to accompany the three forms. The Record Sheets contain copies of the reading passages, each accompanied by comprehension questions. Below each passage is a chart for error analysis in categories: mispronunciations, substitutions, refusals, additions, omissions, reversals. There is also a place to record the reading accuracy total, the comprehension score, the number of errors, and the time taken.

As Matthey (1990) pointed out, reading tests generally aim "to determine an individual's strengths and weaknesses (criterion-referenced)" or "to determine the individual's ability level in relation to his or her peers (norm-referenced)" (p.13). The Neale Analysis

attempts to supply both quantitative (norm-referenced) data on the individual's attainment, and qualitative, diagnostic clinical data (criterion-referenced) on strengths, weaknesses and strategies (which Neale, 1988, considered more important). Norms are provided for reading rate, reading accuracy and reading comprehension, based on the person's oral reading of the graded passages and the answers given to the comprehension questions. Scoring is simple, straightforward and objective, and the norms, percentiles and scoring procedures are clearly set out.

The Manual, the Reader and the Record Sheets are all well presented. The Manual and the Reader have bright, durable cardboard covers, and the Record Sheets are made of thick paper, coloured to match their respective forms. The glossy pages of the Reader remain in good condition after repeated use. The only sign of wear is that the cover is becoming bent where it enters the coil binding which enables the Reader to lie flat when open.

The graded stories, written by Neale, show a careful progression. Each is presented with an illustration appropriate to the story and age group. The print size and style also vary as the material becomes more advanced. The earlier passages are stories, while the later ones are factual. This change reflects the nature of the reading often undertaken by the respective age groups. The form of the test administration, with the

child reading to the tester and answering oral questions, appears familiar to the child. Face validity is good, as this reading test uses "real reading"; that is, reading for meaning in context (not isolated words as in the Burt or Schonell Word Reading tests).

Although scoring is simple and objective, this test is best administered by a person who has taught reading or is otherwise well versed in reading research. Such a person will best understand what the child is doing, and what sort of remediation (if any) would be needed. This recommendation is in line with Jenkinson's (1991) view that use of tests be restricted to those who are competent in that field.

Children generally appear to enjoy the Neale Analysis; it is easy to maintain rapport and motivation. The writer has found this, even though most of the SPELD testing sessions were conducted with children, adolescents and adults with reading difficulties.) The early stories are less suited to testing adults (and in fact, the test was designed to test 6 - 12 year old children, but even reading disabled adults often do not need to begin with the first passage, and the material gradually becomes more mature.

Technical Evaluation. The Manual describes the extensive use of the original Neale Analysis (1958) in experimental and clinical settings. Neale (1988)

provides a rationale for the changes to the Revised (1988) version, citing research in reading, cognitive psychology, linguistics, and child development. The Manual also describes how to interpret the test, communicate results, and use test performance as a basis for designing tutoring programmes for students.

Administration. The Manual (Neale, 1988) gives standard instructions for introducing the Reader and asking the person to read orally, and assists the tester in choosing appropriate materials and levels. A practice passage specified by age (5 - 7 years/7+ years) is provided for reading and answering questions, to familiarise the person with the procedure. The reading of the practice passage also assists the tester in choosing a basal testing level for the person. If the person makes <3 errors on the first passage chosen, (s)he continues to the next passage and is given full credit for preceding passages. If not, (s)he is given the previous passage (unless the first passage read was the first passage in the Reader). Testing ceases after 16 or more errors in passages 1 - 5 or 20 errors in passage 6.

The tester is permitted to correct the person's errors during testing; Neale (1988) considers this useful to facilitate the flow of reading, especially with backward readers. After reading each prose passage, the person

answers standard questions which tap recall and inferencing.

Scoring. The tester calculates and Accuracy, Comprehension, and Rate score for each passage, and sums to obtain overall raw scores for each. Tables in the Manual (1988) enable calculation of reading ages (given in three-monthly intervals), percentile ranks and stanines (given in yearly intervals). Percentiles and stanines should perhaps also be divided into three- or six-monthly intervals, for children make considerable progress in reading in a year, particularly in the early years of reading instruction (Matthey, 1990; Stanovich, 1986a). Rasch calibrated standard scores enable comparison of comprehension and accuracy scores. Qualitative evaluation is also encouraged and guided by the Manual (1988), to facilitate programme planning.

SPELD testers use the Reading Age scores for Accuracy and Comprehension, and comment on qualitative aspects of the person's rate of reading, and the skills and strategies being used (or not being used). They do not use the Rasch scores. Form 1 is used at the initial assessment, Form 2 at reassessment.

SPELD testers also use the Neale (1988) to derive information on listening comprehension, but nothing in the SPELD test kit indicates how this is to be done. The Manual (1988) has no information or scoring procedures for listening comprehension. While it is certainly

desirable to measure listening comprehension when assessing reading progress (Gough & Tunmer, 1986), it is not valid to use the Neale Analysis of Reading to do this, as it was not designed for this purpose.

Normative Data. The normative sample included approximately 1100 children from 107 state and private schools in Victoria and South Australia (Australia), with equal representation of boys and girls, and appropriate representation of urban and rural students, socioeconomic status and non-English-speaking homes compared to the population (Neale, 1988).

Prose Passages. The Manual gives a detailed description of sampling and testing procedures used in developing, pilot testing and norming the Revised Analysis. Syntax, length and vocabulary (Carroll, Davies, & Richman, 1971) of the passages were carefully graded, and checked against current materials used in reading instruction. Cole (1990) criticised the use of a fairly old vocabulary source, but the Revised Analysis took years to develop. Stories from the original Analysis (1958), whose measurement properties were already well known, and found to be reliable, were retained as Form 2. It was used as a benchmark, a revised version of the old Form C was found to be appropriate to use as the new Form 1 for routine norming,

while Form B was revised and extended to become the Diagnostic Tutor Form.

Comprehension Questions. The answers to these questions, which generally follow the sequence of the narrative or factual passage, correspond to answers frequently given by children during pilot testing. The questions were chosen to assess both literal and inferential comprehension, even at low reading levels.

Item Analysis. Tables given in the Manual (1988) illustrate that the graded passages were found to be of appropriate difficulty for each age, and to discriminate between children of differing abilities. Each age group had approximately similar means and standard deviations in their age-appropriate passage, and in their comprehension questions. Matthey (1990) complains of the relatively large standard deviations for each chronological year band, and attributes this to the varied educational experience of Australian pupils of similar ages, compounded by the fact that the ages vary within a 12-month band, and also that children's reading ability and experience vary. He recommends grade-normative scoring rather than age-normative (although this is more a problem in Australia than in New Zealand, where children generally begin school on their fifth birthday), and suggests that qualitative descriptions rather than "precise" reading scores be reported to parents and professionals.

Rasch calibrations (based on latent trait theory, Lord, 1952) of item difficulty were produced for Form 1 and 2 comprehension and accuracy, and also combined to compare the two forms. These showed that the forms were equivalent. The scale so produced was used to produce scaled scores for comprehension and accuracy.

Reliability. Neale (1988) details stability (across parallel forms), internal consistency, and standard errors of measurement (SEM). Using alternate forms rather than test-retest reliability to assess stability enabled retesting to be uncontaminated by practice (Neale, 1988) - an important consideration in a developing skill like reading. The Manual (1988) reports all correlation coefficients. They ranged from .66 to .95 for rate, from .91 to .97 for accuracy, and from .86 to .92 for comprehension for the various age groups (age <6 to 12+ years), comparing Form 1 with the Tutor and Form 2 with Form 1. It appears that both Accuracy and Comprehension Scales are highly stable, the Rate less so, and should therefore not be used for individual prediction (Salvia & Ysseldyke, 1988).

Long-term stability is not an appropriate consideration, as reading skill develops over time.

Internal consistency was calculated using Kuder-Richardson (KR20) coefficients to calculate a conservative estimate. Comprehension coefficients ranged

from .87 to .96, and Accuracy coefficients from .71 to .85. Both Forms of the Comprehension appear highly consistent, while Neale (1988) attributes the lower figures for Accuracy to "idiosyncratic prompting and scoring procedures" (Neale, 1988, p. 49), which one would not expect to find in a standardised test with standardised instructions and scoring like the Neale (1988). Scorer reliability (which was not considered in the Manual) could suffer as a result.

Standard Error of Measurement (SEM). In raw score units, these ranged from 10.3 to 14.0 for Rate, from .53 to 6.9 for Accuracy (with most between 3.5 and 3.8) , and from 1.5 to 2.5 for Comprehension, for the various age groups. Except for the results for age 11.0 - 11.11 for Accuracy, SEMs were remarkably similar between Forms 1 and 2. SEMs were not reported for the Tutor Form.

Overall, this test shows good reliability.

Validity. The satisfactory reliability of the Neale-R (1988) provides a solid base for considering validity (Anastasi, 1988). While Neale (1988) provides less information on validity than on reliability, the Manual discusses the three types of validity listed by Anastasi (1988) and Salvia and Ysseldyke (1988): content, criterion-related, and construct validity. As Anastasi (1988) pointed out, "All test use and all

interpretation of test scores imply construct validity" (p. 163).

Content validity. Neale checked vocabulary against the *Word Frequency Book* (Carroll, Davies, & Richman, 1971) and against current instructional schemes of reading, to ensure that the passages were suitable for each age group and their reading curriculum. While Neale (1988) states that syntax was also carefully graded, she does not mention how she decided what was appropriate. The successful age differentiation and close equivalence of the Forms further validate the content and the item selection procedures.

Criterion-related validity. Neale (1988) discusses both concurrent and predictive validation. In the concurrent validation of the original Neale Analysis (1958), scores on several other widely used standardised reading tests were compared to Form A of the Neale (1958) for 9- and 11-year-olds. Correlations for Rate ranged from .65 to .83, for Accuracy from .75 to .95, and for Comprehension from .61 to .84. Form A was retained as Form 2 of the Neale-R (1988), and the other Forms constructed to resemble it. During the 1981-82 standardisation of the Revised Neale, all children who were administered the "new" test also received the Schonell Graded Word Reading Test (Schonell & Goodacre, 1974), and the Vocabulary and Similarities subtests of the WISC-R (1974). For Rate, Accuracy and Comprehension, Pearson product-moment

correlations ranged from .76 to .96 for the two Forms and the Schonell, from .46 to .68 between Neale and Vocabulary, and from .41 to .66 between Neale and Similarities. Age differentiation also supports concurrent validity, with progressive improvement shown on rate, accuracy and comprehension. The Manual also cites studies showing that the original Neale (1958) successfully discriminated between normal and disabled readers.

Evidence for predictive validity is mainly derived from studies using the original Neale (1958), although Neale and McKay's (1985) finding that results on the Revised Neale at the end of Year 1 correlated highly with reading achievement at the end of Year 2 are also mentioned.

Construct validity is supported by age and clinical differentiation. During the standardisation of the Revised Neale Analysis, the three components (rate, accuracy and comprehension) were found to be highly correlated. As the items were similar or identical to the original Neale (1958), it seems reasonable to suppose (although it has not been tested) that the Revised Neale (1988) has a similar factor structure to the original Neale: a large general factor (supported by the high intercorrelations), but smaller group factors to account for the distinct contributions of decoding (accuracy), comprehension, and rate of reading.

The high correlations with other reading tests, and the somewhat lower correlations with the WISC-R subtests appear to confirm that this is a valid test of reading, as opposed to other verbal skills, while the factor analysis of the original Neale (1958) points to the validity of having separate scores for rate, accuracy and comprehension.

To sum up, it appears that the Revised Neale Analysis (1988) is a valid and reliable test both of global reading skill and of its rate, decoding and comprehension components. It appears to make a valid use of both quantitative measures and qualitative evaluation in assessing reading progress and planning for further programme. It is not designed as a listening comprehension test, however, and so SPELD must look elsewhere for a measure of this skill. Because the Neale Analysis was designed with Australian children in mind, and specifically searched their reading curriculum to ensure content validity for the test in that setting, further studies are recommended to establish norms for New Zealand, and to examine the relevance of the content to materials used here for reading instruction. Matthey (1990) has also cautioned against the use of age-related norms for reading, but this concern would appear more relevant to other countries, rather than to New Zealand, where most children enter school on their fifth birthday.

It may, however, affect the portability of Australian norms to New Zealand populations.

### 3.6 General Discussion of the SPELD Battery

As the various sections were discussed, data were given about each. Now it is appropriate to consider the battery as a whole. Before the battery is discussed, Table 3.3 will summarise the evaluation of the language components of the battery.

Table 3.3 Evaluation Summary of the Language Components of the SPELD Battery

<u>Component</u>	<u>Origins</u>	<u>No. of items/ Scoring</u>	<u>Quant. Rel. Data</u>	<u>Case for Validity</u>	<u>NRM/CRM/P</u>
Repeating sentences	S-B+	2/age Scorer writes person's response & assigns age score.	yes*	fairly strong	NRM/P
Auditory discrim.	Wepman+	24 pairs Right/wrong	yes*	weak	CRM
Phonic skills	SPELD	24+14+20 +12 right/wrong & qualitative	no	strong	P
Dictated sentences	SPELD?	2/age Written record, age level	no	strong	NRM/P
Syllables	SPELD	10 yes/no	no	weak	CRM
Carver	Carver	50 Record errors, deduct from 50 & use norms.	yes	strong	NRM/P
Rhyme	SPELD	3 x 2 Note errors.	no	strong	P
Blending & decoding	Neale	Choose as needed. Note errors.	no	strong	P
Letter names & sounds	Neale	26 x 2 Note errors.	no	strong	P
Writing letters from sounds	SPELD	20 Note errors.	no	strong	P

Visual discrim.	SPELD	10 Note errors.	no	weak	NRM/P
Visual recall	Slinger/ Malcom.	10 Note strategies, quality of written response.	no	weak	NRM/P
Word copying	SPELD	12/age Note strategies, quality of written response.	no	strong	NRM/P
Syntactic sentences	S-B+	2/age Note strategies & response.	yes*	strong	NRM/P
Vocabulary	WISC-R	Administer as WISC-R. Provides a sample of language.	yes	strong	NRM/P
Speech & language	SPELD	Informal based on sample of language during assessment.	no	strong	P
Spelling	Schonell	Test to 5 consecutive errors. Note strategies. Spelling age = no.correct/10 + 5.	no	strong	NRM/P
Reading Accuracy	Neale	As Neale manual.	yes	strong	NRM/P
Reading Comp.	Neale	As Neale manual.	yes	strong	NRM/P
Listening Comp.	Neale	?	no	strong	NRM/P

Note: In Table 3.3, S-B+ refers to the Stanford-Binet (1960), augmented by the SPELD adaptation. An asterisk (\*) indicates that the data available refer to the original test, not to the SPELD adaptation. Other abbreviations are listed below.  
 No. = number, quant. = quantitative, rel. = reliability, NRM and CRM = norm-referenced and criterion-referenced measurement, P = process, Slinger = Slingerland, Malcom. = Malcomensius.

From the information given in this chapter and summarised above, it is apparent that the components of the SPELD battery vary in quality and utility. Reliability and validity will be considered in greater detail in the following sections.

### 3.6.1 Psychometric Considerations

No test can be considered valid if it is not reliable (Anastasi, 1988; Salvia & Ysseldyke, 1988). If a test score is to be used for an individual placement decision, reliability must be very high. Salvia and Ysseldyke (1988) recommend a reliability coefficient of .90 as a minimum standard for individual placement, and .80 for a screening instrument. The *Standards for Educational and Psychological Testing* (1985) and Salvia and Ysseldyke (1988) also recommend that reliability information be reported clearly in the manual.

For many of the instruments which SPELD uses, reliability has not been determined. For those whose reliability has been determined, no investigation has been conducted in New Zealand. Ballard (1984) questioned the stability of individual IQ scores and their ability to predict academic achievement. Lezak (1988) questioned the idea of using general IQ measures. Aaron rejected the use of IQ tests in diagnosing or predicting reading achievement, and suggested using a regression equation derived from measures of listening and reading comprehension. Reasons

for wariness regarding the application of WISC-R and Stanford-Binet results to assessments of New Zealand people with possible reading difficulties have already been discussed: for example, problems with content validity and item discrimination, gender effects, inappropriate norms, and inappropriate reliability estimates (e.g. Tuck, Hanson & Zimmerman, 1975; Silva, 1982; Ballard, 1984; St. George & Chapman, 1984 & 1987).

Similar reservations hold for the Word Recognition Test (Carver, 1970) and the Neale Analysis (Revised, 1988), although the latter comes the closest to contemporary New Zealand samples, being a modern Australian test. Reading ages are, of course, dependent upon reading instruction and experience. Whereas Australians enter school at the beginning of the school year, New Zealanders enter at their fifth birthday; such considerations are bound to affect the norms. Thus even for the standardised materials, the norms have yet to be determined for New Zealand. The situation is further complicated by the fact that in many sections the battery contains modification of published items, or items presented in a different context. And there are also sections without any norms, where the processes and strategies which the person is using are being examined.

Summing up, there appear to be many reasons to be wary of the quantitative aspects of the battery. However, because

there are many different subtests in the SPELD battery, what the tester is looking for is a pattern of results, rather than the results of any one subtest in ascertaining whether or not a problem exists.

### 3.6.2 Validity of the Battery

As has been described, the reliability of the battery is questionable. For this reason, psychometric theory suggests that its validity is an open question (e.g. Anastasi, 1988, Salvia & Ysseldyke, 1988). On the other hand, the selection of tasks appears to tap a reasonable representation of the skills which have been shown to contribute to reading acquisition.

While the assessment gives indications which taken together point toward certain instructional guidelines, it is only the beginning of developing an instructional programme. The SPELD teacher training programme (Durbridge, 1991) recommends to incoming teachers that they continue assessing their new students in their early sessions, to determine which teaching approaches are best suited to the student. This approach is similar to the interactive approach advocated by Lipson and Wixson (1991), who used diagnostic teaching to investigate empirically various teaching methods, before making recommendations for instruction. Unlike Lipson and Wixson (1991), however, SPELD teachers do not exert strict quantitative control over diagnostic teaching.

The eclectic philosophy of SPELD teachers regarding teaching methods is similar to that of many remedial teachers: "If it works, use it".

In the following chapter, several cases will be described, to illustrate how the battery functions as the basis for designing and monitoring an individual instructional programme.

#### 4. CASES AND RESULTS

This chapter describes the cases. Because the students were all male, and the SPELD teachers all female, appropriate pronouns will be used accordingly. As mentioned in the Overview, this distribution reflects the majority of situations for SPELD, with a strong majority of male students and female teachers.

Each case will be considered in terms of his history and reasons for referral, the initial assessment, the teaching programme, reassessment(s), and follow-up data. The first case is an archival case who had finished SPELD tuition, while the remaining cases were currently receiving remediation at the time the thesis was written. For each case, when assessment data are listed, test authors (when known) will be stated only for the initial assessment. The same tests are used for assessment and reassessment, except that some tests are not used again at reassessment. If the person was already able to perform the skill at the top limit (ceiling) of the test at the previous assessment, that test is not repeated at the reassessment.

## Case 1: Daniel

### History and Reasons for Referral

Information in this section is derived from an interview with Daniel's mother, and from the history form completed before his initial SPELD assessment. School teachers and records have also been consulted.

Daniel had a normal birth, and appeared to be a normal, happy child during his preschool years, apparently unaffected by a head injury when he was four years old (but no detailed information is available about this injury). His general health is good. In the extended family there have been several cases of reading difficulties. His mother's brother and his four sons all have learning difficulties, particularly in reading and spelling, but have done well after individual help at a private school. His mother stated that she herself reads fluently but has trouble with spelling. She had read to him often at home.

After his normal behaviour in the preschool years, his mother stated that she was surprised when he "turned into a monster from his first week at school". She related that his teacher "beat him the first week", and during his first year at school he screamed at home, hit the walls and did not want to go to school. Because he feared school, the family had to take him to school until he was in Standard 3. He did not act out at school, only

when he was at home. His first two primary schools offered no special help, either in language skills or in psychological assessment. When he became suicidal at age 7 years, the mother sought psychological assessment for him. A school psychologist and a private psychologist told her that she was an overanxious mother and gave her hints on how to be a better parent. Meanwhile, Daniel was still making no progress in language skills. The next primary school offered remedial reading for one term, then the reading teacher stated that she no longer had time to take him for lessons. At this point, the mother contacted SPELD.

Initial Assessment (Age 7 years, 11 months)

The initial SPELD assessment referred to him as "highly sensitive" and "demoralised about his lack of progress at school". His school record showed poor stability, cooperation and independence in the early years, with average achievement in oral language and most subjects, but with reading and spelling below average. He had "great difficulty in reading", the SPELD assessor noted, with "fortunate guesses when reading in context", but could recognise few words in isolation. Although his oral vocabulary and listening comprehension were good, he showed difficulty in: auditory discrimination of similar words; rhyme production; visual discrimination of similar letters and words; recall of words, designs and

numbers presented visually; writing dictated sentences, and rhythm. He was unable to perform the following components: auditory syllabification and phonemic segmentation. His total inability to identify syllables is unusual at his age, and showed the difficulty he had in sorting out sound patterns. He could not distinguish vowel sounds, sh/ch, or f/th (this error also showed in his speech, which was not very clear). Visually he confused h/i, d/p, b/d, j/g, n/u, and could not name y. When reciting the alphabet he stopped at s and could not continue. He was unable to sound letters or write letters from sounds, and unable to blend sound groups into words or break words into sound groups. In the Carver Word Recognition Test, he confused tay/toy, saw/was, weth/with, gan/gun, crap/trap, nit/night, been/burn, and had many other vowel confusions, and was unable to hazard a guess for "bad", "place" or "quiet". When the tester dictated the sentence "The little boy is sick", he wrote "the lkie is s " and for "Look at the big red boat" he wrote "look at the b r B ". He was unable to think of a rhyme for "make" or "pot". The only words he produced for the Schonell Spelling test were "see", "in" and "DaD"; for the other words he wrote either nothing or the initial consonant (and sometimes the final consonant but only t was accurate. For example he wrote "ran" as "r m"). His errors when attempting to read revealed his strategy of looking at the first letter

and guessing: she/said, was/went, by/did (also a b/d confusion in this example). He also struggled to achieve his age in the syntactic sentences. It is not surprising that he found spelling and reading difficult, when so many of the component and associated skills were lacking. His initial scores reflected this pattern of strengths and weaknesses:

	<u>Initial Assessment</u>
Chronological Age	7 y 11 m
Auditory Memory	
Sentences	8 y
Digits forward	7 y
Digits backward	7 y
Visual Memory	
Words	Under 7 y
Shapes	7 - 8 y
Numbers	Under 7 y
Carver Word Recognition	5 y 6 m
Neale Reading Accuracy	6 y 10 m
Neale Reading Comprehension	8 y 5 m
Listening Comprehension	9 y 1 m
Schonell Spelling	5 y 3 m
Peabody Vocabulary	10 years

These scores illustrate Daniel's difficulty with decoding, and his facility with vocabulary, and therefore with listening comprehension. Reading comprehension was not suffering at this level. However, as the school curriculum becomes more demanding in terms of reading accuracy, it is likely that reading comprehension would also suffer because of his problems with decoding (cf. Perfetti & Hogaboam, 1975). Freebody and Byrne (1988), after examining the word-reading strategies of second and third grade children (i.e. age 7 - 8 years), found that results suggested that a lack of efficient decoding skills begins to impair reading comprehension by grade 3 (about 8 years). This is a time when many parents turn to SPELD.

The school was also concerned about Daniel's reading at this stage. The reading teacher administered the Burt Word Reading Test (Gilmore, Croft, & Reid, 1981) and he scored 6 years 11 months - 7 years 5 months when his chronological age was 11 years.

### The Programme

The tester recommended an intensive programme on the perceptual areas and reading and spelling. Daniel attended private lessons with a SPELD teacher after school one hour a week for eighteen months. At this stage it is not possible to determine what ensued, as this programme was implemented in another part of New Zealand, and the only records received indicate work on written language, mainly phonic spelling along with storywriting.

### Reassessment 1

When he moved to the Manawatu, he was reassessed before beginning lessons with a teacher in Palmerston North. The reassessment at that time indicated that he had made progress:

	<u>Initial Assessment</u>	<u>Reassessment</u>
Chronological Age	7 y 11 m	10 y 9 m
Auditory Memory -		
Sentences	8 y	10 y
Digits forward	7 y	8 y
Digits backward	7 y	10 y
Visual Memory		
Words	Under 7 y	9 - 10 y
Shapes	7 - 8 y	6 - 9 y
Numbers	Under 7 y	7 - 8 y
Word Recognition	5 y 6 m	8 y 3 m
Reading Accuracy	6 y 10 m	8 y 7 m

Reading Comprehension	8 y 5 m	9 y 5 m
Listening Comprehension	9 y 1 m	11y 2 m
Vocabulary	10 y	15 y
Spelling	5 y 3 m	7 y 7 m

At the reassessment, Daniel still had problems with decoding, but had made a start with phonics. He could now reliably identify beginning and middle sounds in words, and sometimes end sounds, but was unsure of blends. He could segment up to three syllables, and was now able to write some sentences from dictation. Rhyming was still slow, however; relating letter patterns to sound patterns appeared very difficult for him. Regarding his spelling, the tester commented, "Good as far as he goes, then a complete shut-off." He obviously needed to be led through letter-sound correspondences step-by-step, as he did not appear to pick them up spontaneously at all. The tester recommended structured exercises and games to improve his recognition of visual forms, and continued intensive work on reading and spelling.

#### The Programme after Reassessment

The teaching programme continued to emphasise decoding, with reciprocal reading (taking turns to read a paragraph) to try to build fluency. Daniel's skills appeared to improve, but he was very slow to absorb

decoding. Meanwhile at school he was being pressured to do a large amount of homework, and was becoming very tired. He was usually tired when he arrived for his lessons after school, but despite this appeared to be making steady progress with his reading, which was becoming more solid as he came to trust his word attack skills rather than just look at the first letter and guess from the context.

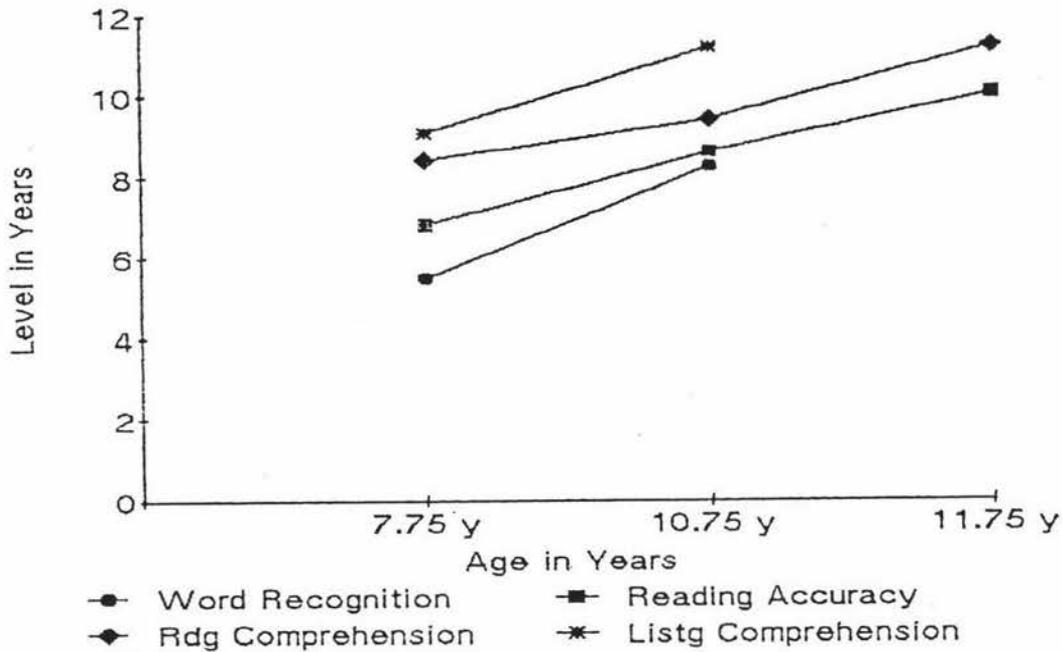
Reassessment 2

A reassessment was conducted after one year.

	<u>Reassessment 1</u>	<u>Reassessment 2</u>
Chronological Age	10 y 9 m	11 y 9 m
Auditory Memory		
Sentences	10 y	9 y
Digits forward	8 y	8 y
Digits backward	10 y	9 y
Visual Memory		
Words	9 - 10 y	8 - 10 y
Shapes	6 - 9 y	8 - 9 y
Numbers	7 - 8 y	9 - 12 y
Carver Word Recognition	8 y 3 m	Accurate
Neale Reading Accuracy	8 y 7 m	10 y 0 m
Reading Comprehension	9 y 5 m	11 y 2 m
Listening Comprehension	11 y 2 m	Not tested
Peabody Vocabulary	15 y	16 y
Spelling (Schonell)	7 y 7 m	8 y 0 m

Results for Word Recognition and Listening Comprehension were not given, because Daniel's performance exceeded the ceilings for these tests. The results of Daniel's assessments are summarised in Figure 4.1, which illustrates his steady progression in skills, with comprehension exceeding his ability to decode.

Fig.4.1 Daniel's Assessment Results



The Programme after Reassessment 2

Although Daniel's reading accuracy was increasing at a rate faster than his chronological age, he was still behind his peers in both reading accuracy and spelling, skills which require a grasp of the phonological code as

well as visual word recognition. He was keen to continue SPELD lessons and the family were pleased with his progress, and so he continued for another year.

During the year, similar teaching strategies were employed as in the previous year. Although he was tired after school and then faced a heavy load of homework in the evening, he appeared to be making progress in decoding. He was gradually becoming more organised in his approach to homework (the SPELD teacher spent part of her time with him discussing homework assignments and strategies to approach these, and his mother worked very hard with him at home), and was producing better results at school.

About halfway through the year, the school decided to offer him extra reading tuition. He still wanted to continue SPELD lessons as well. Because he appeared to be progressing well with reading, and the family was pleased with his progress, and he was receiving reading tuition at school, the SPELD teacher concentrated on spelling for the remainder of the year, using a phonic approach with both personal teaching (based on the phonic progression shown in Hooton, 1975) and computer practice to build fluency (Mayne, 1988).

At the end of this year, Daniel's school English teacher and reading teacher were interviewed by the author. The reading teacher had concentrated on "reading for meaning" (comprehension skills) and was pleased that Daniel's

"guesses were improving". A running record taken by the school reading teacher around the time of Reassessment 2 showed him to be reading material at the 12-year level with 90% accuracy and 100% comprehension and a high rate of self-correction. She estimated that his skills would have improved since then.

Whereas the SPELD teacher had earlier encouraged Daniel to work more slowly and carefully to be sure his reading was accurate, the school reading teacher was pleased that she had increased his reading speed. The English teacher admitted that she had assigned a large quantity of project work, so that the students could build research skills. His mother reported that he was "launching out in written work, showing flair and humour". It was noted that whereas the SPELD analysis had shown a need to concentrate on decoding (word-level processes), the school teachers concentrated on comprehension and speed (text-level processes). Daniel had always tended to be more proficient at these, relative to his difficulties with decoding.

At the end of the year, the SPELD teacher once again had Daniel read to her. (She had not heard his reading for several months.) She was appalled to discover that he now read quickly and carelessly, similarly to how he had been reading before she had attempted to teach him reading. She asked him how he read. He replied, "I don't know, I just do." She then asked what he did when

he came to a word he did not know. He said, "I just say something that seems to fit." This statement is similar to the school reading teacher's praise because his "guesses were improving". The SPELD teacher observed that he read many words fluently and accurately, but did not use word attack on long or unfamiliar words. A final reassessment was conducted at the end of this final year.

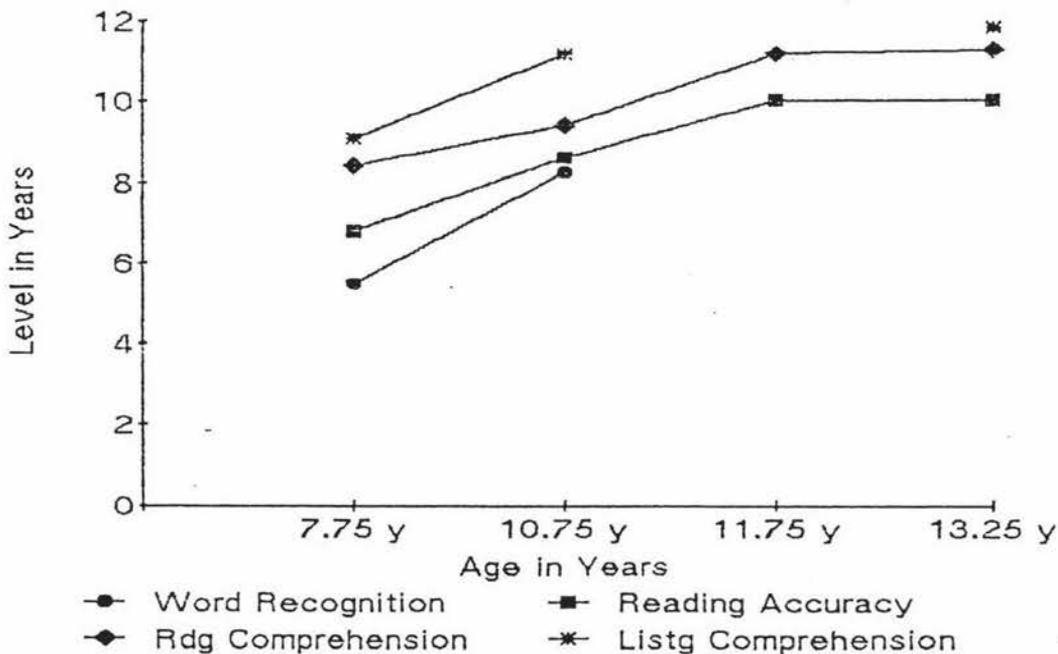
Reassessment 3

As the SPELD teacher had feared, Daniel's reading was not any more accurate than it had been, despite his progress in spelling.

	<u>Reassessment 2</u>	<u>Reassessment 3</u>
Chronological Age	11 y 9 m	13 y 3 m
Auditory Memory		
Sentences	9 y	9 - 10 y
Digits forward	8 y	8 y
Digits backward	9 y	8 - 9 y
Visual memory		
Words	8 - 10 y	10 - 12 y
Shapes	8 - 9 y	9 - 10 y
Numbers	9 - 12 y	8 y
Neale Reading Accuracy	10 y	10 y
Reading Comprehension	11 y 2 m	11 y 3 m
Listening Comprehension	Not tested	11 y 10 m
Spelling (Schonell)	8 y 0 m	8 y 9 m
Vocabulary	16 y	16 y

These results show progress in spelling and reading comprehension, but most other skills appear not to have progressed. The tester commented that he would need decoding as well as comprehension, in order to be able to handle reading in secondary education. His listening comprehension, although still ahead of his reading skills, had now dropped well below his chronological age. Daniel's SPELD assessment results, including the third reassessment, are summarised in Figure 4.2 following.

Fig.4.2 Daniel's Assessment Results



Note that although reading comprehension was easier for Daniel than decoding (as tapped by the reading accuracy

and word recognition measures), his lack of progress in decoding also restricts his ability to comprehend more difficult material (Perfetti & Hogaboam, 1975). This illustrates how the effects of a learning difficulty spread as the child progresses through education (Stanovich, 1986a).

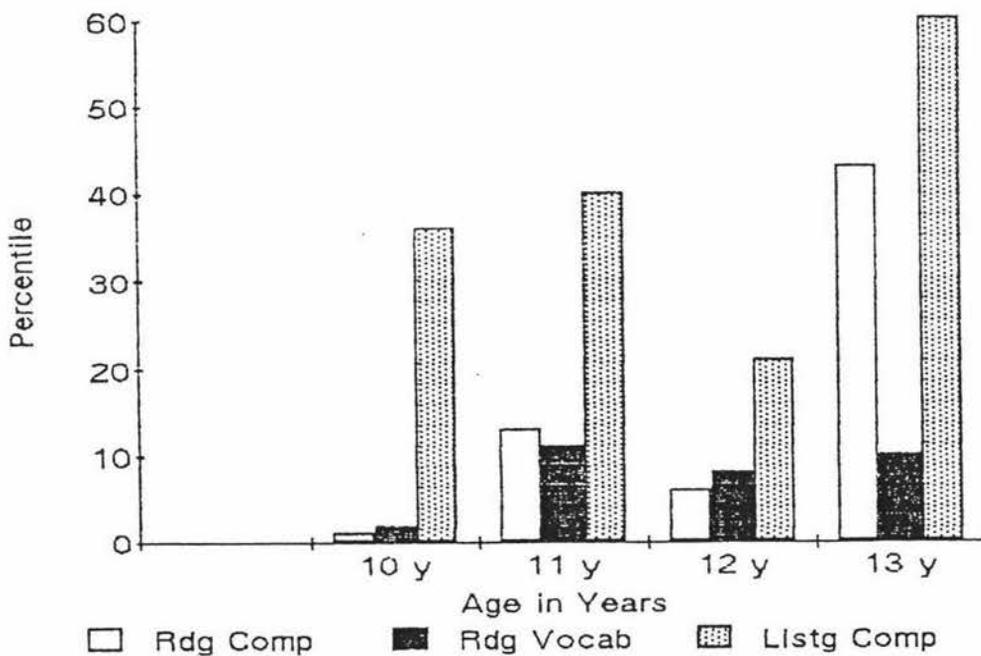
Daniel's results from his school Progressive Achievement Tests (Elley & Reid, 1969, 1971, revised 1991) gave further evidence of his strengths and weaknesses.

In New Zealand, school children are regularly assessed using the group Progressive Achievement Tests (Elley & Reid, 1969, 1971, revised 1991). These tests were developed and normed with New Zealand children. Scores are given in percentiles, a measure of how the child performs relative to children his own age. These tests are used extensively by New Zealand schools for screening children and for selection into streamed classes. The Reading Comprehension Test requires the children to read short graded passages and answer multiple-choice questions. The Reading Vocabulary Test presents words in sentences, and the children are to select the best synonym from five alternatives. The Listening Comprehension Test requires the children to listen to passages of prose or poetry read by a teacher, then answer multiple-choice questions posed orally.

Daniel's Progressive Achievement Test scores in Reading Comprehension (Elley & Reid, 1969), Reading Vocabulary

(Elley & Reid, 1969,) and Listening Comprehension (Elley & Reid, 1971) showed the struggle he had with reading. His results for the Reading Vocabulary Test (a test which requires decoding) lagged well below his other results, and his reading comprehension was well below his listening comprehension, even after a massive increase in reading comprehension from age 12 years (5th percentile) to age 13 years (43rd percentile). (See Figure 4.3).

Fig.4.3 Daniel's P.A.T. Results



As Daniel was about to enter high school, his English teacher was pleased with his progress. His report card had advanced from poor to average in reading. This is

despite the fact that he read with an accuracy three years below chronological age, and comprehension two years below chronological age. Formerly he had taken hours to do homework assignments, but now he was able to do extra work, and was not becoming as tired as he had previously. He had shown a steady improvement in his research assignments. She remarked that he was losing his terror of school and becoming more mature.

#### Discussion

Daniel had severe difficulties with decoding. These problems could have been caused by his preschool head injury, or they could be familial, as similar difficulties are widespread in his mother's family. This case history unfortunately resembles an alternating treatment experiment, with the school applying one treatment (work on speed and comprehension) and the SPELD teacher applying a different treatment (work on decoding). The sad fact is that working directly on comprehension had been shown by repeated assessments as not his most crucial need, whereas work on decoding was extremely necessary. Further, the school teachers accompanied their tuition with the stated belief that theirs was the "right" way to read, so that Daniel then refused to use the word-attack which had previously been improving, as the earlier reassessments showed. Reading is not a psycholinguistic guessing game. Instead,

considerable convergent evidence indicates that knowledge of letter-sound correspondances is directly related to reading acquisition (e.g. Jorm, Share, MacLean, & Matthews, 1984; Perfetti & Hogaboam, 1975; Tunmer, Herriman, & Nesdale, 1988). This unfortunate case illustrates how important it is for different teachers offering remediation to work together, and support each other's efforts. It also illustrates how necessary it is for remedial teachers to have a broad knowledge of the components of the reading process, and to realise that there is no one best method to use in reading instruction. A remedial programme must be designed to fit the needs of the person. If "remediation" is inappropriate, no wonder the results have often been so poor (Johnston & Allington, 1991).

Despite the school teacher's optimism, there still appeared cause for concern in Daniel's case, in that his continuing inability to decode would impede his progress in secondary education. At that point, the family enrolled him in a private college in another part of New Zealand, where they hoped he would be able to receive appropriate individual help with his reading.

## Case 2: Michael

### History and Reasons for Referral

Describing Michael's early development, Michael's mother stated that he was "always physically lethargic" and was

slow to walk. At the time, she had just thought that he was well behaved. He had persistent ear problems which led to an adenoidectomy at age 2 1/2 - 3 years, and four months of speech therapy (every two weeks) to clarify his speech when he was four years old. When he was two years old, he nearly drowned in a public swimming pool and was found floating unconscious. From this episode he developed a fear of water, and his confidence declined. When the family approached SPELD, his mother described him as a shy child who "did not like a lot of hustle and bustle or loud voices". She said that he went into his room and shut the door and played quietly after school. If he did have a friend to play, he had one at a time. She said that he was a sad child and talked about death. On the other hand, she said that he loved being read to, and that both parents read to him often. She said that the family had sought help from SPELD because they did not think he was "clicking with things in class", even after a full spell of Reading Recovery. She said he was quite worried by peer pressure in class.

The history form noted that his hearing and vision had recently been assessed and found to be normal. Michael enjoyed running and drawing, but had difficulties with reading and coordination. The history form listed the following problems for Michael: he lacked concentration and was easily distracted, dreamy and fearful.



Digits forward	4 1/2 - 6 y
Digits backward	under 7 y
Visual Memory	Not tested
Carver Word Recognition	5 y 6 m
Neale Reading Accuracy	5 y 10 m*
Neale Reading Comprehension	5 y 9 m
Listening Comprehension	8 y 0 m
Vocabulary (WISC-R)	7 y 10 m
Spelling (Schonell)	5 y 6 m

\*This score was extrapolated, as his performance was below the norms supplied with the Neale Analysis.

As well as these strengths and weaknesses, the assessment revealed weaknesses in gross and fine coordination and mathematics.

#### The Programme

The teaching programme aimed to use Michael's good awareness of syntax and vocabulary, as well as striving to improve the areas identified as weak in the assessment. The complete programme included a lot of work on oral language, coordination and mathematics. Throughout the programme, card games (including word card games) and other games were used frequently to introduce material and to reinforce points already learned. This technique simultaneously worked on fine coordination. Emphasis in this description will be placed on aspects relevant to reading acquisition, however.

Phonics began with the short vowel /a/ plus simple consonant sounds which Michael already knew, to get him used to decoding. He quickly caught on to the idea of relating letters and sounds. Because he tended to confuse b/d, the teacher began with words ending in "-ab", then gave him "-ack" words. She also used singing to reinforce rhyming (e.g. the song "Down by the Bay" with rhyming verses) and played Pat-a-cake and clapping games to reinforce rhyme and rhythm (but found that his difficulties with rhyme and rhythm continued).

Michael began lessons in February with simple phonics, including pictograms to help him sort out the vowels. Because of his weaknesses with retaining auditory material, visual reinforcement was used, so that he saw the letters while hearing the sounds. The teacher discovered that he learned phonics readily and generalised appropriately. By late March he was able to read a phonically simple book independently and accurately. In March and April he worked on singing and rhyming, reviewed short vowels and began to learn about long vowels. By late March, he was blending sounds independently into words, and could use rhyme to build word families (e.g. fat/cat/sat/mat). She used tactile methods to sort out confusions between letters such as b/d. She found that he was still not understanding language structures, or situations or meanings. He tended to tune out and stop listening, and this appeared

involuntary. He appeared to pick things up well when the structure or connection was explained, but was unable to find the structure for himself.

By late April he was still unable to maintain rhythm and was still unsure of left/right, and still rather fearful and tentative and not always able to find the words he needed to use, or to say what he meant. On the other hand, he was rapidly learning to read.

In May she used cat's cradle string games to build fine coordination, and did the sawing part to a sung rhythm (e.g. See saw Margery daw). These games also reinforced rhyme. By June she was able to talk with him a lot, as they got to know each other better, to extend his comprehension of situations, and build up his listening comprehension. By this stage he was also able to write dictated sentences to reinforce the connection he was making between oral and written language. He was now able to distinguish the short vowels except for /u/, in conjunction with a wide variety of consonants:

e.g. Tom ran to the red van.

The pan is hot.

Len hit Ben on the chin.

I wish I did not have to sit at my desk.

Alf has left his tin box in the loft.

He still tended to use T and B rather than t and b, but most of his reversals had disappeared, and the b/d confusion seemed gone. After writing dictated sentences,

he read them back for practice. Phonics practice was extended to initial consonant blends at the end of June. He had trouble distinguishing ch/sh. He was still often having difficulty making connections in situations or drawing inferences, but was showing a good sense of humour and social skills. He was starting to notice when other people did not make connections, and learning to ask about things he did not understand. Some previous auditory confusions (e.g. mumps/month) had by now become a running joke between him and the teacher. By July he was able to read a book at the 8 - 9 year level with a little assistance, and was able to do simple cooking from a recipe he copied at the lessons.

Reassessment (Age 7 years 10 months)

Michael had made a lot of progress in phonics, and was now able to segment initial, final and medial sounds, and consonant blends. He was still unable to generate rhymes, despite many rhyming games at the lessons. Perhaps he would have been able to recognise rhyme (as in the task used by Bradley, 1980), but the SPELD battery does not check this. In any case, for rhyme to be fully helpful with reading and spelling, the person must be able to generate rhymes fluently.

In the alternating tap, rhythm was improved but still not regular. Although auditory memory for sentences was often closer to the original sentence than at the initial

test, it was still not perfectly accurate, and the score actually dropped slightly. Digit span had improved; he could now repeat five numbers forward and four backward, whereas previously he could only give four numbers forward and two backward. His improved ability to retain auditory material would assist him in reading, enabling him to make more efficient use of context.

His performance on the Carver Word Recognition Test illustrated his progress at relating letters and sounds. He made fewer errors (11 errors out of 50 items, as opposed to his previous 25 errors), with few vowel confusions. Several of the errors he made related to vowel digraphs or other letter combinations which he had not yet learned: boot/boat, lood/loud, nithg/night, kwite/quiet. Although he still made two vowel confusions and one error in a consonant blend (fog/frog), such errors had almost ceased. The b/d confusion no longer appeared, and the only visual confusion was wiy/wig.

He still appeared to be having difficulties with listening comprehension, however, and also had difficulty with syntax. A quiet boy, with delayed early language development as a result of repeated ear infections in his preschool years, he still had difficulties with oral language. His own oral language contained errors (e.g. falled) which are normally made by younger children. Although the SPELD teacher had taken time for

conversation at the lessons, he was still in need of a lot of practice.

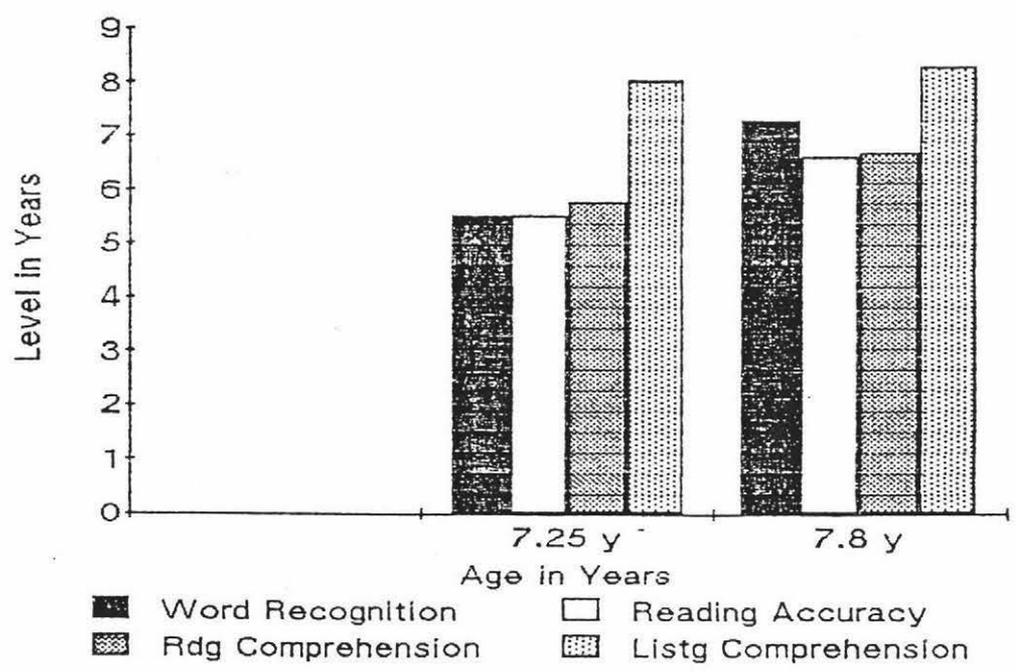
Michael's reading accuracy was much improved, and he was also using context to aid self-correction or assist his decoding for non-phonetic words. Oral reading comprehension was good in the first two levels of the Neale Analysis, then dropped off in the next level. When sentences became longer and more complex, he got lost. His reading had improved enough that he now scored 4/8 on the comprehension of the second level, a level which he had previously been unable to read. His progress in reading and written language was reflected in his test results.

	<u>Assessment</u>	<u>Reassessment</u>
Chronological Age	7 y 3 m	7 y 10 m
Auditory Memory		
Sentences	7 y	6 y
Digits forward	4 1/2 - 6 y	8 y
Digits backward	under 7 y	9 - 10 y
Visual Memory		
Words	Not tested	6 - 7 y
Numbers	Not tested	under 7 y
Shapes	Not tested	7 years
Word Recognition	5 y 6 m	7 y 3 m
Reading Accuracy	5 y 10 m	6 y 7 m
Reading Comprehension	5 y 9 m	6 y 8 m
Listening Comprehension	8 y 0 m	8 y 3 m

Spelling	6 y 1 m	6 y 7 m
Vocabulary	7 y 10 m	Not tested

From these scores it can be seen that his decoding is closing the gap between his initial test and his chronological age, and that in several areas he has either kept pace with his chronological age, or exceeded the pace. His assessment results are summarised in Figure 4.4 following.

Fig.4.4 Michael's Assessment Results



Note that although progress appears small on the chart, Michael has actually shown good progress in a short time, particularly in word recognition, but also in reading accuracy and comprehension. His rate of progress for

skills has accelerated, compared to the rate of skill acquisition in the school programme. He was one child who did not pick up the alphabetic principle (Lieberman & Lieberman, 1990) automatically from the classroom programme, but progressed very well when it was taught to him explicitly. His rapid assimilation of the letter-sound code is especially highlighted in his rapid progress in word recognition and spelling.

#### Follow-Up

One reason for his lack of progress with listening comprehension could have been his continuing battle with infections. The week after the reassessment he had his appendix out, and later in the year his tonsils were removed. The SPELD teacher indicated that by the end of the year's lessons he was reading a wide range of material (e.g. stories, newspapers). She said he had "marvellous word attack", and was also using context clues. She said he was more confident, even cheeky, and cited an anecdote to show how his listening comprehension and confidence had improved. His parents were discussing him at home, and he objected: "I'm fine at school!" Previously he would just tune out when adults were talking. Apparently the school teachers said his progress was slowing down, however, and his parents said his reading performance was erratic.

### Discussion

Michael appeared to like to work in an organised way. Although he did not acquire an understanding of letter-sound relationships from the school reading programme the way many children do, he learned very well when letter sounds were taught to him explicitly, and was then quickly able to use them in reading and spelling. He appeared to be doing well until his confidence and progress were undermined by serious illness.

### Case 3: James

#### History and Reasons for Referral

James was born with a tumour on his right hand. He had an anaesthetic and biopsy when he was 24 hours old, and the tumour proved to be malignant. Because an operation performed when he was six weeks old was unable to remove the entire tumour, the hand was partially amputated when he was four years old. Otherwise, he appeared to have a normal preschool development. He attended a pre-school day-care programme, and later an after-school care programme. When he was five years old, he had occupational therapy for eight months to improve his coordination. At school he enjoyed science but disliked reading, writing and spelling. His mother approached the school about his poor reading progress when he was age six years. When he was in J2 he was given remedial reading classes, but his mother stated that these were

"of limited assistance". Following a suggestion from his class teacher, the family approached SPELD when he was 8.6 years old. At this time, his six-year-old brother was reading better than he was, and the parents stated that he was "beginning to shun all books." He was also reluctant to write, and very sensitive about his right hand. The history form noted the following problems:

- lacks concentration, easily distracted,
- over-active,
- engages in attention-seeking behaviour,
- difficult to manage at home,
- behaviour problems at school, hates school,
- difficulty in mixing, different from other children,
- feels himself to be a failure."

James had been assessed by the Special Education Services, who had recommended that he use his right hand as little as possible. The family had also approached the university reading clinic, but described this approach as "unsuccessful". His mother stated that she "began to feel guilty when she was unable to help him to read". On the positive side, James had good oral language, and had been read to frequently and enjoyed this. He especially enjoyed science and nature programmes on television, and books about aircraft. He also enjoyed building motors for toys, and playing cricket and soccer.

### Initial Assessment

The initial assessment confirmed the strengths and weaknesses which the history had described. Although he appeared to be naturally right-handed, for the most part he kept his right hand on his lap, as though it were dead.

He conversed readily and fluently, with a good sense of humour and quick oral comprehension, supported by vocabulary and syntax beyond his chronological age. His weak decoding showed up both in a score of 5.3 years on the Carver Word Recognition Test and in his performance on reading in context. He was below the six-year floor for the Neale Analysis of Reading accuracy test. Held back by his weak decoding, his reading comprehension only reached 6 years 7 months. Phonic skills were weak; James could isolate beginning and middle consonants, but was unsure of all vowels in any position, and unable to segment final sounds or consonant blends. He was able to blend groups of sounds into words (st + ill = still) but breaking words into sound groups was difficult for him (e.g. He blended l + end to produce island and g + ives to produce gills). Because James lacked decoding skill, he would look at the first letter and guess when reading. This incorrect strategy was hindering reading comprehension.

The history and the assessment showed that James had good oral language and listening comprehension, but poor

self-esteem, sensitivity about his right hand, resistance to reading and writing, and very weak decoding skills. Just as good vocabulary and syntactic awareness supported his listening comprehension, so weak phonological awareness (as shown by difficulty in a rhyming production task) contributed to his difficulty in decoding. The scores which James obtained at the initial assessment are listed following.

	<u>Assessment</u>
Chronological Age	8 y 10 m
Auditory Memory	
Sentences	8 y
Digits forward	7 - 9 y
Digits backward	7 - 8 y
Visual Memory	
Words	7 y
Numbers	7 y
Shapes	7 - 9 y
Carver Word Recognition	5 y 3 m
Vocabulary (WISC-R)	9 y 6 m
Reading Accuracy (Neale)	5 y 9 m
Reading Comprehension (Neale)	6 y 7 m
Listening Comprehension	Not tested
Spelling (Schonell)	5 y 5 m

### The Programme

James arrived at his early SPELD lessons in February bursting with hate and resentment. He hated school, other people, being unable to do things, and his unusual right hand, which he tried to keep hidden. The SPELD teacher engaged him in activities which used both hands - computer games, board and card games - to encourage him to treat the hand as an integral part of himself, and to strengthen his awareness of left and right. Because he was "very resistant to reading and writing and would not pick up a pen", she kept writing to a minimum in the early months.

Gradually he became more secure in his phonics, and enjoyed the game-filled approach. By mid March he had mastered final consonant sounds, and was starting to sound single letters but was unable to put them together into words. He did, however, read a phonically simple book.

By April he was able to play ball games with both hands and was relaxed about this. In language he was working on rhyming and short vowels. He was still unable to combine sounds into words.

In May the teacher continued to work with James on letter sounds. Although he found short vowels difficult, she chose to introduce these after he had mastered the consonants, so that he could then construct simple words. By June, he was still guessing words using the initial letter when attempting to read, but was starting to be

able to write dictated sentences. His concentration still tended to wander, and he was still showing rigid behaviour. If he did not like the alternatives presented (e.g. when playing a phonics game), he would choose his own and insist on it. By mid June, the teacher described him as "quite keen" on writing dictated sentences, as he was experiencing success. He was still showing rigid behaviour; once he made an error, he did not see it, and if it was pointed out, he was unable to see how to correct it. She found that he appeared to have difficulty focussing on a task, and drifted off when he made an error.

In July he still appeared distractible, and unable to follow a series of instructions. She continued to work with him on letter sounds, using consonant blends and short vowels. His mother stated at this time that the school principal was refusing to allow children to go to SPELD during school hours, and that James was "more reluctant" to attend his SPELD lessons, and still behind his peers in reading and writing. She did consider, however, that he had improved in reading, although he was refusing to bring reading home from school.

#### Reassessment

James said that he was now enjoying mathematics and spelling lists in his schoolwork, but not enjoying folk dancing (because of his left/right confusion, and

consequent embarrassment when he moved in the wrong direction) or handwriting. His mother indicated that he was having major difficulties with: following a series of instructions, relating letters and sounds, reading accuracy and comprehension, attention to a task, and spelling. She stated further that he had moderate difficulties with coordination, social skills, self-esteem and fear of school. Attitude and social skills appeared to have improved. James now persevered with tasks he found difficult, and was aware that he had been tuning out or talking or wiggling to escape from tasks he found difficult. He joked about these tactics at the retest, and appeared prepared to learn effective strategies to replace these ineffective ones.

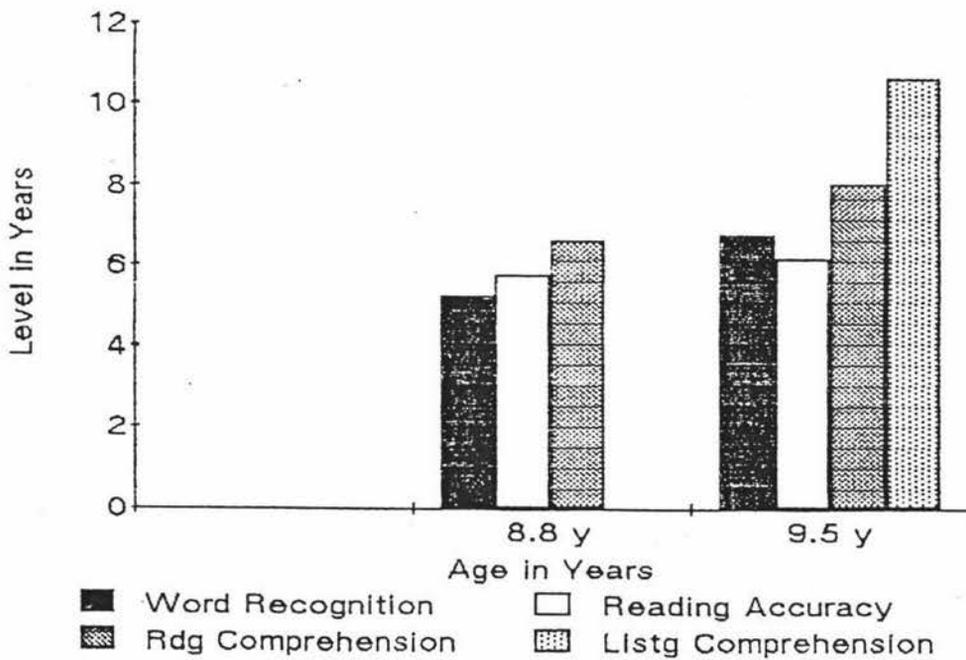
The test results indicated that although rhyming was still very slow, James had made progress in a number of areas:

	<u>Assessment</u>	<u>Reassessment</u>
Chronological Age	8 y 10 m	9 y 6 m
Auditory Memory		
Sentences	8 y	8 y
Digits forward	7 - 9 y	7 - 9 y
Digits backward	7 - 8 y	7 - 8 y
Visual Memory		
Words	7 y	7 - 8 y
Numbers	7 y	8 - 12 y
Shapes	7 - 9 y	7 - 9 y

Word Recognition (Carver)	5 y 3 m	6 y 9 m
Vocabulary (WISC-R)	9 y 6 m	Not tested
Reading Accuracy (Neale)	5 y 9 m	6 y 0 m
Reading Comprehension (Neale)	6 y 7 m	8 y 1 m
Listening Comprehension	Not tested	10 y 7 m
Spelling (Schonell)	5 y 5 m	6 y 1 m

Assessment results for James are charted in Figure 4.5 which follows.

Fig.4.5 James' Assessment Results



At the reassessment, James used a range of reading strategies which he had not employed at the initial assessment:

- decoding words when reading rather than guessing,
- self-correcting his errors,
- using comprehension to support decoding.

Now that he was beginning to experience success and use effective strategies, the reassessment report recommended that SPELD lessons continue, so that skill development could be consolidated. He was beginning to improve his word recognition, and now that his attitude to reading was improving, he would feel more inclined to read, and with more practice and improved strategies, progress could be expected to accelerate.

#### Follow-up (December)

The SPELD teacher stated that James was a lot happier, and was making progress at school and at SPELD lessons. She said that he was learning to approach learning methodically, and increasing his learning strategies. As an example, she noted that he was using touch to aid memory. In phonics they had been working on consonant blends, vowel digraphs, and endings such as -er, ed, and -ing. She noted that in his reading he was making an effort at decoding, and was now absorbing the words which he decoded into his sight vocabulary as he went along.

### Discussion

Comparing James' initial data with his follow-up indicates that he has made major progress in reading, learning strategies, and attitude. Because he has made this progress during the year when he was having SPELD lessons, and did not make such progress in previous years when he was not having SPELD lessons, it seems possible to consider that the SPELD input contributed to this progress.

### Case 4: Hayden

#### History and Reasons for Referral

Hayden's mother was asthmatic during the pregnancy, and Hayden was delivered using instruments. He walked at 15 months of age, and appeared to have a fairly normal preschool development. He did however have difficulties with coordination, particularly in the right hand, with muscle weakness on his entire right side. After consulting a pediatrician when Hayden was four years old, his mother had received exercises from a physiotherapist to do with him.

Hayden had difficulty coping with academic work through his entire time at school. His mother stated that she had approached the school "consistently from 5 years of age".

Hayden's family sought help from SPELD because he had multiple disabilities, and they were concerned with his lack of progress at school. Along with his difficulties with motor coordination, he had a squint and was long-sighted. As well as his physical difficulties (and in some cases because of them) he had considerable difficulties with a variety of school subjects: language, reading, writing and manual skills, sport and mathematics. He also had difficulty relating to his peers.

On the history form, his mother stated that he:

- lacked concentration, and was dreamy and distractible,
- was aggressive, restless and over-active,
- engaged in attention-seeking behaviour,
- felt himself a failure,
- played poorly with others and had difficulty mixing,
- readily lost his temper,
- hated school, and
- was withdrawn, sad and different from others.

The mother had consistently sought help from schools, and had read to her son frequently at home. Three years previously, she had approached the university reading clinic, but Hayden had not cooperated with the programme, considering extra reading a punishment. By the time she

approached SPELD, however, she considered that he wanted to improve his skills.

Initial Assessment (14 years 6 months)

Hayden presented as a large, pleasant but physically awkward boy with a sense of humour and considerable difficulties in both coordination (because of the right-side weakness) and language. He used simple vocabulary and syntax in his own speech, but was able to complete the syntactic sentence test to the limit (12+ years), and appeared to be learning as he went through it. Although he had often been read to at home, his listening comprehension was only good at a fairly basic level, and disappeared entirely as language became more complex. His listening comprehension was assessed using the parallel form of the Neale Analysis. He appeared to have difficulty following oral material. When he read himself, he had a visual reinforcement for what he was hearing, and could go slowly, and thus managed better at reading comprehension than at listening comprehension (a most unusual result). When he was listening, the tester controlled the speed (although attempting to make the material intelligible to him), and he was unable to follow or remember beyond a basic level. His auditory memory scores were good for straight repetition (both sentences and digits), but remarkably poor when material had to be manipulated (digits backward). He used

rehearsal (repetition) to assist his short-term memory, but appeared to have difficulty (and no strategies) for manipulating material in his memory. His recall of visually presented material was also sometimes inaccurate. Despite his other difficulties, he wrote neatly, and spaced his material well on the page.

Hayden had made a start with phonic skills. He could reliably and easily isolate initial and final sounds, and could almost segment middle sounds and initial blends. He could write sentences to dictation and discriminate up to four syllables accurately. He had some difficulty with rhyming, however, performing slowly and unable to think of any words to rhyme with "cut" or "pot". He appeared to have difficulty putting sound groups together to make words; for example, he blended sp-ort to produce smart. Decoding (e.g. sport to sp-ort) was easier for him. He named all the letters with ease, but confused the vowel sounds i/e/u/a and the consonants h/p. The Word Recognition Test revealed confusion between sh/ch, b/d and i/e. He also sometimes omitted letters from blends.

Hayden had a good stock of sight words which he used in reading, and also used the first few letters of a word for sounding out words he did not recognise. He would then say a word that fit those sounds, unperturbed that it did not make sense, and continuing on without self-

correcting or re-reading. He also tended to ignore punctuation.

As well as work on coordination, the assessment recommended work on phonics and rhyming to strengthen Hayden's decoding skills, with a lot of reading and oral comprehension work, including discussion of social situations. Hayden's difficulties with listening comprehension, coupled with his sensitive quick-tempered nature had caused problems at times. From years of difficulty, he was angry and frustrated and had developed an aversion to reading, language, mathematics and school. At the time of the initial assessment, however, he appeared motivated to work on his skills. He appeared to have a limited understanding of abstract systems, whether language or mathematics or social relations, and so instruction would have to be concrete.

Test scores are listed below.

Chronological Age	14 y 6 m
Auditory Memory	
Sentences	13 y
Digits forward	Adult
Digits backward	7 - 8 y
Visual Memory	
Words	8 - 10 y
Numbers	9 y
Shapes	8 y
Carver Word Recognition	8 y 3 m

Neale Reading Accuracy	8 y 9 m
Neale Reading Comprehension	10 y 7 m
Listening Comprehension	8 y 6 m
WISC-R Vocabulary	11 y 10 m
Schonell Spelling	8 y 3 m

This list of scores shows Hayden to be substantially behind in all aspects except auditory memory for sentences and repeating digits forward (for which he would have had practice, in remembering telephone numbers). Rather than "specific learning disabilities", it would appear that Hayden had general difficulties with understanding both academic material and situations.

#### The Programme

Because of Hayden's strong aversion to reading, the early stages of the programme worked on the perceptual areas and fine motor coordination. For example, the teacher played card games with him, to improve his auditory memory and fine coordination. She also used a puzzle with him called "Crazy Cat", with nine almost identical cats to compare and match up the edges. She attempted to programme for generalisation to reading skills by pointing out that just as he had to look carefully at the cats, so when reading he had to look carefully at the words. She attempted to play "My Word" (a word card game like a crossword), but he found it too difficult.

At each lesson, the teacher conversed with Hayden, to work on listening comprehension and to help him to process social and school situations. Gradually his attitude appeared to improve, and he became less angry.

In the first month, the teacher reviewed the short vowels and common words, and read *Winnie the Pooh*, hoping he would enjoy the humour. The second month, she introduced the long vowels with silent e and also some of the digraphs (ai, ay, ei). The third month, she worked on consonant blends and started giving him dictated sentences, which he enjoyed. At this time she began trying reciprocal teaching, to extend his manipulation of language by getting him to form questions for which a given statement could be the answer. She modelled the procedure, then tried to get him to do it, but he had enormous difficulty. She also tried to make him more aware of punctuation and syntax.

Because his reading progress was very slow, at this time the teacher referred him to the Talking Books section of the public library, to extend his listening comprehension. Unfortunately, he chose a book which was too difficult (*The Dam Busters*), and would fall asleep when the tape was on.

Meanwhile, Hayden was having great difficulty at school, because the curriculum was all above what his skills could handle. The SPELD teacher tried to help him by attempting to teach him some study skills and strategies,

following those outlined in Jackson, Reid and Croft (1982). To no avail. In the English exam, he was presented with an excerpt which he could not read, then questions to answer (which he also could not read). He received an E, and lost heart, and his anger returned. The SPELD teacher commented that he was very tired at the lessons, and that he had a poor attitude to reading.

In the fourth month, the SPELD teacher tried to work on the distinction between sh and ch. Hayden said them both the same. Although she tried visual, auditory and kinesthetic approaches, he had said them the same for too long, and could not change. During this month, they also used dictated sentences and autocorrect drills to work on long vowels. This month he defied the school rules and was forced to write an essay as a punishment. The SPELD teacher attempted to bring him to understand the school's point of view through conversation, but he remained angry and self-righteous.

The next month little was achieved because Hayden was very ill with whooping cough. By the following month, however, he was using a laptop computer to do his assignments, and writing more freely.

#### Reassessment (15 years 1 month)

Towards the time of the reassessment, Hayden's mother considered that emotionally he was a little better, and that he was settling down. She said that there had been

"definite improvement in word attack skills". The school report was discouraging, however: still a range of Es and Ds except for C in Art. His attitude mark had improved from previously, with more 2s (on a 5-point scale, with 1 at the top and 5 at the bottom). She said that the report complained of uncompleted assignments, but that Hayden tended to forget when he had assignments. He stated further that Hayden had worked hard at the school radio club, but was still not very motivated to work hard academically. She said that she found it a struggle to try to work with him on homework assignments, but found him more confident and relaxed than previously.

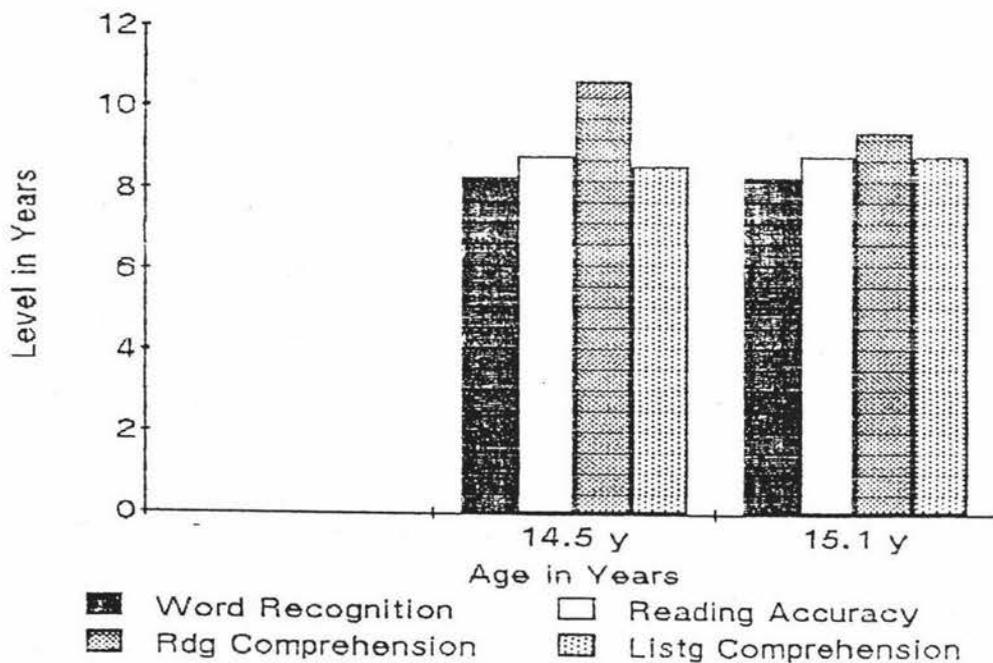
Best data were discouraging. Although the memory scores had improved slightly, the academic skills were steady or decreased, similar to the trends in the school reports. Results are listed below.

	<u>Assessment</u>	<u>Reassessment</u>
Chronological Age	14 y 6 m	15 y 1 m
Auditory Memory		
Sentences	13 years	Not tested
Digits forward	Adult	Not tested
Digits backward	7 - 8 y	9 - 10 y
Visual Memory		
Words	8 - 10 y	9 - 10 y
Numbers	9 years	9 - 12 y
Shapes	8 years	9 - 10 y

Word Recognition (Carver)	8 y 3 m	8 y 3 m
Reading Accuracy (Neale)	8 y 9 m	8 y 9 m
Reading Comprehension	10 y 7 m	9 y 4 m
Listening Comprehension	8 y 6 m	8 y 9 m
Spelling (Schonell)	8 y 3 m	8 y 3 m
Vocabulary (WISC-R)	11 y 10 m	11 y 6 m

Hayden's lack of progress is summarised in Figure 4.6.

Fig.4.6 Hayden's Assessment Results



What these scores do not show is that Hayden had improved in both gross and fine coordination, rhyming and phonic skills. Nevertheless his reading had not progressed.

There were two main reasons for this. Firstly, the programme had not included much full-fledged reading yet because of his aversion to it. Secondly, Hayden like many poor readers often did not apply a skill he actually possessed to a situation where it was needed (cf. Bryant, 1982).

As well as the discouraging lack of progress in the scores, another discouraging fact was that Hayden's reading strategies had not improved. Perhaps because he had had years of practice, he was still using the same ineffective set of strategies he had established. He was sounding out the first few letters of unfamiliar words, then guessing. He still took no notice of context or punctuation, and still did not reread or self-correct.

There was, however, some cause for hope. Several skills (rhyming, sounding letters, adding, subtracting, and fine manipulation) were handled more quickly and easily, with a greater fluency. Hayden appeared to be on the threshold of being able to compile his subskills into a more fluent reading performance.

There were still attitude problems, however. Hayden seemed content to leave computation to the calculator and spelling to the computer. Now that a reader-writer had been arranged to assist at his final examinations, it was feared that he might think he could leave studying to the reader-writer. The assessment recommended that the programme be continued, to consolidate and compile the

subskills into more fluent reading. The programme was now to concentrate on academic skills.

#### Follow Up

The SPELD teacher discussed the reassessment with Hayden. He said he was not interested in learning further, but was close to tears at times. His mother wanted the lessons to continue, but his father did not. Hayden was interested in obtaining his driving licence, and so the SPELD teacher planned to structure his lessons around the Road Code. She also introduced him to memory strategies. Shortly after this, Hayden's health appeared to fail, both physically and psychologically. He appeared to lose hope, and become depressed. Physically he was weakened by the whooping cough, and psychologically he was having a struggle with nearly every aspect of his education.

An interview with his mother four months after the reassessment confirmed that he had been very ill. At that point he still had a severe cough, and was unable to attend school. She hoped that he would be strong enough to work the following year, as it seemed futile to go back to school. At that point he was reading the Road Code, road signs and Footrot Flats. She considered that his reading was improving, but not fast enough to cope with curricular needs. She felt that the SPELD lessons had helped at the beginning of the year by improving his attitude. The family had a very difficult year, with the

father also extremely ill, so that she had no time to read to Hayden at home.

### Discussion

Hayden presented with major difficulties in nearly every area which the SPELD battery assesses. He had problems with: gross and fine coordination, vision, abstract conceptualisation, manipulation of symbolic material in memory, phonological awareness and decoding, word finding, oral language and listening comprehension, reading accuracy, reading comprehension, and social situations. All academic subjects were very difficult for him. Because of his multiple difficulties, he was depressed, with low self-esteem and poor motivation (cf. the "Matthew effects" described by Stanovich, 1986a). His right-side weakness and his difficulty with language and symbols pointed to possible brain damage. Although the teacher tried hard, there appeared little hope of success. Progress was minimal, and ceased when his physical and psychological health broke down.

### Case 5: Sam

#### History and Reasons for Referral

Sam experienced a normal antenatal history and birth, and there was nothing unusual in his preschool development. He was read to frequently at home in his early years. His progress at school appeared normal until he was moved

to a large school with large classes at the age of seven and a half years.

By the time his family contacted SPELD, he was 11 years old. His school progress by then was poor. His mother stated that his inability to "put things on paper" was hindering all areas of his education. As well as his difficulty with reading and spelling, his mother mentioned that he "lacked concentration and was easily distracted", and "felt himself to be a failure". She also indicated that his father and two brothers had difficulty with spelling, and an uncle had very limited reading and spelling. Sam enjoyed art, mathematics and sport (cricket, tennis and soccer), but disliked reading, spelling and writing. He was receiving special tuition in reading, spelling and mathematics in a small group at school for two hours each day, but the family considered he needed even more.

Initial Assessment (11 years 1 month)

Sam was ahead of his chronological age in vocabulary and arithmetic, but somewhat down in other areas. Gross coordination was good, but fine coordination and rhythm were not well controlled. He had difficulty drawing shapes especially circles and diamonds, and also had difficulty managing handwriting and the use of space when arranging material on the page. Although he had some experience of playing cards, his manipulation of

cards was awkward. Cutting with the scissors was slow and painstaking, and he dropped the scissors.

He appeared restless and distractible at the test (given in a quiet place). His attention appeared to drift at times. Both auditory and visual memory were down (especially for numbers, as they are isolated items), phonic skills were weak except for initial sounds, and he had some difficulty thinking of rhyming words. When writing dictated sentences he omitted sounds (go/goes, ore/over). Similarly, word copying was fast but inaccurate. He seemed to have difficulty perceiving speech: he confused sh/ch, n/m, b/d (self-corrected), and l/r. Although he could sound most individual letters, his attempts at spelling revealed his confusion: red/rag, let/lit/lid, door/doll, love/loud, terr/tree. His SPELD teacher later discovered that this appeared to be interference: when he tried to write a less familiar word, a more familiar one would appear as if by motor programming. At this stage he was unaware that this was happening. On the other hand, his knowledge of syntax was good.

Both listening comprehension and especially decoding appeared to hinder his reading. He had a good stock of sight words and read easier material fluently. As material became more difficult, however, his word attack strategies were inadequate. He tended to look at part of an unfamiliar word and guess, often using syntax but not

using context to assist. Reading comprehension was better than his accuracy would predict. He appeared to drift off at times from oral material, however, and did not appear to be following as material became more difficult.

If he had this much difficulty in a quiet one-to-one situation, functioning in a classroom would be very difficult indeed for him. He often appeared to be unaware of his errors, and so did not self-correct. He needed one-to-one or small group teaching, where the teacher could notice his errors and faulty strategies and assist him to replace these with effective methods.

Because of his auditory and visual weaknesses, and his difficulty in maintaining attention, the assessment recommended a multisensory approach. The test scores illustrate the extent of his strengths and weaknesses.

Chronological Age	11 years 1 month
Auditory Memory	
Sentences	10 years
Digits forward	4 1/2 - 6 years
Digits backward	7 - 8 years
Visual Memory	
Words	7 - 8 years
Numbers	under 7 years
Shapes	9 years
Carver Word Recognition	8 years 0 months

Neale Reading Accuracy	6 years 11 months
Neale Reading Comprehension	9 years 11 months
Listening Comprehension	10 years 4 months
Spelling (Schonell)	7 years 1 month
Vocabulary (WISC-R)	12 years 2 months

The Programme

Because Sam had difficulty focussing on language tasks, the SPELD teacher used a lot of games in her approach. The games all had a physical element which would not only enable him to attend but also improve his fine coordination.

The SPELD teacher also continued to investigate Sam's problems with language. She found that he sometimes had trouble thinking of words (e.g. for rhymes). She tried a game of inventing tongue-twisters, but it proved too difficult. Even when he was given a list of words, he could not put them together to form a sentence. Although his hearing was very acute, he could not distinguish voiced/unvoiced consonants such as f/v, s/z and d/t, nor did he distinguish f/th.

In the first month, she worked directly on: visual discrimination (Crazy Cats puzzle), Rosner's (1975) auditory programme, printing and layout, short vowels, and rhythm (using the electronic game, Simon). She also worked on syllables, to help him to break words into components.

In the second month, she continued with the Simon electronic game and the Rosner auditory programme (1975), and worked on distinguishing m/v, g/k, f/th/v, initial and final consonants, short vowels and syllables. She urged him to pay careful attention to his work, and played Gopher (a card game) to strengthen the automaticity of directional concepts (up/down, right/left) and improve his memory for instructions.

By the third month, his card handling was acceptable, including shuffling, and his sense of rhythm was developing. He was still having difficulty distinguishing voiced/unvoiced consonants. She continued to work on short vowels, then started to introduce the long vowels using a silent e, and the short and long vowel spelling patterns (e.g. doubling a final consonant to keep a vowel short). To build listening comprehension and auditory memory, she gave him practice at following instructions. She tried using the cloze technique (missing words, as described by Taylor, 1953) to build reading comprehension, but he found it difficult. To strengthen his visual skills, she continued to work on layout and observation, reinforced by touch, and used phonic word card games to try to enhance his visual memory for word patterns and encourage automaticity. At this stage he was still not using context for self-correction in reading.

In the fourth month, she continued work on the voiced/unvoiced consonants. She began to use dictated sentences (from Hornsby & Shear, 1975) to build auditory memory using visual reinforcement, and to try to increase his observation of spelling patterns. She used card games to practise layout and increase his visual memory for numbers.

By now, using phonic card games, he had sorted out the short vowels and the consonant blends. In the Rosner auditory programme (1975), he could segment initial sounds but still could not segment final sounds. This problem reflected his continuing problems with speech, where he tended not to pronounce all the middle and final consonants. Using the dictated sentences, he could now reliably write initial and final consonant blends and digraphs and short vowels, and was starting to recognise some vowel digraphs. She then had him check his spelling, then read back what he had written. In this way she hoped to strengthen his decoding. He was able to decode predictable patterns of words in phonic "last card" decks (e.g. a card might say hat, sat, mat, flat, rat), but could not use context to self-correct even in a simple reading book.

The dictated sentences were increasing his auditory span. Some spelling errors appeared to result from interference from more familiar words, either by motor patterning or auditory or visual confusion.

In the fifth month, his speech was still unclear (e.g. n/l). The SPELD teacher engaged him in conversation regularly to build listening comprehension and auditory memory, and continued to use phonic card games and dictated sentences to build knowledge of the grapheme-phoneme code. His decoding was improving but he was still not using context for self-correction when reading. At this stage, however, his problems in maintaining attention had ceased, and the SPELD teacher considered he "appeared ready to take off" (i.e. learn more quickly). At this point, Sam's mother was contacted. Sam had been having one hour of SPELD tuition a week for five months, and had just had a school report. She described it as "the best report he had ever had". It said that he was "a lot more cooperative and willing to try". The remedial teacher at school was happy to follow through with the programme which the SPELD teacher had designed. The school invited representatives of SPELD to meet with them to discuss Sam's programme, and the principal gave permission for Sam to have an intensive course with SPELD tuition for three hours each weekday morning for three weeks. A reassessment would be conducted before and after the intensive course, to ascertain progress.

#### Reassessment 1

At the reassessment, Sam showed that he had made progress in a number of areas. He was able to focus much better

on the tasks, and was happier and more confident. His coordination and handwriting had improved, and his work was better organised on the page. His reading accuracy had shown a good improvement, as had his listening comprehension. It was pleasing to learn that he was now able to enjoy recreational reading.

He was still having some difficulty with oral language. His own speech was still not clear in the medial and final consonants. Several times he misunderstood instructions, despite being a little familiar with the assessment procedures. His class teacher at school reported that he was conversing more fluently and participating more in class discussions, however. He used good vocabulary and structures in his oral language. He was improving his knowledge of letter/sound relationships. He accurately wrote letters from sounds, had improved his performance in dictated sentences, and decoded much more accurately when reading. His improvement on the Word Recognition Test reflects his improvement in decoding.

His efforts at word attack were painstaking, so that he had trouble then remembering the answers to the reading comprehension questions. This is an intermediate stage, and the assessment recommended much more practice in reading, to enable his accurate word attack to become automatic so that he could remember what he had read. He

was still not able to make much use of context for self-correction.

Although the spelling score had not yet improved, his attempts to spell unknown words were improved. He showed good progress on the short vowels and consonant blends. The assessment recommended that he next work on more advanced written language skills: self-correction using context, analysing passages for comprehension, and study and research skills.

At this point he had largely overcome the difficulties which were indicated in the first report. Coordination, attention and visual recall were much improved, and there was a good start to reading improvement. He was continuing to have auditory difficulties and needed practice in: following instructions, repeating sentences, retelling stories and repeating numbers. An intensive SPELD course was recommended, to consolidate his skills and to work on more advanced reading and research skills. The test scores reflect his progress.

	<u>Assessment</u>	<u>Reassessment 1</u>
Chronological Age	11 y 1 m	11 y 8 m
Auditory Memory		
Sentences	10 y	11 y
Digits forward	4 1/2 - 6 y	7 - 9 y
Digits backward	7 - 8 y	7 - 8 y
Visual Memory		

Words	7 - 8 y	9 - 10 y
Numbers	under 7 y	9 - 10 y
Shapes	9 years	10 - 12 y
Word Recognition	8 y 0 m	8 y 6 m
Reading Accuracy	6 y 11 m	8 y 8 m
Reading Comprehension	9 y 11 m	9 y 8 m
Listening Comprehension	10 y 4 m	13 y 7 m
Spelling (Schonell)	7 y 1 m	7 y 1 m
Vocabulary (WISC-R)	12 y 2 m	Not tested

Sam stated at the reassessment that spelling and reading were becoming easier for him at school. The school also asked that the intensive course work on mathematical tables and music skills.

#### The Intensive Course

Tuition was undertaken by two SPELD teachers who worked with Sam on alternate days. His usual SPELD teacher worked with him on Monday, Wednesday and Friday, while another experienced SPELD teacher worked with him on Tuesday and Thursday. They worked out a programme for him together, with each specialising in areas of particular strength. Both worked on language and reading, but one had particular strengths in music and mathematics, while the other had strengths in building coordination. They held the intensive course in the middle of the city, as Sam was coming into town by bus.

This was a noisier environment than their homes, to provide him with practice in coping with distractions, and to permit a variety of outings. The course was structured around these outings, with academic skills built in incidentally. The outings provided for a range of skills: drawing a map, following instructions, reading street signs and menus, using the telephone directory, speaking to people in shops, calculating prices and change, and writing letters. They also provided natural reinforcement, as Sam increased his skills and used these skills to: order food in restaurants, select and rent a video on skateboarding (a strong interest for him), and go on a treasure hunt. He also enjoyed learning to play "When the Saints Go Marching In" on a keyboard, and doing creative writing. As his skills improved, he liked to work quickly, and moaned and carried on when the teachers slowed him down or asked him to check his work.

A detailed list of objectives and a report which the main SPELD teacher prepared on the intensive course is attached as Appendix G. Sam appeared to enjoy the course, and stated afterwards that he found listening to questions and following instructions easier than previously. The SPELD teacher mentioned his progress with short and long vowels and in auditory discrimination of speech sounds in her report, and his continuing problem with distractions.

### Reassessment 2

Sam was becoming rather tired of being assessed, and probably did not perform as well as he could have. This reassessment came immediately after the intensive course finished, and it was considered that this timing was probably not a good idea for future intensive cases. He was becoming rather impatient with the procedures, and sometimes rushed his performance, to the detriment of the results. This tendency to rush was especially noticeable in writing dictated sentences and word copying. In the word copying, although he went quickly, he showed a better awareness of all the letters in consonant clusters than before. Despite his impatience, Sam showed good gains in several academic skills at this time. He was also improving in his auditory memory for digits, and starting to use rehearsal strategies to assist his memory.

Although he was still slow at isolating middle sounds, or any of the sounds in unfamiliar words, he was starting to use phonic skills more, both in reading and in spelling. Because he was becoming more aware of grapheme/phoneme relationships, his speech was becoming clearer, and his reading was easy to understand until he reached a level which was difficult for him. At this point he began to mumble. He still appeared to have some difficulty following all the intricacies of a conversation.

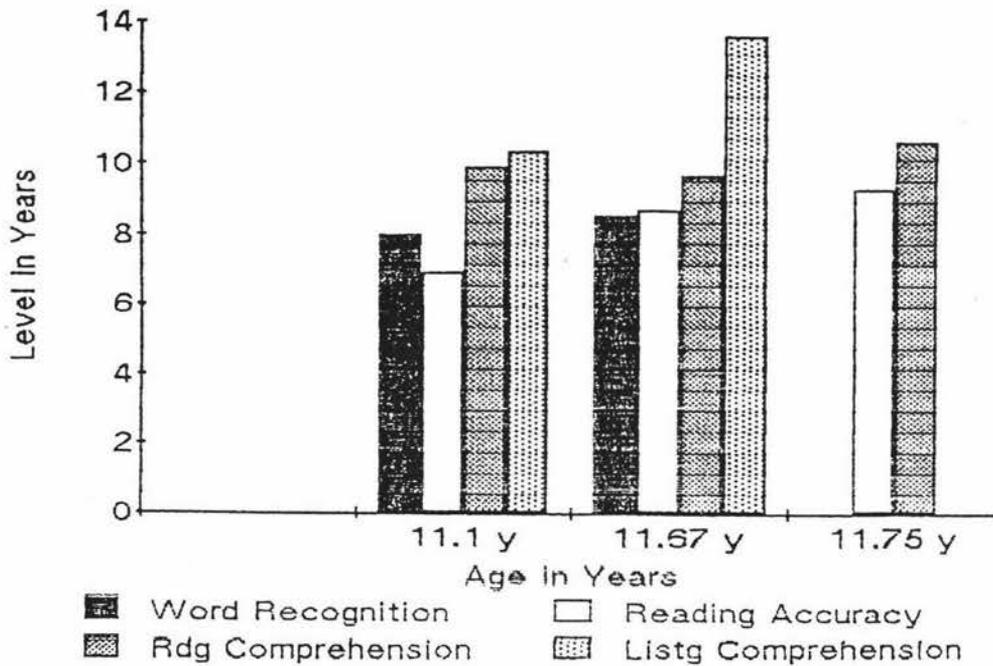
Reading and component skills showed good improvement. He was now able to combine sound groups fluently into words, and break words into sound groups (decoding and encoding), and phonemic segmentation had improved. He was sorting out the internal sounds in words better. This improvement was also reflected in his improvement in spelling, where he was now able to handle short vowels, single consonants, blends and some vowel combinations accurately. In both reading and spelling he needed to pay more attention to verb endings, but otherwise his decoding when reading was becoming more fluent. He was also using context to correct himself. At this stage, the assessment recommended that he be encouraged to work by syllables rather than individual letters, and learn some common prefixes and suffixes to aid automatic recognition of common letter groups. It was also suggested that it was appropriate at this stage to concentrate on academic skills, and to work on memory strategies and study methods.

The test results illustrate Sam's continuing progress in his academic skills. In some of the tests there could be practice effects because of the brief interval between assessments, but for the Neale Analysis and the Schonell, the alternate form was used for the middle assessment to minimise these effects.

	<u>Reassessment 1</u>	<u>Reassessment 2</u>
Chronological Age	11 y 8 m	11 y 9 m
Auditory Memory		
Sentences	11 y	11 y
Digits forward	7 - 9 y	10 - 11 y
Digits backward	7 - 8 y	9 - 10 y
Visual Memory		
Words	9 - 10 y	10 - 11 y
Numbers	9 - 10 y	< 7 y
Shapes	10 - 12 y	12 y
Word Recognition	8 y 6 m	Not tested
Reading Accuracy	8 y 8 m	9 y 3 m
Reading Comprehension	9 y 8 m	10 y 7 m
Listening Comprehension	13 y 7 m	Not tested
Spelling (Schonell)	7 y 1 m	7 y 5 m
Vocabulary (WISC-R)	Not tested	12 y 2 m

Sam's progress is summarised in Figure 4.7 following.

Fig.4.7 Sam's Assessment Results



#### Follow Up

After an intensive course, SPELD recommends a further twelve months' tuition to consolidate gains and ensure that the student does not slip back. Sam continued to have weekly lessons. At the end of the year he received a good report from school. The teachers noted that he was becoming more confident and involved in the school programme. A conversation with his father the following year showed that Sam had "a lot more confidence" but was "still a bit slow with written work because he was conscious of spelling". The family had bought a computer, and Sam was able to use a word processing package to check his spelling. Except for spelling, he

appeared to be able to keep up with the class programme, supported by continuing weekly lessons with his SPELD teacher.

### Discussion

The early stages of the programme were designed to help Sam "learn how to learn". He appeared able to learn, but had fallen into poor strategies which had not been noticed by his teachers in large classes. Although he had done well at mathematics, he had fallen behind in his language skills. Once a programme was designed individually for him, Sam made considerable progress. Once he had begun to focus on task better (assisted by multisensory techniques and card games), he then worked on reading directly.

Sam's memory performance when he was initially assessed resembled a patient described by Baddeley, Vallar and Wilson (1987), who could comprehend individual words but had difficulty comprehending larger and more complex sentences. With a carefully structured language and reading programme, however, Sam was able to improve his language processing considerably, as the test results show. Sam himself, his family, the SPELD teacher and the school all appeared pleased with his progress. The decision to offer an intensive course, to give him a boost, appears to have been suitable in this case. He is

now able to work along with the regular class programme, except for residual difficulties with spelling.

### Summary

The aim of this chapter has been to illustrate how the SPELD assessment battery functions as a basis for designing individual remedial programmes. The various cases were chosen to represent a range of the age of children who form the bulk of SPELD'S clients, rather than to represent a range of difficulties. Nevertheless, these cases also illustrate a range of difficulties typical of the difficulties for which clients seek SPELD assistance. Many of SPELD'S clients (and indeed the majority of cases of reading difficulty) have problems with phonological awareness, and hence decoding (like Daniel, Michael and Sam). Some have difficulty with coordination (like Michael and Hayden). Older clients often have major problems with self-esteem and self-concept (like James and Hayden) as a result of years of failure (cf. Chapman, 1988; Stanovich, 1986a). Some have unclear speech (like Daniel and Hayden) or are reluctant to use oral language (like Michael). The SPELD approach is to take the assessment results, which are different for each child, and use them to design a programme, which is different for each child.

This chapter has illustrated how SPELD teachers use the assessment results to design a programme, building on the

child's strengths and building up the areas of weakness. In most cases, the client then made progress. If he did not, then perhaps it is understandable (e.g. Hayden's physical and psychological collapse). It must also be remembered that all of these boys are members of the segment of the school population which Clay (1990) described as "very difficult to teach". These cases also illustrate the advantage of having remediation early (cf. Clay, 1979), before they have years of practising ineffective strategies and failure becomes ingrained.

## 5. RESULTS OF THE QUESTIONNAIRE

To ascertain their attitudes towards the SPELD assessment battery, a questionnaire was distributed to twenty practising SPELD teachers from the region. A copy is attached as Appendix A. The return rate of 60% (12/20) was disappointing, but not unexpected in a questionnaire which they had to fill out in their own time and return on their own initiative.

The first questions concerned the years of SPELD teaching experience, the number of pupils at present, the largest number the respondents had had at one time, and the total number of pupils which they had. Results showed that the respondents had generally had only a few years' experience as SPELD teachers. Of the twelve respondents, six had two years' experience or less, three had four to five years' experience, and three had ten to thirteen years' experience. The mode of distributing the questionnaire, via teachers' meetings, may have contributed to this bias, as the majority of the teachers who attend meetings regularly are the less experienced teachers, looking for teaching methods to use with their pupils.

Most SPELD teachers work part-time, and do not have many pupils at any one time. The sample of respondents reflects this situation. With the exception of one teacher who had twenty-one pupils, the respondents had six pupils or less when they completed the questionnaire, and had not exceeded eight pupils at any one time. The total number of pupils generally reflected a combination of the number of pupils they had at one time and their years of experience, so that they ranged from one to forty pupils in total. Although their experience is numerically much smaller than that of a classroom teacher, they obviously get to know their pupils well because they see them individually rather than in groups or classes.

Results for the remainder of the questionnaire are summarised in Table 5.1, which gives the number of responses in each category. In some cases, some of the questions were left unanswered, so that the total number of responses is less than twelve for a few questions.

Table 5.1 Collated results of the questionnaire distributed to practising SPELD teachers.

I consider that the SPELD Test overall helps me to plan and design a programme for a pupil.

Definitely	Reasonably	A little	Very little
8	4	-	-

When I am planning a programme, or considering what to do next, the following parts of the SPELD Test are helpful to the degree I've ticked:

	Very Helpful	Moderately Helpful	Slightly Unhelpful	Very Unhelpful
Lateralisation	4	6	1	1
Gross coordination	3	8	1	0
Fine coordination	3	8	1	0
Balance	4	7	1	0
Eye tracking	3	7	2	0
Alternating tap	3	7	1	0
Auditory memory:				
Sentences	9	3	0	0
Digit span	8	3	1	0
Prose passage	5	4	0	0
Auditory discrimination	9	3	0	0
Phonic skills	8	4	0	0
Writing dictated sentences	7	5	0	0
Syllabification	7	5	0	0
Carver word recognition	9	3	0	0
Rote sequencing	7	5	0	0
Rhyming	7	5	0	0
Sound blending	6	4	0	2

Visual				
discrimination:				
letters	7	4	1	0
words	7	5	0	0
Naming letters	6	6	0	0
Sounding letters	8	4	0	0
Writing letters				
from sounds	8	3	0	1
Delayed visual				
recall	7	4	0	0
Word copying	7	5	0	0
Syntactic sentence				
arrangement	8	4	0	0
Vocabulary	7	5	0	0
Speech	5	6	0	0
Language	6	5	0	0
Spelling	7	5	0	0
Reading accuracy	8	3	0	0
Reading				
comprehension	9	3	0	0
Listening				
comprehension	9	3	0	0

As can be seen from Table 5.1, the questionnaire forced the respondents to choose between "helpful" and "unhelpful" for each section of the battery. Generally the teachers found all the items helpful, particularly the items which appear more closely connected to academic subjects. They may also consider that these tests more directly inform instruction. This approach probably reflects their training and experience, as classroom teachers first and then SPELD teachers. The few teachers

who appear to have taken a strong interest in coordination have done so either because they have had training in early childhood education or other additional training in special education, or because they have taught a SPELD pupil who has outstanding difficulties with coordination, so that they have been compelled to take notice of these.

Generally teachers appeared well satisfied with the battery and found it helpful as a starting point for designing remediations. This result is also not surprising, as their training prepares them to use it, and the selection of items for it is not questioned in their training. Like the battery, the training emphasises neurology, learning strategies and styles, auditory and visual perception and memory, gross and fine coordination, and the component skills which go toward the acquisition of reading and spelling.

It was hoped that this questionnaire would reveal not only the teachers' attitudes to the various sections of the battery, but also their suggestions for improvement to it, and comments on how they used the test results to design a remedial programme for their students. However, not much detail was forthcoming. A questionnaire may not have been the appropriate way to seek these data; an

interactive interview might have served the purpose better.

## 6. DISCUSSION

This chapter has two main purposes: to discuss the SPELD method of assessment and remediation, and to review the cases which have just been presented, to determine to what extent the SPELD approach has enabled progress.

When assessing a reading assessment, several questions are salient. Does the assessment tap skills which research has shown to be required for reading acquisition? How well does it measure them? Do the test results permit the teacher to place students in a remedial programme? Do the test results indicate specific remedial techniques which are required or recommended (or not recommended) with the particular student? These questions will be considered in turn with reference to the SPELD approach, then related to the cases which have been presented.

### 6.1 Skills Needed/ Skills Assessed

Recent reading research has emphasised the interactive nature of the reading process (e.g. Lipson & Wixson, 1991).

"Reading is a complex cognitive skill, consisting of the coordinated execution of a collection of oculomotor, perceptual, and comprehension processes. These include processes that direct the eye from location to location, word-level processes that encode the visual pattern of a word and access its meaning from memory, and text-level processes that compute the semantic, syntactic, and

referential relationships among successive words, phrases, and sentences in a text." (Daneman, 1991, p.513).

Daneman's (1991) definition appears reasonably comprehensive, except that it appears to ignore the phonological aspect of reading, which appears important to reading acquisition (Snowling, 1987) and to reading difficult material (Hulme, 1981).

Converging evidence appears to indicate that reading acquisition is a developmental process, with skilled readers and poor readers at opposite ends of a continuum (Bryant & Bradley, 1985; Mann, Cowin, & Schoenheimer, 1989). Reasons given as to why people fall at one end or the other of this continuum include: verbal deficits (Vellutino, 1979), inappropriate environmental support (Ehri, 1989; Au & Mason, 1981; Heath, 1982), lack of phonological awareness (Bradley & Bryant, 1983), poor visual discrimination (Kavale, 1982; Feagans & Merriwether, 1986), memory problems which probably reflect differences in processing rather than in storage (Daneman & Tardif, 1987), speech and language difficulties (Stackhouse, 1985; Klein, 1985), and neuropsychological problems (Ellis & Young, 1988). Stanovich (1990) considered that reading acquisition involves progressive encapsulation of information (not automaticity); that is, through practice being able to organise progressively larger and more complex units and manipulate them in working memory.

In the majority of cases, problems can be traced to difficulties with word recognition. Because the person spends so much time, effort and attention on trying to find out what the words are, little attention can be given to comprehension (Perfetti, 1985). The problem is not a perceptual one per se, but of combining perception with linguistic processes, and of combining the words encountered on the page with life experience and previously acquired knowledge to produce meaning.

Although the reading acquisition process is not completely understood (Juel, 1991), empirical research has uncovered several components which are needed for acquiring reading skill. Basically, decoding and listening comprehension are necessary (Gough & Tunmer, 1986). Jackson and McClelland (1979) found that listening comprehension accounted for half the variance in reading skill. Listening comprehension becomes an increasingly important factor as reading skill increases, whereas encoding-decoding word recognition processes are most prominent in the variance of reading skill of beginning readers (Daneman, 1991). Unfortunately, if the beginning reader does not acquire a certain level of decoding skill (which appears to depend on phonological awareness), (s)he will be unable to progress to the more advanced levels where decoding becomes less prominent in the variance (but is still necessary). Jorm and Share (1983) found that the ability to read pronounceable

pseudowords such as *troom* (a measure of phonological recoding) was the task which most clearly differentiated good and poor readers, even of high school age. Reading speed increases as the person becomes more fluent in manipulating the code and comprehending the subject matter; increasing speed per se does not contribute to increased comprehension, and indeed may decrease comprehension if it is bought by making fewer fixations.

Reading processes do not merely entail factors within the reader; external, instructional and social processes and language use patterns are also involved. As mentioned in the Introduction, McNaughton (1987) found that high progress readers develop the skills they need by reading, supported and socialized by a responsive environment which considers their needs and interests. On the other hand, low progress readers tend not to develop skills beyond what they have been given in the teaching programme.

So far, we can identify two groups which are at risk for reading difficulties: those with poor listening comprehension, and those with poor decoding skills. The New Zealand method for teaching reading uses a whole language approach, with emphasis on reading for meaning using context clues. Relatively less attention is given to systematic teaching of letter/sound relationships. High progress readers discover the alphabetic principle

for themselves, whereas low progress readers do not. It appears that a teaching programme which emphasises certain elements of reading acquisition while neglecting others can place part of the school population at risk for reading failure.

The other group at risk for problems with reading contains those children whose oral language is not well developed, or those who have problems with listening comprehension for other reasons.

Within the skills of decoding and listening comprehension, other component skills have been uncovered: phonological awareness (e.g. rhyming), syntactic awareness (awareness of language structures) and pragmatic awareness (awareness of word meanings and contexts). Metalinguistic ability (the ability to think about language) feeds into these component skills, and control processing (being able to "shift gears" between one level of meaning and another) and exposure to language activities are seen as prerequisites in the Cognitive-Developmental Model of Reading Comprehension (Tunmer, 1990).

Accordingly, an assessment of reading should examine the skills which have been found to contribute to reading: phonological awareness, syntactic awareness, pragmatic awareness, recoding/decoding (letter/sound

relationships), and listening comprehension. Finally, reading in context should be assessed, to determine which skills the person is using, and whether they are being selected appropriately (Bryant, 1982). As well, Vellutino (1979), Stackhouse (1985) and many others have implicated the role of speech and language difficulties in reading problems, while Hulme (1981) has also shown that there can in some cases be problems because of visual or psychomotor difficulties, and that the latter cannot be discounted as a symptom of a neurological immaturity which could also be manifest in reading difficulty. Verbal memory and vocabulary should also be assessed, as they contribute to listening comprehension. As well, it is necessary to consider environmental factors (Ehri, 1991) such as the support for reading available in the home, and the extent to which the person's learning style (Carbo et al., 1986) is or can be accommodated in the reading programme. These aspects are listed in Table 6.1 following, along with a description of how they are assessed in the SPELD Battery.

Table 6.1 Components of Reading Assessment

<u>Component</u>	<u>In Battery?</u>	<u>How Assessed</u>
Phonological awareness	yes	-p. Rhyme production -r/p. Letter sounds -r. phonic skills -r/p. writing dictated sentences
Syntactic awareness	yes	r. Syntactic sentence arrangement r/p. Speech/lang. assessment
Decoding/Recoding	yes	-r/p. Decoding/Encoding (Neale) -r/p. Writing dictated sentences
Listening comprehension	yes	-r. Questions on passage read to child (Neale) -r. Speech/lang. assessment
Reading accuracy	yes	p. Neale passages
Reading comprehension	yes	Questions on Neale passages child reads
Speech/language	yes	Informal observation according to guidelines
Pragmatic awareness	yes	-Vocabulary test -Speech/lang. assessment
Verbal memory	yes	Auditory memory for sentences and digits
Psychomotor assessment	yes	Coordination tests
Visual perception	yes	Visual discrimination and memory tests
Environmental factors	yes	SPELD History, interview
Learning style	no	While not considered specifically, it emerges from the history and assessment.

Note: For each component in the Table, r. indicates that it is being assessed for reception, and p. indicates that it is being assessed for production, while r/p. indicates that the task requires that the person use the skill both receptively and productively.

From the list in Table 6.1 it appears that the SPELD battery provides coverage of the skills which have been found to contribute to reading acquisition. As well, the SPELD History considers some of the social factors and medical factors (birth trauma, ear infections, eyesight problems, serious illness) which could have a bearing on learning difficulties. Questions are asked about reading in the home, familial reading difficulties, and social difficulties which the child is experiencing, but the assessment does not take cultural factors into consideration.

## 6.2 Measurement Issues

In this regard, the SPELD battery does not fare as well. Many of the items are taken from published, standardised tests. The items are thus removed both from their environment within the original standardised test, and from the standardisation sample. For this collection of items, no reliability or validity information has been collected, other than the construct validity which could be inferred by comparison with the tasks listed in Table 6.1 above. While it appears that there are in most cases enough items to sample a particular skill, and because progress with the cases has appeared to operate in the

expected direction, there appear to be some reliability and validity to the battery, but the battery has not been formally investigated in this way.

Responses recorded on the assessment record form (Appendix D) provide a permanent record of the client's oral, written and drawing performance. The tester is then able to make a detailed analysis of performance before writing the initial report (Appendix E), and a comparison between performances on the assessment and the reassessment before writing the reassessment report (Appendix F).

It would appear that the component samples for most tasks are a reasonable compromise between having a very thorough sample of the behaviour, and conducting an assessment that is of reasonable length and not too tiring for the young client. Reliability of the battery has not, however, been researched. Numerical data are available only for those portions of the battery which employ standardised tests in their entirety (e.g. Carver, 1970; Neale, 1988; Schonell, 1955; WISC-R, 1974). While each of these tests appears to be a reasonable sample of the domains they purport to investigate, no data have been collected in New Zealand.

The use of the Neale Analysis (1988) as a listening comprehension device has no basis, as this test is not designed for that purpose, and the norms supplied do not apply to such a use. The only listening comprehension

test available which has been designed and normed for New Zealand children and young people (aged 7 - 14 years) is the Progressive Achievement Test: Listening Comprehension (Elley & Reid, 1971), which takes forty minutes to administer, uses multi-choice responses, is designed for group use, and is widely used in the schools. It would appear desirable to have an individual listening comprehension measure to accompany the SPELD battery, perhaps using reciprocal teaching (Palincsar & Brown, 1984) for part of the test to make the assessment more dynamic, and to show how active the person's comprehension-monitoring strategies are.

Summing up, there appear to be serious reservations about the measures used in the SPELD battery, especially about the appropriateness of the norms and the reliability of the measures. Although the battery has been in use for nearly twenty years in a form similar to its present testing kit, no formal standardisation has taken place, and the brief commentary which accompanies the testing material could not be described as an adequate manual.

### 6.3 Placement Considerations

Salvia and Ysseldyke (1988) specified a reliability coefficient of .90 as a prerequisite for individual placement decisions. Very few measures afford such

reliability. Certainly not the SPELD battery, whose reliability is unknown.

On the other hand, people do not seek help from SPELD unless they consider that there is a problem. Probably the individual or the family of the individual is the best qualified to decide whether intervention is warranted. After the SPELD assessment, the assessor talks with the parents, discussing the performance on the assessment, and together the assessor and the parents (or the person concerned, in the case of adolescent or adult clients) decide upon a course of action.

There are several possibilities. There may in some cases be no need to do anything, but this is seldom the case. A remedial programme may be designed for the parents to carry out at home with the child, or the assessor may offer suggestions for a joint programme between home and school (with consultation with the school). The child may receive weekly lessons with a SPELD teacher, before or after school or during school hours. There may be a joint programme involving the SPELD and the classroom teacher(s); this is increasingly the case, and appears to work well for all concerned.

Because the decision is discussed rather than imposed, the process appears to work well. Despite its dubious reliability, the battery appears able to indicate performance in a wide range of tasks relevant to success in reading. Thus the battery yields qualitative

information about strategies and processes. Whether this information is more important than the current absence of psychometric data is a moot point. Johnston (1984) contended that the psychometric paradigm was inappropriate to reading assessment. He proposed an individual process-oriented approach, emphasising the learner rather than the instrument, and concurring with Clay's (1979) approaches to reading assessment.

#### 6.4 Instructional Design

The SPELD battery gives the individual the opportunity to demonstrate strength or weakness on a wide range of tasks. The philosophy of SPELD is to use the strengths to build up the weaknesses. For example, if the person gets muddled when trying to sort out the sounds in words, such lessons are supported by written words, so that the person can see what to do.

Because the battery reveals what sort of items the person can handle adequately, and where there is difficulty, the teacher who is to conduct remediation knows where to begin, and what sort of approach to take. In this regard, however, the assessment does not inform instruction as directly as does the interactive diagnostic teaching described by Lipson and Wixson (1991).

The case histories in Chapter 4 showed how suggestions for an instructional programme are developed from the SPELD assessment. These cases will now be briefly reviewed, to illustrate how the assessment findings related to the teaching programme for each student.

#### Case 1: Daniel

Daniel had major difficulties trying to sort out sounds in words, which made reading and spelling hard for him. Because of this difficulty, he had not had much experience of reading, and found school and assignments a struggle.

The assessments showed a continuing but decreasing problem with letter-sound relationships, which showed up in impaired performance in: unclear speech, the Carver Word Recognition Test (1970) when he was younger until he passed the ceiling of this test, and reading accuracy. When his family first approached SPELD (when he was 7 years 11 months), he had little facility with words or sounds: unable to break words into syllables, to find rhyming words, to give sounds for letters or letters for sounds. He could write very few words in isolation or in sentences, and his small reading success (he was already a year behind his age) was attributable mainly to using context. Because his listening comprehension and vocabulary were well ahead of his age (from being read to a lot at home), his reading comprehension was reasonably

good at this stage. Successive assessments revealed a continuing similar pattern of strengths and weaknesses, with gradual progress in decoding, although it continued to be a weak area for him. As reading material became more difficult, the decoding problem came to deter comprehension as well, particularly when he had not had as much practice by this time as his classmates who were better readers.

The teaching programme concentrated on helping Daniel to associate letters and sounds (phonics), to improve his reading and spelling. Each lesson contained reading as well. The teacher presented a stack of books, and he chose what he wanted to read. Because reading was a struggle for him, they took turns reading, first paragraphs, then pages as his proficiency developed, and finally several pages at a stretch. A short book was read at one lesson, a longer book in instalments. If he was particularly enjoying a book, he took it home, and read it in instalments at home. Thus the teaching programme had a double focus: structured language practice to build phonic skills, and reading in context for enjoyment and to practise word attack in its natural setting. Because he was also struggling to complete projects for his Intermediate schoolwork, part of some lessons was also spent sorting out approaches to work, looking up items in reference works, reading reference works together to sort out meaning and summaries, etc.

Successive assessments showed that the approach was working, and teacher and pupil were enjoying the lessons. Unfortunately, Daniel's poor reading attracted the notice of the school reading teacher, who encouraged him to read faster and guess. The SPELD teacher, knowing that he was receiving reading help at school, and not knowing what form the help was taking, stopped working on reading at the SPELD lessons and concentrated on spelling. Unbeknownst to the SPELD teacher (who thought he was getting the idea of using word attack), Daniel stopped using the word attack skills he possessed in reading, and confined his phonological approach to spelling (cf. Bryant & Bradley, 1980). Only after talking to the schoolteachers did she realise what had happened. Unfortunately, this was too late. His last assessment showed that only his spelling had improved, and Daniel had been convinced that reading quickly with guessing was the "right" way to read. The succession of lessons and assessments clearly documents the appropriateness of the SPELD teaching programme to his needs, and the inefficacy of the inappropriate "remediation" attempted by the school. It also sadly illustrates the confusion which can be caused by well-meaning independent remediation programmes taking diametrically opposed approaches, and the importance of working together to reinforce each other's efforts.

### Case 2: Michael

Michael had several problems from his early years on, which made learning difficult for him. He was physically lethargic, inclined to play quietly in his room rather than engage other people in conversation. Persistent ear problems had produced unclear speech (for which he had speech therapy) and contributed to his lack of phonological awareness and therefore problems with decoding and reading. His reading had failed to develop at school, despite a spell of Reading Recovery. On the other hand, his listening comprehension and vocabulary were a little ahead of his age, because his parents had read to him a lot at home.

The teaching programme worked on gross and fine coordination, oral language, phonics, mathematics and card games (to reinforce teaching points in language and mathematics, and to build fine coordination and social skills). The teacher talked with him a lot, because there were a great many aspects of everyday living which he did not appear to understand.

Michael learned phonics very well when the system was taught to him explicitly. Although he had been unable to learn letter-sound relationships in the context of a "whole language programme", he learned well when taught explicitly in a structured way, and this was true of other situations and meanings; he needed to be shown, and to have explanation. Whether it was a pattern of

behaviour which he developed in younger years when he could not hear cannot be shown for certain, but he tended to go into his own world and stop listening. He was a sad and rather solitary little boy.

As well as being lost in language and situations, he was "lost in space". He had difficulties with rhythm and confused left and right. Perhaps for this reason, reversals in his writing persisted well beyond the age when they tend to disappear from most children's writing, making reading and writing difficult.

After a while, his confidence was improving, he was starting to make sense of his world, or to realise when it did not make sense, and to be able to ask questions about it. He took to phonics really well, and his rapidly developing reading also contributed to boost his confidence. His oral language was starting to sparkle with a sense of humour. Some of his previous auditory confusions (e.g. mumps/month) developed into jokes between him and his SPELD teacher.

Reassessment showed improvement in the areas which had been worked on: phonics, reading accuracy, reading comprehension. Rhythm, generating rhyming words and oral language, though improving, were still problematic for him. His reading continued to improve after that, with good word attack, and listening comprehension and confidence improved.

### Case 3: James

James presented with anger, hostility and low self-esteem. Remedial reading classes at school had given "limited assistance". A spell with the university reading clinic had also been unsuccessful, and made the mother feel guilty that she had been unable to help him. By the time his family approached SPELD (when he was 8 years 6 months), his six-year-old brother was reading better than he was, and he was becoming resistant to reading and writing.

Assessment revealed strongly developed, fluent oral language and quick oral comprehension, supported by good vocabulary and syntax. On the other hand, his phonological awareness and decoding were weak, as shown by his results in Word Recognition, Reading Accuracy and Spelling. He had little knowledge of phonics, and would look at the first letter and guess words when reading. His written language had also been hindered by his sensitivity about his unusual right hand, and he was reluctant to write with either hand, or to do anything with his hands. He was rather confused about right and left, because he was naturally right-handed, but had been told to use his left hand (because he was sensitive about his right).

The SPELD teacher decided to use a lot of games and activities where he would be using his hands (both hands), and not to do any reading or writing for a while

until he felt more at ease with her. She used phonic word card games to practise these skills in an enjoyable way. After some months she was able to persuade him to read a simple book, and he began to write dictated phonic sentences. Gradually his attitude improved, and he was willing to persevere with tasks which he found difficult. At reassessment he appeared more relaxed, and was able to joke about his ineffective strategies (such as tuning out or wiggling to escape from difficult tasks). Because of the phonic card games and dictated sentences, word recognition and spelling were improving. Reading accuracy had improved a little, even though not much actual reading had yet been attempted. He was starting to use decoding and self-correcting when reading rather than guessing. Reading comprehension was improving, and he was using comprehension to self-correct. It appeared that he was ready to make good progress in reading, with improved strategies and attitude.

After the reassessment, good progress in attitude and reading continued. Because the progress occurred while he was having SPELD lessons, and not before, it seems reasonable to conclude that the SPELD approach was efficacious.

#### Case 4: Hayden

Like Jesse, Hayden also had developed an attitude problem after years of failure. Unfortunately, Hayden was some

years older, so that he had practised ineffective strategies for longer, and his difficulties were widespread and very severe.

Hayden had difficulties with right-side weakness, and had difficulty right through school. All subjects were difficult for him, and he also had difficulty understanding situations or abstract systems (such as school rules or mathematics), with consequent social problems. His frustrations also found expression in a quick temper, or he became depressed and withdrawn.

Although Hayden used simple vocabulary and structures in his speech, he successfully completed the syntactic sentences (age 12+). Auditory memory was good for repetition, but he was unable to manipulate material in memory. He could isolate initial and final sounds, write sentences to dictation, and discriminate up to four syllables, but had difficulty generating rhyming words, and could not blend sound groups to form words. When he read, he recognised a number of words by sight. When he failed to recognise a word, he looked at the first few letters and said a word appropriate to those, without considering meaning, and unperturbed when what he said did not make sense. He also ignored punctuation. Most scores in his assessment were substantially below his chronological age, and he was ill-equipped for secondary education.

The assessment recommended work on rhyming, coordination, phonics, reading and oral comprehension, including discussion of situations that arose.

Because Hayden hated reading, the teaching programme avoided reading for quite a long time, with lessons spent in discussion and activities to work on auditory memory, comprehension and fine coordination. The teacher read to him, and began phonic instruction using games and later dictated sentences, which he enjoyed. She tried to use reciprocal teaching, to build his ability to manipulate language, but he had difficulty forming questions. She tried referring him to the Talking Books section of the library, but he chose a difficult book and fell asleep while listening to it. She tried to teach him study strategies, but he remained passive, and failed most of his subjects. His attitude to reading remained negative. After these unsuccessful attempts to interest him in various approaches, it is not surprising that the reassessment showed that he was basically stationary. His mother considered that his attitude had improved, but he presented at the reassessment as one who has lost hope. He had, however, improved in rhyming, fine coordination and phonic skills - the areas he had worked on. Reading had not improved, but he had not spent much time or effort on it, and so this outcome is not surprising.

This was an unfortunate case. Attempts to help came far too late, when he was much too far behind, and negative attitudes and ineffective strategies were entrenched.

#### Case 5: Sam

Sam was receiving special tuition at school in reading, mathematics and spelling, but his family considered that he needed additional help, as he was falling behind at school (age 11 years 1 month).

At assessment, he appeared restless and distractible, and his attention appeared to drift (e.g. when listening). Rhyming and phonics were weak, as were auditory and visual memory. Perception of speech appeared inaccurate, and he omitted sounds when writing dictated sentences. Syntax and vocabulary were good, and contributed to his reading comprehension, but both decoding and listening comprehension let him down, particularly decoding. He appeared unaware of his errors, and did not self-correct when reading. He could read easy materials fluently, but lacked strategies for coping with more difficult material.

Noting his auditory and visual difficulties and his problem in maintaining attention, the assessment recommended a multisensory approach.

The teaching programme used a lot of games, employing the physical element to help maintain his attention. The teacher noticed that Sam had difficulty finding words and

distinguishing speech. She began with visual puzzles, printing and layout, rhythm and syllables. Later she worked on phonics and used games to build his ability to hold onto and follow gradually lengthening instructions. She used touch to reinforce visual input, and continued with phonic elements throughout the programme. Writing dictated sentences, he gradually learned to sort out the sequence of sounds in words, and increased his auditory span. Regular conversation also served to improve his listening comprehension.

Gradually his decoding improved, but it took a long time until he began to use context to self-correct his reading. His school report was the best ever, his mother was pleased, he was happier and more confident, and the attention problems had disappeared.

Reassessment showed good improvement in reading and listening comprehension. The Word Recognition Test indicated his progress with understanding letter-sound relationships. Because he was straining to decode, he lost comprehension, and thus needed more practice at reading, so that he could keep track of context. His work was better organised on the page. Oral language was still rather difficult for him, and he still misunderstood instructions at times. The reassessment recommended more work on written language, comprehension and study and research skills. He had largely overcome his initial difficulties, and was ready to move on to

more challenging language material. The supporting skills of coordination, attention and visual recall were much improved, but he still needed practice at oral skills: following instructions, repeating sentences, retelling stories and repeating numbers. An intensive course was recommended, to accelerate his progress so that he could work up to his school level. The school met with the two SPELD teachers who would take the course, and requested help also in music and mathematics. For the intensive course, Sam was released from school to attend SPELD lessons every morning for three weeks, with the two teachers taking alternate days. Both teachers worked on language and reading. One also worked on music and mathematics, the other on coordination. The course was held in the centre of the city, to be convenient for him to come on the bus, to provide practice in coping with a noisy, potentially distracting environment, and to allow for a number of outings. Sam's curriculum was described in Chapter 4 (See also Appendix G). Basically the idea was to provide for experiences to support his growing facility with both oral and written language, integrated with other practice such as reading and mathematics, with natural opportunity for reinforcement. Sam appeared to enjoy the course, and considered it boosted his oral comprehension. Although he was by now rather tired of assessment, he still showed gains in reading and language performance. Discussion with his

father several months later showed that he was now able to participate in the regular school curriculum, having difficulty only with spelling. He had acquired an effective set of language skills, and good study strategies.

This was an effective intervention, showing excellent cooperation between home, school, student and SPELD. All worked well together, with excellent results.

#### 6.5 Summary

It appears from this examination of the assessment that it considers a good range of learning skills, strategies and performance. The aspects of reading coincide well with current research in reading. Reviewing the cases shows that they each had their own programmes, designed for their strengths and needs, and most showed progress. In each case, there was progress in the areas worked on.

## 7. CONCLUSION

Previous chapters have considered current trends in reading theory and empirical research, and in assessment and remediation. The SPELD approach to assessment and remediation of reading difficulties has been reviewed, and illustrated with several cases. This study has, however, been limited in both scope and methodology. Because the SPELD battery has not undergone rigorous development with a manual as recommended by the *Standards for Educational and Psychological Testing* (1985), attempts to assess it psychometrically are bound to be limited. Also, the approach taken in comparing the elements of the SPELD assessment to the findings of current research, is only one manner of assessing validity. Empirical research is needed, to investigate reliability and develop norms. The scope of the research was also limited, in that only five cases were followed, albeit in depth. Larger psychometric and empirical studies are advised.

This chapter will suggest improvements to the SPELD programme for assessment and remediation in order to provide a better service to clients, and consider possibilities for school programmes and SPELD programmes to work together for the maximum benefit of the child. In this regard, the mode of service delivery for SPELD lessons must also be considered, whether at the teacher's

home or at the school, whether during school hours or at other times, and whether once a week, more than once a week, or in an intensive block.

Because each child is different, and children have different needs at different ages, programmes and service delivery will probably always need to be designed individually to suit the needs of the particular case. Such a policy is in keeping with the needs-based remediation which has been advocated for education in New Zealand (Department of Education, 1987). Discussion of the cases in Chapter 4 and Chapter 6 has shown that SPELD programmes are designed individually, and service delivery is arranged according to the needs of the person, as far as environmental constraints will allow.

#### 7.1 Suggested Improvements to the SPELD Assessment

As far as referral is concerned, procedures appear to be improving. For years most referrals to SPELD have been self-referrals, from word-of-mouth recommendations. In the last few years, however, SPELD has been becoming more visible, and more referrals are now coming from other organisations such as schools and the Accident Compensation Corporation.

The history form appears to function well as an initial screening, to alert the tester to various possibilities, and show the support for reading in the home. It also

provides a preliminary list of the academic and social difficulties which the person has.

The conclusion reached in previous chapters is that the SPELD assessment method is a reasonable compilation of the tasks and components which should be examined for the most part. It provides for a good sized sample of the various behaviours, samples behaviours that have been found to contribute to reading acquisition, and leads to the development of helpful instructional programmes. As an indication of strategies and processes which the person is using, the assessment works fairly well. Absent from the assessment, however, is the classroom observation recommended by Tindal and Marston (1986), and therefore an analysis of the matching between the child and the classroom reading programme (Lipson & Wixson, 1991) is not facilitated. Also absent is a section using interactive testing (Carney & Cioffi, 1990) or diagnostic teaching (Lipson & Wixson, 1991), to provide empirical evidence that the use of a particular teaching approach is suited to the person being assessed.

There are also psychometric points of concern. The cognitive assessment using the WISC-R (Wechsler, 1974) shows different facets of the person's functioning (Lezak, 1988), but is distanced from the New Zealand of the 1990s. From the point of view of academic

remediation, the Arithmetic and Vocabulary subtests are the most salient, but Das (1989) cautioned against taking subtests out of context out of a general measure.

There are other psychometric concerns as well. First there is the problem that much of the material consists of items which have been taken from other published tests and put into a new context. While the *type* of item (e.g. syntactic sentence arrangement) appears to have a valid role in screening reading difficulties, taking items from published tests is not to be condoned.

The next major concern is the absence of reliability data. Although in practice the battery appears to function quite well as a basis for assessing difficulties and designing interventions, yet the psychometric properties are unknown. While SPELD has thousands of results from people who consider that they have learning disabilities, no norms have been collected from normal samples, to discover how average and good readers of various ages perform. Empirical studies should be conducted to document the reliability and validity of the components. Empirical studies are also needed to generate data for norms or criterion cut-off points. New Zealand items should be developed, or previously published items formally incorporated. For some tasks, it is necessary to specify criteria more fully. Where a test is legitimately used in its entirety (such as the

Carver Word Recognition Test, the WISC-R, the Schonell, and the Neale Analysis - Revised), New Zealand norms should be developed, or criteria specified for some tasks.

Although the Neale Analysis (Revised, 1988) is being used by SPELD to assess listening comprehension, the norms given are for reading comprehension, and the test is not designed for testing listening comprehension. Because listening comprehension is very salient to reading and learning, the battery needs a test of listening comprehension, and one will need to be found (and normed for New Zealand) or designed. A similar format to the Neale reading passages with questions is the traditional test of listening comprehension, but there are other possibilities. The person could be given instructions to follow, or asked to indicate the main points of a passage, or reciprocal questioning (Palincsar & Brown, 1984) could be used to determine how much performance is improved by assistance. Or the measure could contain several different types of item, as indicated.

Some of the subtests need updating. Although the psychomotor section helps in assessing coordination, there are more recent, normed compilations (e.g. see Wall, 1982). Table 7.1 following lists possible changes to the various subtests in the battery.

Table 7.1 Proposed Changes to the SPELD Battery

1. <u>Psychomotor Skills.</u>	See Wall (1982) for tests of clumsiness. Also test spatial concepts, right-left orientation.
2. <u>Auditory Skills.</u>	
- memory for sentences	Test as at present, except develop New Zealand items and norms.
- digit span	Test forward and backward, to assess span and manipulation of material. While not a reading skill, can be helpful for mathematics.
- auditory discrimin.	Of dubious value.
3. <u>Tests of Phonological Awareness.</u>	
- phonic skills	Retain.
- dictated sentences.	Retain, replacing items taken from other tests.
- syllabification	Retain the type of test. 5 syllables maximum.
- Word Recognition Test	Retain. Very helpful. It would be helpful to design a similar more advanced test, as many clients are above ceiling.
- rhyming	Retain. Add a rhyme recognition task, to be given to younger children, and to those who have difficulty with rhyme production.
- sound blending/ decoding	Retain.
- letter sounds	Retain.
4. <u>Rote Sequencing.</u>	Retain.
5. <u>Visual Skills.</u>	

- visual discrimination      Retain but develop norms.
  - letters and sounds          Retain.
  - visual memory                Retain to see strategies.
  - word copying                 Retain.
6. Language Skills.
- syntactic sentences         Retain but develop own items and norms.
  - vocabulary                    Retain a vocabulary production test but use words from a New Zealand frequency list if possible. Develop New Zealand norms.
  - speech/language assessment      Retain but develop fuller guidelines.
7. Spelling.
- Schonell is outdated. Proof-reading Tests of Spelling is a New Zealand test, but could prove cumbersome to administer. The Neale Analysis has a diagnostic productive spelling test which would assess the child's skills. If norms are desired, they would have to be developed.
8. Reading Skills.
- Use the Neale Analysis (1988) but develop New Zealand norms. Develop and norm a New Zealand listening comprehension test.

From this chart it is apparent that there is much that is worth retaining. It is also apparent that there is much work to do in test development. A research programme is beginning in Auckland to develop assessment materials and training programmes for SPELD personnel, with input from researchers at Auckland and Massey Universities.

Ballard (1987) argued against norm-based psychological testing based on theoretical constructs and against classification in assessment. He argued in favour of "ecologically valid" assessment which focussed on actual learning behaviours and sampled them adequately, an assessment credible to the clients, and leading to a maximum chance of remediation for the child. These points will be considered in turn, as they apply to the SPELD assessment.

SPELD does use psychological testing, including cognitive assessment (WISC-R, 1974). However, the results from the WISC-R (if given) are used in the Manawatu primarily as a sample of behaviour and learning strategies.

SPELD classifies the child's strengths and weaknesses. The assessment is done as a basis for a possible instructional programme, rather than for attaching a label to the child. The decision on whether to proceed and how to proceed is made jointly with the family, not imposed by SPELD.

In "ecologically valid" assessment, the child is to be seen in his environment (e.g. home, classroom or playground) rather than in a special testing room. While SPELD testing is often done in a testing room, this is often a room in the tester's house, and the parents are present during the SPELD battery. The child is seen in only the one environment for assessment, but often the

SPELD teachers see the child at school and may visit the child and family at their home.

Many of the tasks in the SPELD battery are relevant to reading acquisition, but some (such as letters and sounds) may be new to the child. The battery has a considerable number of letter/sound items, however, and so the child has an opportunity to demonstrate how (s)he copes with learning a new skill.

The assessment appears credible to the clients, who often state how pleased they are that they have learned so much about how their child learns. The questionnaire in Chapter 5 also illustrated that the assessment is credible to practising SPELD teachers.

As shown in Chapter 4 and Chapter 6, the assessment leads logically to an individual instruction programme. This is one reason why it is so credible to practising SPELD teachers, who have had experience in changing assessment results into teaching practice. Incorporating procedures suggested by Carney and Cioffi (1990) and Lipson and Wixson (1991) would strengthen the battery's ability to inform instruction. In the SPELD training programme (Durbridge, 1991), SPELD teachers are encouraged to continue to assess students as they get to know them, and the procedures advocated by Lipson and Wixson (1991) could well be implemented in this portion of SPELD assessment.

## 7.2 Suggested Improvements to SPELD Teaching Programmes.

As indicated in Chapters 4 and 6, the SPELD programme of assessment and remediation appears to function well.

The cases illustrate well how much better the programmes function if there is good cooperation between the various teachers (school and SPELD), as there was in the case of Sam. Conversely, the example of Daniel illustrates how much harm can be done if the various teachers are not working together. Fortunately, the trend is for more school teachers to receive SPELD training or lectures, and for more SPELD teachers to be accepted as a working partner in helping the child. More and more, SPELD assessment reports are being shared with schools, and SPELD lessons are being given during school hours, either at the schools or at the teacher's home. There is great variation. Some schools are happy to release children for intensive courses. Other schools consider that the child needs to have a full classroom programme, and so lessons are given after school or before school. Factors to consider are: the age of the child, the gap between the child's level and the level of the class, the wishes of the parents and the needs of the child, and the availability of the teacher's time.

Now that cooperation between schools and SPELD is increasing, it may be possible to investigate the psychometric properties of the battery using a stratified

sample of average to good readers in a selection of age ranges. These results could then be compared with the results from poor readers in SPELD archives, to determine empirically whether the battery can in fact discriminate between good and poor readers. To improve the assessment's ability to inform instruction, diagnostic teaching (Lipson & Wixson, 1991) should be incorporated, to investigate instructional decisions interactively and empirically. The new spirit of cooperation between schools and SPELD may also permit classroom observation by the SPELD teacher.

SPELD has been offering needs-based remediation since the 1970s. With improving relations between SPELD and the schools, the SPELD programme of assessment and remediation should be able to provide a better service.

Appendix A. Questionnaire for SPELD Teachers

1. The SPELD Test

1. I have been a SPELD teacher for \_\_\_\_\_ years.
2. At present I am taking \_\_\_\_\_ pupils. Over the years I have had approximately \_\_\_\_\_ pupils altogether.
3. I consider that the SPELD Test overall helps me to plan and design a programme for a pupil.

Definitely	Reasonably	A little	Very little
[ ]	[ ]	[ ]	[ ]

4. When I am planning a programme, or considering what to do next, the following parts of the SPELD Test are helpful to the degree I've ticked:

	Very Helpful	Moderately Helpful	Slightly Unhelpful	Very Unhelpful
Lateralisation	[ ]	[ ]	[ ]	[ ]
Gross coordination	[ ]	[ ]	[ ]	[ ]
Fine coordination	[ ]	[ ]	[ ]	[ ]
Balance	[ ]	[ ]	[ ]	[ ]
Eye tracking	[ ]	[ ]	[ ]	[ ]
Alternating tap	[ ]	[ ]	[ ]	[ ]
Auditory memory:				
Sentences	[ ]	[ ]	[ ]	[ ]
Digit span	[ ]	[ ]	[ ]	[ ]
Auditory discrimination	[ ]	[ ]	[ ]	[ ]
Phonic skills	[ ]	[ ]	[ ]	[ ]
Dictated sentences	[ ]	[ ]	[ ]	[ ]
Syllabification	[ ]	[ ]	[ ]	[ ]

Carver	[ ]	[ ]	[ ]	[ ]
Rote sequencing	[ ]	[ ]	[ ]	[ ]
Rhyming	[ ]	[ ]	[ ]	[ ]
Sound blending	[ ]	[ ]	[ ]	[ ]
Visual discrimination				
Letters	[ ]	[ ]	[ ]	[ ]
Words	[ ]	[ ]	[ ]	[ ]
Naming letters	[ ]	[ ]	[ ]	[ ]
Sounding letters	[ ]	[ ]	[ ]	[ ]
Writing letters from sounds	[ ]	[ ]	[ ]	[ ]
Delayed visual recall	[ ]	[ ]	[ ]	[ ]
Word copying	[ ]	[ ]	[ ]	[ ]
Syntactic sentences	[ ]	[ ]	[ ]	[ ]
Vocabulary	[ ]	[ ]	[ ]	[ ]
Speech	[ ]	[ ]	[ ]	[ ]
Language	[ ]	[ ]	[ ]	[ ]
Spelling	[ ]	[ ]	[ ]	[ ]
Reading Accuracy	[ ]	[ ]	[ ]	[ ]
Reading Comprehension	[ ]	[ ]	[ ]	[ ]
Listening Comprehension	[ ]	[ ]	[ ]	[ ]
Comments:				

## 2. Assessment Reports

- In order to design a programme for a child, I prefer to receive:
  - [ ] a photocopy of the test paper plus comments
  - [ ] a typed analysis of the child's performance
  - [ ] a photocopy of part of the test paper plus a typed report (Please specify which sections you would like to

see)

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other (Please specify)

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2. To help me design a programme, I would like the final section of the report to contain (Tick as many as you would like):

- a description of the child
- a list of the child's strengths
- a list of the child's weaknesses
- a few suggestions for the teacher
- other (Please specify):
- 
- 
- 

3. Additional comments:

3. Analysis

For the sections of the Test which you have found helpful, can you give examples of how that *particular* section gave you *particular assistance* in programme planning? Was there information you needed which was not given? How did you set about discovering what you needed to know?

NAME: \_\_\_\_\_

	TEST	M1	M2	M3	M4	M5	M6	M7	M8	TEST
GROSS COORDINATION										
FINE COORDINATION										
AUDITORY DISCRIMINATION										
AUDITORY MEMORY										
VISUAL DISCRIMINATION										
VISUAL MEMORY										
LETTER SOUNDS										
LETTER COMBINATIONS										
RDG COMPREHENSION										
LSTG COMPREHENSION										

Appendix C. SPELD History Form

SPELD  
(SPECIFIC LEARNING DISABILITIES ASSOCIATION)

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CONFIDENTIAL

HISTORY FORM

Name of person with learning problem: \_\_\_\_\_

Date of birth: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone - Home: \_\_\_\_\_ Business: \_\_\_\_\_

Present School: \_\_\_\_\_ Class: \_\_\_\_\_

Present Employment: \_\_\_\_\_

Father's Initials: \_\_\_\_\_ Occupation: \_\_\_\_\_

Mother's Initials: \_\_\_\_\_ Occupation: \_\_\_\_\_

Guardian's Name (if applicable): \_\_\_\_\_

Parent's address if different from above: \_\_\_\_\_

List of other children in the family:

Names: \_\_\_\_\_ Ages: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Name of family doctor: \_\_\_\_\_ Address: \_\_\_\_\_

PATTERNS OF DEVELOPMENT

Injury, illness, smoking during pregnancy (please describe):

\_\_\_\_\_

\_\_\_\_\_

Birth (normal, premature, prolonged labour, instruments used etc.)

---

Was the baby breast fed? \_\_\_\_\_ How long? \_\_\_\_\_

At what age did the child walk unaided? \_\_\_\_\_

At what age did the child understand sentences of a few words? \_\_\_\_\_

At what age was the child speaking a simple sentence of 2-3 words?  
\_\_\_\_\_

Your estimate of the child's intelligence (above average, average,  
below average): \_\_\_\_\_

Has the child been assessed by the Psychological Services? \_\_\_\_\_

Psychologist's name: \_\_\_\_\_ Date: \_\_\_\_\_

Has hearing been assessed? \_\_\_\_\_ Date: \_\_\_\_\_ Result: \_\_\_\_\_

Has vision been assessed? \_\_\_\_\_ Date: \_\_\_\_\_ Result: \_\_\_\_\_

Present health: \_\_\_\_\_

Serious illnesses, operations, accidents, allergies:  
\_\_\_\_\_

Did high fever accompany any of these? \_\_\_\_\_

Patterns at school and socially

Did the child attend Play Centre? \_\_\_\_\_ Kindergarten? \_\_\_\_\_

Any other play group? \_\_\_\_\_

Age of starting school: \_\_\_\_\_ No. of schools attended: \_\_\_\_\_

Attendance at school regular: \_\_\_\_\_ Progress at school (when reading  
is not considered): Poor, satisfactory, good, very good: \_\_\_\_\_

Subjects the child likes: \_\_\_\_\_ Dislikes: \_\_\_\_\_

Games that are particularly enjoyed: \_\_\_\_\_

Hobbies that are particularly enjoyed: \_\_\_\_\_

Group activities (Cubs, Sunday School, Y.M.C.A. etc.) \_\_\_\_\_

When the child plays with others, is he/she usually the leader, the follower, alone: \_\_\_\_\_

Special strengths (e.g. in art, music, arithmetic, science, phys.ed)

---

Special weaknesses (e.g. in arithmetic, manual skills, language, writing, speech, balance, sport, coordination)

---

Would your child's reading compare with children of -

same age: \_\_\_\_\_ 1 year younger \_\_\_\_\_ 2 years younger \_\_\_\_\_

3 or more years younger: \_\_\_\_\_

Is the child good in use of spoken language: \_\_\_\_\_

Very interested in words: \_\_\_\_\_

Very interested in T.V. or illustrated books: \_\_\_\_\_

Has a good memory for general knowledge gained from TV or radio or through other media: \_\_\_\_\_

Has a poor memory for reading words: \_\_\_\_\_

Do you read or tell the child stories (often, sometimes, seldom, never): \_\_\_\_\_

Is the child keen to have stories read to him at home: \_\_\_\_\_

What explanation has been given (by teachers, doctors, psychologists) for the learning difficulty:

---

Who has given the explanation: \_\_\_\_\_

Are there any special difficulties the child experiences as a result of the learning problem: \_\_\_\_\_

Have other members on either side of your family (uncles, aunts etc.) ever had a severe reading, language or spelling difficulty:

---

If so, please give details (relationship etc.)

---

Here is a list of personal qualities which some children show. Please underline those which apply to your child:

Lacks concentration, easily distracted, aggressive, over-active, restless, acts the "dare-devil", engages in attention-seeking behaviour, feels himself to be a failure, plays poorly with others, difficult to manage at home, behaviour problems at school, "dreamy", "blows his top" easily, hates school, refuses to go to school, withdrawn, sad, unhappy, seems depressed, difficulty in mixing, fearful, nightmares, wets the bed, soiling problems, sleeps badly, seems "odd", different from others.

Comments: \_\_\_\_\_

Any other information not mentioned which you consider important:

---

Have you approached the school about the problem? \_\_\_\_\_ If so, when did you go, and what happened?

---

Would you like someone from SPELD to go with you to the school to discuss the problem? \_\_\_\_\_

Have agencies other than the school been approached for help?

---

If so, who were approached and what was the outcome?

---

Is the child currently receiving special help for his problem?

---

If yes, please describe: \_\_\_\_\_

What are your views as to the possible causes of the child's

difficulties: \_\_\_\_\_

I agree to this information being used by the SPELD Association, but understand that no names will be used without my permission.

---

(Signed)

Please enclose a sample of your child's written language with this application.

Appendix D. SPECIFIC LEARNING DISABILITIES

ASSESSMENT RECORD FORM

NAME: \_\_\_\_\_ DATE OF BIRTH: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ AGE: \_\_\_\_\_

I.Q. RATING: \_\_\_\_\_ V \_\_\_\_\_ P \_\_\_\_\_ F.S.C. \_\_\_\_\_

SCHOOL: \_\_\_\_\_ CLASS: \_\_\_\_\_ PRINCIPAL: \_\_\_\_\_

PRESENT AT TEST: \_\_\_\_\_ CLASS TEACHER: \_\_\_\_\_

REPORTS TO BE SENT TO: \_\_\_\_\_

TUITION SESSIONS ATTENDED: \_\_\_\_\_

LATERALISATION

Card deal: \_\_\_\_\_ Easy reach: \_\_\_\_\_

Wool wind: \_\_\_\_\_ Energetic reach: \_\_\_\_\_

Circle cut/direction: \_\_\_\_\_ Step: \_\_\_\_\_

Writing: \_\_\_\_\_ Ball throw: \_\_\_\_\_

Head turn: \_\_\_\_\_ Ball catch: \_\_\_\_\_

Spy glass: \_\_\_\_\_ Ball kick: \_\_\_\_\_

Pin hole: \_\_\_\_\_

Results

Hand: \_\_\_\_\_ Eye: \_\_\_\_\_

Foot: \_\_\_\_\_ Ear: \_\_\_\_\_

COORDINATION

Integration & balance: Hop: \_\_\_\_\_ Skip: \_\_\_\_\_ Tandem: \_\_\_\_\_

\_\_\_\_\_ Fingers to thumb: \_\_\_\_\_ Finger to nose: \_\_\_\_\_

Results: Gross: \_\_\_\_\_

Fine: \_\_\_\_\_

DIRECTIONAL

Body image - Self: \_\_\_\_\_ Others: \_\_\_\_\_

Gross spatial: \_\_\_\_\_

Eye tracking: \_\_\_\_\_ Alternating tap: \_\_\_\_\_

Geometric copying: (Reverse page 1) \_\_\_\_\_

AUDITORY PERCEPTION

AUDITORY MEMORY: Sentences: \_\_\_\_\_

\_\_\_\_\_ Age: \_\_\_\_\_

Digit span: Forward: \_\_\_\_\_ Approx. age: \_\_\_\_\_

Backward: \_\_\_\_\_ Approx. age: \_\_\_\_\_

AUDITORY DISCRIMINATION

1 \_\_\_\_\_ 5 \_\_\_\_\_ 9 \_\_\_\_\_ 13 \_\_\_\_\_ 17 \_\_\_\_\_ 21 \_\_\_\_\_

2 \_\_\_\_\_ 6 \_\_\_\_\_ 10 \_\_\_\_\_ 14 \_\_\_\_\_ 18 \_\_\_\_\_ 22 \_\_\_\_\_

3 \_\_\_\_\_ 7 \_\_\_\_\_ 11 \_\_\_\_\_ 15 \_\_\_\_\_ 19 \_\_\_\_\_ 23 \_\_\_\_\_

4 \_\_\_\_\_ 8 \_\_\_\_\_ 12 \_\_\_\_\_ 16 \_\_\_\_\_ 20 \_\_\_\_\_ 24 \_\_\_\_\_

PHONIC SKILLS: Beginning errors: \_\_\_\_\_

Middle errors: \_\_\_\_\_

End errors: \_\_\_\_\_

Consonant blend errors: \_\_\_\_\_

PHONETIC SEQUENCING (writing dictated sentences): Age level: \_\_\_\_\_

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

AUDITORY SYLLABIFICATION \_\_\_\_\_

WORD RECOGNITION (Carver): Age: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Analysis of errors: \_\_\_\_\_

\_\_\_\_\_

ROTE SEQUENCING: Alphabet: \_\_\_\_\_ Months: \_\_\_\_\_  
Days of week: \_\_\_\_\_ Arithmetic: \_\_\_\_\_  
Time: \_\_\_\_\_  
Broken sequencing: \_\_\_\_\_

RHYMING: \_\_\_\_\_  
Sound blending: \_\_\_\_\_  
Decoding: \_\_\_\_\_

VISUAL PERCEPTION

Errors in letter discrimination: \_\_\_\_\_  
Errors in word discrimination: \_\_\_\_\_  
Naming lower case letters: Errors: \_\_\_\_\_  
Naming upper case letters: Errors: \_\_\_\_\_  
Sounding letters: Errors: \_\_\_\_\_  
Writing letters from sounds: \_\_\_\_\_  
\_\_\_\_\_

DELAYED VISUAL RECALL (Reverse page 3)

WORD COPYING Age level: \_\_\_\_\_ Span: \_\_\_\_\_ Time: \_\_\_\_\_

1. _____	7. _____
2. _____	8. _____
3. _____	9. _____
4. _____	10. _____
5. _____	11. _____
6. _____	12. _____

SYNTACTIC SENTENCE ARRANGEMENT: Age level: \_\_\_\_\_

A \_\_\_\_\_  
B \_\_\_\_\_  
C \_\_\_\_\_

VOCABULARY (WISC-R) (Reverse page) Vocabulary age: \_\_\_\_\_

SPEECH: \_\_\_\_\_

\_\_\_\_\_

LANGUAGE: \_\_\_\_\_

\_\_\_\_\_

SPELLING (Schonell) Spelling age: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Analysis of spelling errors: \_\_\_\_\_

\_\_\_\_\_

ORAL READING (Neale A or B)

( ) \_\_\_\_\_

\_\_\_\_\_

Score: \_\_\_\_\_

Observation: \_\_\_\_\_

COMPREHENSION (tick): \_\_\_\_\_ Score: \_\_\_\_\_

( ) \_\_\_\_\_

\_\_\_\_\_

Score: \_\_\_\_\_

Observation: \_\_\_\_\_

COMPREHENSION (tick): \_\_\_\_\_ Score: \_\_\_\_\_

( ) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ Score: \_\_\_\_\_

Observation: \_\_\_\_\_

COMPREHENSION (tick): \_\_\_\_\_ Score: \_\_\_\_\_

Total Comprehension Score: \_\_\_\_\_ Total Reading Score: \_\_\_\_\_

Comprehension Age: \_\_\_\_\_ Reading Age: \_\_\_\_\_

LISTENING COMPREHENSION (Neale A.B.C.)

Tick

Score

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

Total: \_\_\_\_\_ Listening Comprehension Age: \_\_\_\_\_

COMMENTS:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

SUMMARY:

Chronological Age: \_\_\_\_\_ Mental Age: \_\_\_\_\_

Auditory Memory - Sentences: \_\_\_\_\_

- Digits Forward: \_\_\_\_\_ Reverse: \_\_\_\_\_

Word Recognition Age: \_\_\_\_\_

Visual Memory: \_\_\_\_\_

Vocabulary Age: \_\_\_\_\_

Spelling Age: \_\_\_\_\_

Reading Age: \_\_\_\_\_

Reading Comprehension Age: \_\_\_\_\_

Listening Comprehension Age: \_\_\_\_\_

Arithmetic Age: \_\_\_\_\_

TESTER: \_\_\_\_\_  
\_\_\_\_\_

DATE: \_\_\_\_\_

Appendix E. S.L.D. ASSESSMENT REPORT

as administered to:

NAME \_\_\_\_\_ DATE \_\_\_\_\_  
ADDRESS \_\_\_\_\_ AGE \_\_\_\_\_  
\_\_\_\_\_

The SPELD Assessment consists of a number of measures of both school attainment and assessment of difficulties affecting attainment. The assessment is in two parts.

Part A: Results

These tests are designed to assess underpinning problems. That is, whether or not the child's ability is intact in the areas which support academic learning.

LATERALITY

A series of tests to determine which hand, eye, ear and foot is preferred. When laterality is mixed or confused children may have difficulties in some school activities.

Hand \_\_\_\_\_ Eye \_\_\_\_\_ Foot \_\_\_\_\_ Ear \_\_\_\_\_

COORDINATION, BALANCE AND EYE TRACKING

These measure the child's ability to engage in physical activities, and particularly to write easily and legibly. Satisfactory eye tracking is required for a child to be able to read and write.

Gross \_\_\_\_\_ Fine \_\_\_\_\_ Balance \_\_\_\_\_

SPACE AND DIRECTION

Activities which determine the child's ability to distinguish left from right, carry out directional instructions and relate them to people or objects, and to copy simple shapes.

Body image - Self: \_\_\_\_\_ Others: \_\_\_\_\_

Spatial concepts: \_\_\_\_\_ Geometric copying: \_\_\_\_\_

Fingers to thumb: \_\_\_\_\_ Finger to nose: \_\_\_\_\_

Eye tracking: \_\_\_\_\_

MEMORY (Auditory and Visual)

The child's ability to remember dictated sentences and numbers (forwards and backwards) is tested as well as the ability to remember visually presented information. They are measured in years and are an important attribute underlying all learning.

Auditory

Sentences (Age) \_\_\_\_\_ Numbers forward \_\_\_\_\_ Approx.age \_\_\_\_\_

Numbers reverse \_\_\_\_\_ Approx.age \_\_\_\_\_

Visual

Shapes \_\_\_\_\_ Numbers \_\_\_\_\_ Words \_\_\_\_\_

Comment \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

DISCRIMINATING WORD PAIRS

This measures the ability to distinguish between pairs of similar sounding words.

Errors \_\_\_\_\_

\_\_\_\_\_

PHONIC SKILLS

The ability to recognise and repeat sounds in various positions in words.

Beginning errors \_\_\_\_\_

Middle errors \_\_\_\_\_

End errors \_\_\_\_\_

Consonant blend errors \_\_\_\_\_

WRITING DICTATED SENTENCES

This test requires the ability to remember, in the correct order, verbal instructions and write them in sequence. Correct spelling is not required for this test.

Poor      Satisfactory      Good      Very Good      Age level \_\_\_\_\_

AUDITORY SYLLABIFICATION

The ability to break words into syllables. This helps the child to develop skills necessary in spelling and in reading.

Poor                      Satisfactory                      Good                      Very good

VISUAL DISCRIMINATION

The child must be able to discriminate between pictures, shapes, letters and words and be able to name and sound the letters.

Errors in discrimination of letters: \_\_\_\_\_

Errors in discrimination of words: \_\_\_\_\_

Errors in naming letters: \_\_\_\_\_

Errors in sounding letters: \_\_\_\_\_

Errors in writing letters from sounds: \_\_\_\_\_

ROTE SEQUENCING

The ability to remember "by heart" commonly needed information.

Alphabet \_\_\_\_\_ Days \_\_\_\_\_ Months \_\_\_\_\_

Time \_\_\_\_\_ Rote counting \_\_\_\_\_ Broken sequence \_\_\_\_\_

Arithmetical concepts \_\_\_\_\_

RHYMING

This is to test the child's ability to rhyme words, which assists in spelling.

Poor                      Satisfactory                      Good                      Very good

SOUND BLENDING AND DECODING

Tests the ability to blend or encode sounds into words or break words into sounds.

Poor                      Satisfactory                      Good                      Very good

WORD COPYING

Tests the speed and accuracy of copying a given list of words.

No. of words \_\_\_\_\_ Time \_\_\_\_\_ Span \_\_\_\_\_

Test age level \_\_\_\_\_

SENTENCE ARRANGEMENT

The arrangement of words into sentences demonstrates the child's ability to construct a sentence.

Poor                    Satisfactory                    Good                    Very good

SPEECH

Poor                    Satisfactory                    Good                    Very good

Comments \_\_\_\_\_  
\_\_\_\_\_

LANGUAGE

Comments \_\_\_\_\_  
\_\_\_\_\_

Part B: Age Scores for Attainment

These tests are standardised attainment tests which assess the level at which a child performs compared with children of the same age.

WORD RECOGNITION (Carver)

The child is required to differentiate carefully between a series of similar looking or sounding words.

Examples of errors \_\_\_\_\_ Age \_\_\_\_\_

VOCABULARY

This result is obtained from the vocabulary test administered during the Wechsler intellectual assessment.                    Age \_\_\_\_\_

SPELLING (Schonell)

A graded list of words is read to the child, who is required to write them correctly.                    Age \_\_\_\_\_

Types of errors \_\_\_\_\_

READING ANALYSIS (Neale)

Graded stories are read aloud by the child and errors are scored.

Comments

---

\_\_\_\_\_ Reading Age \_\_\_\_\_

ORAL READING COMPREHENSION

Questions are then answered concerning the stories. Age \_\_\_\_\_

Comments

---

---

ORAL LISTENING COMPREHENSION

The tester reads graded stories to the child, who answers questions.

Comments \_\_\_\_\_ Age \_\_\_\_\_

---

---

FURTHER COMMENTS OR REFERRALS

Name: \_\_\_\_\_

TEST SCORES

Chronological Age	_____	Word Recognition	_____
Auditory Memory		Vocabulary	_____
Sentences	_____	Spelling	_____
Digits forward	_____	Reading Accuracy	_____
Digits reverse	_____	Reading Comp.	_____
Visual Memory		Listening Comp.	_____
Shapes	_____	Arithmetic	_____
Numbers	_____		
Words	_____		

SUMMARY

(presentation, relevant past history, major strengths and weaknesses, areas for remediation, reassessment due)

TESTER: \_\_\_\_\_ DATE: \_\_\_\_\_

\_\_\_\_\_

Appendix F. SUMMARY OF SPELD REASSESSMENT

DATE: \_\_\_\_\_ AGE AT RETEST: \_\_\_\_\_

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

S.L.D. TEACHER: \_\_\_\_\_

ATTENDANCE: \_\_\_\_\_ LENGTH OF LESSON: \_\_\_\_\_

TIMES WEEKLY: \_\_\_\_\_ NO. OF WEEKS: \_\_\_\_\_

	<u>PREVIOUS LEVEL</u>	<u>RETEST LEVEL</u>
Chronological Age		
Auditory Memory -		
Sentences		
Digits forward		
Digits reverse		
Visual Memory		
Word Recognition		
Vocabulary		
Spelling		
Reading		
Oral Comprehension		
Listening Comprehension		
Arithmetic		

COMMENTS AND RECOMMENDATIONS

Appendix G. Intensive Course Report.

SPELD (MANAWATU)

INTENSIVE COURSE

[Details of student]

The teaching approach selected for this pupil was primarily:

- auditory                       visual                       multisensory  
 linguistic                       whole language/language experience

OBJECTIVES

Decoding:

- to introduce the concepts and to perfect the skills that underlie the reading process  
 to develop automatic recognition and response to language symbols  
 to increase basic sight vocabulary  
 to improve fluency and accuracy  
 to eliminate the following high frequency errors:  
 omissions                       additions                       substitutions  
 hesitations                       repetitions

Encoding:

- to develop an automatic recognition and response to sounds and their corresponding language symbols  
 to develop automatisisation and accuracy in spelling through the use of patterns, awareness of rules and generalisations and the emphasis of specific elements.

Word Attack Skills:

- to increase word attack skills through syllabification  
 to increase word attack skills through the use of affixes and bound morphemes  
 to increase word attack skills through word synthesis  
 to increase word attack skills through discrimination of homonyms

Sequencing:

- to develop the ability to sequence:  
 pictures to tell a story  
 words to form a complete sentence  
 sentences to form a paragraph  
 to follow a sequence of oral and/or written directions

Reading Comprehension:

- to develop information seeking techniques  
 to train scanning strategies  
 to increase reading power by emphasising attention to detail  
 to improve the ability to abstract the main ideas  
 to increase reading speed without loss of accuracy

Listening Skills:

- to develop the ability to attend, relate and interpret receptive language

Dictionary Work and Vocabulary:

- to learn the alphabet sequence through rote memory
- to develop the ability to alphabetise words
- to develop written vocabulary through experience and practical application

Oral Expression:

- to increase oral vocabulary through experience and practical usage
- to increase the ability to organise thoughts for effective and meaningful speech
- to develop and increase self confidence
- to develop the ability to interact in group discussions

Handwriting:

- to train fine motor coordination
- to develop clear letter formation
- to foster fluency
- to increase neatness, organisation and legibility of present style

Dictation:

- to reinforce and encourage the practical application of handwriting and encoding skills in continuous writing

Syntax: to develop a knowledge of:

- word categories and their functions
- simple sentence structure (e.g. agent-action-object)
- imperative, interrogative and negative transformations
- the embedding of subordinate clauses
- direct and indirect speech
- contraction, ellipses and inversions
- punctuation and the use of capital letters

Precis (oral and written):

- to increase both written and oral comprehension
- to practise written and oral expression in a controlled situation

Creative Writing:

- to facilitate free written expression through language, experience, stories and imaginative work

POST COURSE REPORT

[Description of student, progress and current functioning]

POST COURSE OBJECTIVES

[the same categories as for the intensive, with appropriate sections ticked as necessary]

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