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Oral Reading Errors of  
Eight, Nine and Ten Year Olds  
of High and Low Reading Ability:  
An Analysis of their Miscue Patterns  
at Independent and Frustration  
Levels.

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## Abstract

A review of the Research which has investigated Oral Reading errors, both before and after the contribution of the Psycholinguists, showed that much of the data had been collected at relatively high difficulty levels. It was the purpose of this study to investigate differences in miscue patterns both between Independent and Frustration Reading difficulty levels and amongst groups differentiated by Reading ability, age and sex. The sample used consisted of twenty eight-year-olds, twenty nine-year-olds and twenty ten-year-olds, thirty of whom were of each sex and thirty of whom were of High Reading ability and thirty of whom were of low Reading ability. Five of the subjects were low ability Readers who had scored highly on the PAT Listening Comprehension Test.

Miscues were collected from each subject at both their Independent and Frustration Reading levels and classified by using an amended form of Goodman and Burkes Reading Miscue Inventory. The miscue patterns obtained were then compared both between levels and amongst groups by using the SPSS programme of the Burroughs B6700 Computer at Massey University. Significant differences were found between miscue patterns at Independent and Frustration level and this has serious implications for the interpreting of the accumulated miscue research. Significant differences were also found amongst the various groups. High ability Readers were found to make greater use of the Syntactic and Grapho-Phonic cueing systems, and relatively less use of the Semantic Cueing system, at both levels, than were the low ability Readers. At Independent Level the high ability Readers made greatest use of the Syntactic cueing system but at Frustration Level usage of the Grapho-Phonic cueing system marginally replaced the Syntactic cueing system as the one upon which he placed most reliance. For low ability Readers this increased dependence on the Grapho-Phonic cueing system at Frustration level is not evident, and this suggests that high ability Readers have a more highly organized and integrated method of utilising the cues available than do low ability Readers. Rather, low ability Readers appear to utilize the cueing systems in a non-sequential, non-preferential, almost random manner. Girls appear to utilise the Semantic cueing system to a greater extent than do boys and developmental trends over the age groups used in the study illustrate the Readers developing ability to utilise the cueing systems in an integrated manner. Subjects of low Reading ability who

had scored highly on the PAT Listening Comprehension Test utilised all three cueing systems less efficiently than did the other low ability Readers. Self-correction rates were found to be a function of the difficulty level of the material being read rather than a reflection of mastery of a trainable skill which differs quantitatively between high and low ability Readers.

It is concluded that the analysis of Oral Reading Errors is a vital source of information for the Reading teacher or diagnostician and a recommended procedure for carrying out such analysis is outlined.

## Preface and Acknowledgements

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## CHAPTER ONE

Oral Reading Errors: A Review of the  
Literature and the Setting of  
the Research Task

## 1.1 The Nature of the Reading Process

Reading can be described as the process of attributing meaning to deliberately patterned graphic or pictorial symbols which serve as a means of communication between, and amongst, individuals. Such a skill, or set of skills, obviously has a vital role in human society and has attracted much interest from educationalists, particularly in the last 60 years. An adequate description of such a process must necessarily include all those activities, processes or skills (both observable and unobservable) which are necessary for receiving and interpreting such communications. It must also define the interrelationships amongst such processes at varying levels of development and efficiency. Investigators have given these various processes a variety of definitions and labels according to their purpose and theoretical orientation. Studies investigating Reading have tended to be comparative and descriptive rather than attempts to test specific hypotheses generated by detailed theoretical models of the Reading process. In fact the Reading process has proved to be so complex that few have even attempted to construct such models! However, while satisfactory models of the Reading process may not yet have been successfully posited, it is at least agreed that Reading involves a set of complex cognitive processes, requiring visual, perceptual and thinking operations by the reader. It is also accepted that such an activity is an active language process involving constant interaction between the Reader (the communication receiver) and the text (the end product of the communicators encoding of meaning).

## 1.2 Oral Reading As A Mirror of the Reading Process

Investigation of the Reading Process has been fraught with the same methodological difficulties as has all research which involves perceptual and cognitive processes - the ongoing process(es) is not directly observable. The most readily observable form of reading



behaviour is Oral Reading. In her review of Oral Reading Studies Weber (1968) quotes studies going back to the late 1920's (Monroe, 1928; Davidson 1931) but it would appear that as long as man has been literate, oral reading has been intuitively granted the status of the most obvious and valuable means of both checking the reading performance of readers and of trying to gain some insight into the mechanics of the reading process. However, Oral Reading is not the most common form of Reading behaviour and some consideration must be given as to the role of investigations of Oral Reading in investigations of the Reading Process en toto. As Cambourne (1977 p1) points out "by far the most prevalent form of reading behaviour is silent reading". However silent reading is not directly observable and has been able to be researched only indirectly and mainly as a product (i.e. comprehension) rather than as a process. Thorndike (1917) investigated Reading performance by asking questions about the content of the passage the subject has just read silently, and this has been the predominant investigatory technique used in silent reading studies until relatively lately. More recently Bormuth (1969) has used sentence completion tasks as an investigatory tool in the study of silent reading. Goodman and Burke (1973), Frederickson (1975) and Kintsch (1976) have used oral retelling and Cambourne (1977) is using cloze procedures, these representing further developments in the range of tools available. Some researchers (e.g. Fairbanks, 1937; Swanson, 1937; and Gilmore 1947) have investigated the relationships between oral and silent reading but the empirical evidence that has resulted from such studies consists almost entirely of correlations between aspects of the end-products of Reading (e.g. number of oral errors and comprehension score on passages of equal difficulty read orally and silently respectively.) While no current investigators of the reading process would claim that oral Reading is identical to silent Reading but with oral pronunciation added, lack of controversy and debate in this area indicate that, given our present state of knowledge, investigation of Oral Reading is accepted as a valid avenue into the investigation of the Reading Process. Perhaps Goodman (1972) best summarizes the present situation: "probably the closest we can come to tapping the (reading) process is having the reader orally interpret the text". (1972 p8).

### 1.3 Oral Reading Errors (ORE)

Oral Reading Behaviour can be divided into two main categories - the production of oral interpretations of the text that are (1) acceptable and (2) unacceptable. Acceptable Oral Responses to the textual stimuli demonstrate successful decoding. Unacceptable Oral Responses or Errors demonstrate inaccurate decoding. It is this latter class that has received most attention from researchers and is the subject of this paper. Oral Reading Errors (hereafter ORE) have attracted this attention because of their potential for providing insights into the decoding methodology used by the Reader.

### 1.4 Oral Reading Errors: A Review of the Literature.

#### 1.41 Introduction

As Fleming (Goodman and Fleming, 1969, p3) and many others have noticed the current climate of thought about any particular variable, and the definitions which reflect it, determine the kinds of questions researchers ask, the methods they will use to answer them, and the sort of evidence that will be considered acceptable. Research into ORE certainly demonstrates this determining role of climate and for this reason the Literature Review will be separated into three Chronological periods: (i) pre 1968; (ii) 1968-72 and (iii) post-1972. Such a classification is somewhat arbitrary but it has been chosen to give emphasis to the major changes which have taken place since the influence of Psycholinguistics assumed a major role in thinking about the Reading Process and the ways in which these changes have been reflected in the ORE Research. Psycholinguists began to influence thinking about Reading in the late 1950's and early 1960's but it was not until the late 1960's that their radicalizing impact really began to be felt. This, together with the 1968 publication of Webers definitive and comprehensive review of Oral Reading studies makes 1968 a convenient dividing line between studies in which Psycholinguistics had virtually no influence and those in which it did. Similarly the publication of Goodman and Burkes Reading Inventory in 1972 marks a date from which virtually all ORE research reflects a Psycholinguistic viewpoint. The period 1968-1972 represents a transition period where Psycholinguistic influence was rapidly

increasing but not yet all-pervading.

#### 1.42 Research Investigating Oral Reading Errors Prior to 1968.

##### 1.421 The Research Studies

Webers (1968) review of ORE research considered more than 30 studies. She classified these into five main groups according to the variables being investigated. A large group of studies were concerned with investigating developmental changes in error patterns e.g. Monroe (1932), Duffy and Durrell (1935), Dow (1938), Gilmour (1947), Ilg and Arnes (1950) and Schale (1964). Weber concludes that all that appears to emerge from this research is that substitutions are the most prevalent error type at all developmental levels. A second group of researchers have been concerned with the effect of difficulty level on error patterns e.g. Schwes (1956), Schale (1964) and Christensen (1966). No discernable patterns related to difficulty level appear to emerge. The relationships between sex, IQ and error pattern have been a third major area of concern. Again no clear pattern of relationships appears to emerge. Yet another group of researchers has been particularly concerned with one specific error type - reversals. Such interest would seem to stem in part, at least, from interest in Orttons cerebral dominance theory e.g. Hill (1936), Davidson (1934) and Malmquist (1958). Weber concludes that reversal errors "were only one of several more common types of errors made by both good and poor readers" (p 112). The fifth group consists of studies which have used ORE to examine the relative importance of different elements of words in decoding. e.g. Davidson (1931), Bennett (1942). The only conclusive finding appears to be that the first letter in a word attracts the most attention from the reader. In the course of her Review, Weber makes very serious criticisms of both the research methods used and the theoretical base in which such studies are rooted. Firstly she observed that all the studies she had reviewed had failed to consider the influence of dialect when classifying "errors". Dialect may have little relevance in the New Zealand situation but it does have considerable implications for interpreting the results of many United States studies! Secondly she found that a wide variety of classification systems had been used to classify the errors being investigated. Duffy

and Duffell (1955) and Dow (1930) for example used 'poor enunciation' and 'inadequate phrasing' as error categories; Schummers (1956) ascribed to 'hesitation' the status of an error class. Such lack of agreement upon the defining characteristics of the variables being measured makes the comparison of results impossible and suggests a general lack of precision which necessitates doubt being cast upon the validity of the findings of all the studies. Perhaps her most damning criticisms, however, refer to the theoretical base of the studies - in particular the fixation with words as the only proper unit of study and the failure to consider errors according to their linguistic function. "In Reading Research, then, deep interest in words as visual displays stands in contrast to the relative neglect of written words as linguistic units represented graphically..... Inaccurate responses have tended to be handled as isolated units rather than as elements in grammatical constructions that are hierarchically related to one another in order to form sentences." (Weber p 113).

To gain some understanding as to why such fundamental misorientations were so manifest in these studies it is necessary to consider the theoretical climate in which they took place.

#### 1.422 The Theoretical Context Within Which Pre-1968 ORE Research Took Place.

It is perhaps natural, and typical of the early stages in any scientific investigation of a newly isolated phenomena, to separate and define the phenomena and then to study the observable and measurable characteristics of that separate entity. Such a research procedure can be described as an analytic or molecular one and certainly characterises Reading Research in the pre-1968 era. Such was the interest in Reading that a vast body of research, greater than that in any other curriculum area (Russell and Fea, 1963) built up, all carried out within a context of Reading being considered as a separate, isolated process the research tasks of which were to separate the subprocesses and to investigate them and their interrelationships. Such research then, has concerned itself mainly with investigating specific skills, subskills and processes abstracted out of the reading act for more specific study. Goodman (Singer and Ruddell (1970) p 497) summarizes

such a view of Reading as: "Reading is a precise process. It involves exact, detailed, sequential perception and identification of letters, words, spelling patterns and large language units". Spache's definition (1969) also reflects such a view: "Thus in its simplest form reading may be considered as a series of word perceptions". Such a view then regards Reading as the combination of elements into meaningful wholes - the Reader starts by identifying single letters which he builds up into single words, which he builds up into single meaningful units i.e. sentences, paragraphs and 'stories'. A large degree of the justification for such a molecular view has been based upon the nature of the English alphabet - in particular its phonological nature and the implications it has been assumed this has for decoding written communications. Alphabetic writing differs from other systems of writing in that the graphological system is not a direct representation of the referents but rather one of Oral Language. Smith (1973, chap 10) contends that the choice of an alphabetic system has evolved historically to suit writers and printers rather than Readers and that the phonological nature of our alphabetic system misleads students of the Reading Process into concentrating on factors (visual) that are neither necessary or sufficient for reading to take place. To summarize then, Reading Researcher's assumptions about the role of alphabetic graphology misoriented early Reading Research toward an analytic study of a separate, distinct process. Such research was atheoretical (Golinkoff, 1975) ; failed to produce 'improvement' (Russell and Fea 1963); and failed to consider Reading as a process in action. (Koler, 1969)

Just as current thinking about language provided the impetus for an analytic bias in early Reading Research so it has proved to be the catalyst for changing views of the nature of the Reading Process and consequently of the research tasks. A review of recent changes in thinking about language is therefore appropriate.

#### 1.43 The Changing Views of the Nature of Language

##### 1.431 A Description of the Changes Taking Place

Language is the process by which individual members of a culture communicate with each other. It involves using a set of

signals (code) which represent meaning. For each individual, language involves both receiving (decoding) and sending (encoding). It is a system that can take an infinite number of forms to signal any semantic information whatever, and a knowledge of how that system works is essential for participants to be able to communicate with each other. Two main sensory processes are utilised for receiving messages - sight (reading) and hearing (listening). For sending messages voice (speaking) and psychomotor (writing) processes are utilised. Oral language utilises the processes of listening and speaking, written language the processes of writing and reading. Both are closely related, but independent, arbitrary codes neither of which has any direct relationship to meaning and the 'real world' other than that which its users assign to it. Oral Language is invariably bound to the situational context wherein it takes place and includes some facets that are not present in written language e.g. movements, gestures, intonations and stress. Written language takes place out of the direct situational context, although it does still take place within a definite context. The past study of language, too, has been hampered by a molecular view emphasising the actual physical characteristics (sounds, orthography) of the code taking place in a context which viewed the receiver of the message as a passive reactor to language patterns solely according to the incoming message's physical characteristics. However as Fleming (1969, p 3) observes, since the early 1960's a bold new theory of linguistics has been researched and became known - the notion of transformational - generative grammar. This development opened up the whole field of the relationship between syntax and meaning.

Initial impetus for this development came mainly from the study of the listening process. Researchers such as Garret, Bever and Foder (1966), Miller, Heise and Lichten (1951), Pollock and Picket (1964) and Foder and Bever (1965) showed that information in the form of context (i.e. information outside the specific sound that is local and specific to every individual word) played a significant role in word identification and therefore in subsequent comprehension. Such findings implied that the listener made an active contribution to what he heard and that his ability to understand speech sounds depended to a large extent on his ability to understand meanings prior to receiving the message rather than vice versa. Also relevant was the finding that the listener did not process every single sound contained in the message he was receiving. Rather he



sampled from the cues available, only processing some of the sounds presented. Such a finding of course, places under stress the traditional notion that the word is the essential unit of meaning. The process of comprehension of spoken messages is then, not only on 'outside-in' flow of information, but has a major 'inside-out' flow as well, with the listener bringing to bear his knowledge of the regularities of his language and his relevant background knowledge to the topic of discourse.

Linguists delineate physical from other characteristics of the language-using-process by referring to language as having two aspects or levels. The physical manifestation of language (the end product of the encoder) is referred to as surface structure. All the processes and knowledge involved in attributing meaning to the surface structure are referred to as the deep structure of language. If language were solely dependent on surface structure (i.e. upon the sum effect of individual words) phrases such as 'venetian blind' and 'blind venetian' would have identical meanings. So would 'dog eats man' and 'man eats dog'. The two levels of language are related and meaning is provided for the surface structure by the language-users knowledge of the syntax and grammar of his language and the relevant meaningful background knowledge contained in the language users deep structure. A meaningful language unit is not a set of words randomly ordered the sum of which adds up to a message! Rather language is organised into patterns which are the sequences in which the elements may occur. Grammar and syntax are the set of rules that determine how words are organized into patterns and sentences. Grammar can be regarded as a set of rules for generating an infinite number of sentences. The syntactic structure of a sentence imposes groupings that govern the interaction between the meanings of the words in that sentence. Without knowledge of patterns or syntax there can be no understanding because meaning is not directly represented in the surface structure. The eyes and ears are but tools of the brain - the ear can only listen and the eye can only look - it is the brain that sees and hears. The meaning of any single word will depend both on the other words in the sentence and on the grammatical role of each of the words in the sentence. The existence and use of such rules and their presence in the individual's deep language structure makes possible the treating of individual communications as members of classes, all

members of which can be responded to in identical terms. Without the existence of such classes human communication would be impossible - every single communication would be adrift in a meaningless sea.

In encoding meaning then the communicator reaches into his deep structure and encodes his message in appropriate syntactical form. In receiving communication the subject receives the message in surface form and decodes it into meaningful information by using his deep structure. The learning of language involves the learning of rules for generating and receiving admissible combinations. Children cannot possibly learn language by imitation or role because meaning is not directly represented in the sounds that they hear. Language can only be understood through the application of these syntactic rules which are never formally or systematically taught. Nor can they be! Nobody knows or can hope to know the complete set of supposed rules! (Smith 1971, p3).

1.432        The Effects of Changing Views of the Nature of Language upon Views of the Reading Process: The Contribution of the Psycholinguists.

The implications of changing views of language for psychology have been explored by a group of researchers who are commonly referred to as Psycholinguists. "Psycholinguistics brings together the theoretical and empirical tools of both psychology and linguistics to study the mental processes underlying the acquisition and use of language" (Slobin 1971, p1). Such an interest, of course, includes all the various aspects of Reading. Because of the traditional separation of Language and Psychology in advanced education such combinations of interest are only recent and there do appear, at times, to be severe limitations in the ability of the members of one group to understand the model-building and research of the other (e.g. Mosenthal and (versus) Goodman). They have, however, brought about a major re-orientation in views of the Reading Process. They have had particularly valuable contributions to make in two fields: (1) the role of the alphabet in the Reading Process; and (2) the decoding strategies used in the act of Reading.



As noted above early Reading Research took place in a climate where the nature of the English alphabet was considered to have a vital role for decoding. "It is frequently asserted that since the English language is written in alphabetic symbols the alphabetic system must be the basis of Reading! This is rather like the argument that hotel guests should pay for the telephone service even if they don't make use of it, just because it is there!" (Smith, 1973 p 116). If an alphabetic language was such a necessary ingredient for successful reading it would be difficult to explain how members of cultures with non-alphabetic writing systems (e.g. Chinese, Japanese) learn to read successfully. Roan, Peritsky and Sotsky (opcit pp 105-16) even cite cases of very poor readers in English mastering the reading of Chinese in a very short time - surely not possible if phonological analysis was a necessary ingredient for successful Reading to occur. Such a view of the Reading Process holds that Reading consists of translating written language into spoken language before meaning can be attributed to the written language. Readers are required to process single graphological units into larger graphological units and then into auditory units which are large enough to be meaningful. As noted earlier one of the first findings of recent linguistics that had immediate potential for this alphabetic view of the nature of the Reading Process was that listeners did not pay meticulous detail to every sound cue with which they were presented. Rather, they were found to be sampling only as many of the sounds as they needed to maintain the process of receiving meaningful communications. Considering the speed at which competent readers operate, there seemed to be an obvious need for the investigation of whether similar strategies are employed by Readers. Studies by the Psycholinguists of Reading in process (e.g. Goodman (1968), Levin and Williams (1970), Levin and Kaplan (1970), Smith (1973) and Gibson (1970) indicate that Readers certainly don't reproduce word for word (even subvocally!) the graphological input. Smith (1973 p 29) quotes research to demonstrate that "if normal reading proceeded by a serial scan on a letter-by-letter basis, its maximum rate would be between three and four letters a second, or, because English words average 5-6 letters in length, between 32 and 42 words per minute. Because college students read, on the average, at a rate of 300 words per minute it must be clear that they do not proceed in such a serial way." Instead Readers are as actively involved in bringing their 'deep structure' to the graphology in order to make the reception meaningful as is the listener to the sounds he hears.

The Psycholinguists have also questioned the notion of visual codes having to be translated into aural code before acquisition of meaning takes place. Such recoding, Psycholinguists hold, is no more necessary than it is for a person who speaks Maori as a second language to translate 'hoa' to 'friend' before he can attach any meaning to the graphological cue 'how'. Psycholinguists instead hold that written text and oral speech are merely alternate forms of the same language process. The key issue really, is whether the rules of syntax and grammar can be applied independently to both visual and aural input or whether they can only function upon aural input. Although this question is still a subject of considerable debate, it does not prevent the application of many of the Psycholinguists findings into a model of the Reading Process.

#### 1.433 The Psycholinguistic View of the Reading Process

Psycholinguists would not attempt to deny the obviously necessary role of graphological input. Obviously without any such input no Reading is possible. Rather they would relegate its role to that of the minimum necessary for meaningful (efficient) comprehension of the encoders message. The more efficient the Reader the less visual cues he needs to use to attain the encoders meaning. Reading, then, involves bringing the deep structure of language, to bear upon the graphological input, making use of the same strategies as the listener in order to attain the meaning the encoder intended. Such a view of Reading can be described as an information-processing model. The Reader (as a user of language) interacts with the graphic input as he seeks to reconstruct a message encoded by the writer. He concentrates his total prior experience and learning on the task, drawing on his experiences and the concepts he has developed as well as the language competence he has achieved. Such a model posits that the nature of the Reading Process is universal. It is the same for all languages with only minor variations to accomodate the specific characteristics of the orthography used and the grammatical structure of the language. One of the immediate implications of a Psycholinguistic model of Reading is that 'errors' take on a new stature. In other models of Reading the oral production of a Response that does not match the graphological stimulus is mismatching and an error. From a Psycholinguistic point of view all Responses to the visual

stimuli are guesses, estimates or hypotheses about the meaning encoded in the passage. They are the products of the Readers use of decoding strategies and how close they are to the authors intended meaning is a measure of that Readers efficiency. Errors "point to a selective, tentative, anticipatory process quite unlike the process of precise, sequential identification commonly assumed." (Singer and Ruddell, 1970 p 499).

1.434 Kenneth Goodman and his model of the Reading Process

Since even before he received his Ed.D in 1963 Kenneth Goodman and his colleagues (particularly his wife Yetta and Carolyn Burke) have been interested in investigating Children's Oral Reading Errors from a psycholinguistic point of view. It was in fact, Goodman, who introduced the practice of referring to such errors as miscues to remove the 'stain' of incompetence that such terminology implied and rather to view such reader behaviour as indicative of the cognitive problem - solving strategies the reader was using. Goodman has always maintained a strong pedagogical interest which is reflected in the very high percentage of his many articles that have been published in teaching practice oriented Journals rather than in theoretical model - building oriented journals. In addition to his journal publications, book-editing and many speaking engagements, Goodman has been funded in much of his Research by United States Department of Health, Education and Welfare and Department of Education grants which have resulted in the publication of comprehensive, descriptive Research Reports. To summarize his comprehensive contribution from a historical point of view is a difficult task, but perhaps his first widely publicised contribution to the literature occurred in 1965 with the publication in Elementary English of an article entitled "A linguistic study of cues and miscues in Reading". This was followed in 1967 by "Reading: A Psycholinguistic Guessing Game" published in The Journal of the Reading Specialist. In 1968 the first report of US Dept of HEW project No. 425, contract No. OE-6-10-136, undertaken in conjunction with Carolyn Burke was released and he edited a book entitled "The Psycholinguistic Nature of the Reading Process." In 1969 the Final Report of Office of Education Project No. 7-E-219 entitled A Study of Oral Reading Miscues that Result in Grammatical Transformations, again carried out in conjunction with

Carolyn Burke was released and Goodman published an article which was very widely read and acknowledged entitled "The Analysis of Oral Reading miscues: Applied psycholinguistics" in Reading Research Quarterly, Fall, 1969. In his initial ORE research Goodman had used a very large number of classification categories but in this article he had reduced his categories to a much more manageable 28, and this taxonomy began to be used by other researchers in their investigation of the Reading Process. These categories were (1) words in miscue; (2) correction; (3) repeated miscues; (4) word-phrase identification; (5) observed response in periphery; (6) habitual associations; (7) dialect; (8) graphic proximity; (9) phonic proximity; (10) grammatical function of Oral Response; (11) function word role of Oral Response; (12) grammatical function of the Expected Response; (13) function word role of Expected Response; (14) sub-morpheme level; (15) bound morpheme level; (16) free morpheme level; (17) word level; (18) phrase level; (19) clause level; (20) sentence level; (21) allalogs; (22) bound or combined morphemes (types); (23) syntactic proximity; (24) semantic proximity; (25) miscues involving transformations; (26) intonational miscues; (27) syntactic acceptability; and (28) semantic acceptability. Also in 1969, Goodman edited with J.T. Fleming Psycholinguistics and the Teaching of Reading published by the International Reading Association from Newark, Delaware. In 1970, Goodman's most important publication was "Psycholinguistic Universals in the Reading Process" in the Journal of Typographic Research, and in 1971 he published "Decoding: from Code to what" in the Journal of Reading. In 1972 Carolyn Burke and Yetta Goodman published the Reading Miscue Inventory in which Kenneth Goodman's influence is obviously pervasive and widely acknowledged. It is, in fact, a further breakdown of Goodman's earlier Taxonomy, this time into eleven categories. Thus the results of Goodman's research have been put into an even more manageable form for both researchers and practising teachers. Because the RMI is the major analytic tool to be used in this study a detailed description of it will be given after a consideration of Goodman's 'Theory of Reading'. Perhaps the final major step in the spreading of Psycholinguistic ideas on the Reading Process was the publishing of Psycholinguistics and Reading edited by Frank Smith in 1973. This included four chapters written by Kenneth Goodman. Since then Goodman has continued to publish regularly and to supervise a wealth of research. Up until 1975 Goodman was the Director of the Reading Miscue Centre at

Wayne University in Detroit, Michigan. Since then he has been a Professor at the University of Arizona in Tuscan. Some consideration will now be given to the results of Goodman's research and model building - i.e. his theory of the nature of the Reading Process.

### Goodman's Model of the Reading Process

Goodman characterises the "Reading Process" as a "Psycholinguistic guessing game" the fuel of which is the search for meaning. Goodman hypothesizes that the reader is simultaneously utilising three cue systems. These are:

(1) The graphophonic cue system. This consists of (a) visual graphic information - letters, spelling patterns, punctuation and blank space; (b) phonological information - sound and sound patterns (intonation) - pitch, stress and pause - and (c) phonic information - the complex set of relationships between graphic and phonological representations of language. What constitutes useful graphonic information will depend upon how much relevant syntactic and semantic information is available to the specific reading act;

(2) The syntactic cue system. This contains the readers knowledge of syntax - his knowledge of sentence patterns, pattern markers and generative transformation rules and

(3) The semantic cue system. This consists of the readers store of relevant experience, concepts and vocabulary.

Efficient utilisation of these cue systems to achieve meaning is dependent upon the development of efficient strategies. These strategies are

(1) sampling - selecting only the most useful and necessary graphic cues;

(2) predicting - getting to the underlying grammatical structure to anticipate what is likely to be found in print.

(3) confirmation - checking the validity of predictions and

(4) correction - when predictions prove to be inadequate (incorrect) the input data has to be reprocessed. The role of each of the strategies will vary with the nature of the Reading task. Such a model involves no hierarchy or sequence of subskills. To use all the cues available would not only be slow and inefficient but would actually lead the reader away from (interfere with) his primary goal which is comprehension.

#### 1.435 The Reading Miscue Inventory

Goodman and Burkes Reading Miscue Inventory (hereafter RMI) represents a shorter and more manageable form of Goodmans original taxonomy. Its use results in each error being measured upon a number of variables according to the answers given to each of the nine questions which are asked about every miscue. The answers to some of these questions are then used to compute patterns of relative strength in Comprehension and Grammatical Relationships. Its authors state that "the RMI should aid the educator in applying reading miscue information to the classroom. It is an attempt to narrow the tremendous gap between research and application which has become almost a tradition in education" (RMI manual p10). "The RMI will provide the teacher with a window into the Reading process as it operates within individual readers. At the same time it will allow him to analyze a single student's reading for the purpose of planning language experiences through which the student can expand his reading effectiveness." (op cit p15).

Administration of the RMI involves four basic operations. Firstly, the subject's Oral Reading of a passage and his retelling of that passage are recorded. In the retelling the test administrator may use questioning to elicit Responses which indicate the depth of meaning the subject has attained. Secondly the taped Responses are recorded on Coding Sheets, errors are classified according to the answers given to each of the nine questions, and the Retelling is scored according to a standardized points scale distribution. Table 1.1 is an example of the Coding Sheet, Table 1.2 lists the nine RMI questions and the scoring criteria for each one, and Table 1.3 the points distribution to be used for scoring the Retelling. The third stage involves using



# READING MISCU E INVENTORY CODING SHEET

Table 1.1

Miscue Number	Reader	Text	DIALECT 1			INTONATION 2			GRAPHIC SIMILARITY 3			SOUND SIMILARITY 4			GRAMMATICAL FUNCTION 5			CORRECTION 6			GRAMMATICAL ACCEPTABILITY 7			SEMANTIC ACCEPTABILITY 8			MEANING CHANGE 9			COMPREHENSION				GRAMMATICAL RELATIONSHIPS	
			Y	P	N	Y	P	N	Y	P	N	Y	P	N	Y	P	N	Y	P	N	Y	P	N	Y	P	N	No Loss	Partial Loss	Loss	Strength	Partial Strength	Weakness	Overcorrection		
01-1	know	know			✓			✓									N	Y	Y	P															
03-2	the	a					✓										N	N	Y	Y	P														
04-3	seven	Sven			✓					✓							N	P	P	Y															
05-4	—	olven															N	P	P	Y															
05-5	went	wanted			✓			✓									Y	P	N	Y															
06-6	never	ver	Y		✓			✓									N	Y	Y	P					✓										
06-7	.	—		Y													N	P	P	Y					✓										
08-8	—	Claribel															N	N	N	Y					✓										
10-9	music	musical			✓			✓									N	Y	Y	P					✓										
14-10	heard	had			✓			✓									N	Y	Y	P					✓										
15-11	Clarido	Claribel			✓					✓							P	Y	P	N	Y				✓										
16-12	—	small															N	P	P	Y					✓										
16-13	care	canary															N	P	P	Y					✓										
18-14	and	at					✓										P	P	N	Y					✓										
19-15	have stayed	stay															N	Y	Y	P					✓										
21-16	had	—															N	Y	Y	P					✓										
01-17	carrot	canary															N	N	Y	Y					✓										
04-18	\$ canary	canary			✓			✓									N	Y	Y	P					✓										
05-19	it don't	done it															Y	Y	P	N	Y				✓										
01-20	Steve's	Sven's			✓					✓							N	Y	Y	Y					✓										
02-21	—	a															N	Y	Y	Y					✓										
05-22	—	space															N	Y	Y	Y					✓										
06-23	could not	couldn't															Y	Y	Y	Y					✓										
06-24	rules	rule			✓			✓									N	Y	Y	Y					✓										
07-25	put	but			✓												N	Y	Y	Y					✓										
COLUMN TOTAL					11	3	1	8	6	1	11	2	2	COLUMN TOTAL			10	6	9	11	5	7	2												
PERCENTAGE					73	20	7	53	40	7	73	13	13	PERCENTAGE			40	24	36	44	20	28	8												
QUESTION TOTAL					15			15			15			PATTERN TOTAL			25				25														

Table 1.2 READING MISCUIS INVENTORY QUESTIONS

Question 1: DIALECT. Is a Dialect Variation Involved in the Miscue?

If a variation is involved, the appropriate box is marked "Y" for yes. If no dialect variation is involved, the box is left blank.

Question 2: INTONATION. Is a Shift in Intonation Involved in the Miscue?

If a shift is involved, the appropriate box is marked "Y" for yes. If there is no variation involved, the box is left blank.

Question 3: GRAPHIC SIMILARITY. How Much Does the Miscue Look Like What Was Expected?\*

Y - A high degree of graphic similarity exists between the miscue and the text.

P - Some degree of graphic similarity exists between the miscue and the text.

N - A graphic similarity does not exist between the miscue and the text.

Question 4: SOUND SIMILARITY. How Much Does the Miscue Sound Like What Was Expected?\*

Y - A high degree of sound similarity exists between the miscue and what was expected.

P - Some degree of sound similarity exists between the miscue and what was expected.

N - A sound similarity does not exist between the miscue and what was expected.

Question 5: GRAMMATICAL FUNCTION. Is the Grammatical Function of the Miscue the Same as the Grammatical Function of the Word in the Text?\*

Y - The grammatical functions of the two are identical.

P - It is not possible to determine the grammatical function.

N - The grammatical functions of the two differ.

\*If the miscue is an omission or insertion, this category is not marked. If the miscue involves more than one word, this category is not marked. If the miscue involves intonation, this category is not marked.



Question 6: CORRECTION. Is the Miscue Corrected?

- Y - The miscue is corrected.
- P - There is an unsuccessful attempt at correction. Or a correct response is abandoned.
- N - There has been no attempt at correction.

Question 7: GRAMMATICAL ACCEPTABILITY. Does the Miscue Occur in a Structure which Is Grammatically Acceptable?

- Y - The miscue occurs in a sentence which is grammatically acceptable and is acceptable in relation to prior and subsequent sentences in the text.
- P - The miscue occurs in a sentence which is grammatically acceptable but is not acceptable in relation to prior and subsequent sentences in the text. Or the miscue is grammatically acceptable only with the sentence portion that comes before or after it.
- N - The miscue occurs in a sentence that is not grammatically acceptable.

Question 8: SEMANTIC ACCEPTABILITY. Does the Miscue Occur in a Structure which Is Semantically Acceptable?

- Y - The miscue occurs in a sentence which is semantically acceptable in relation to prior and subsequent sentences in the text.
- P - The miscue occurs in a sentence which is semantically acceptable but is not acceptable in relation to prior and subsequent sentences in the text. Or the miscue is semantically acceptable only with the sentence portion that comes before or after it.
- N - The miscue occurs in a sentence that is not semantically acceptable.

Question 9: MEANING CHANGE. Does the Miscue Result in a Change of Meaning?

- Y - An extensive change in meaning is involved.
- P - A minimal change in meaning is involved.
- N - No change in meaning is involved.

Table 1.3: Points Distribution in Scoring Retelling

STORY MATERIAL FORMAT  
(for fictional or biographical materials)

Character Analysis:

Recall: A listing of the characters involved in the story.

Development: Information concerning the characters' physical appearance, attitudes and feelings, behaviour, relationship to other characters.

Events: The actual happenings as they occur.

Plot: The plan upon which the sequence of events is organized. The overall question or problem which is the central concern of the story.

Theme: The generalization, perspective, viewpoint, or truism around which the story and its plot are built.

INFORMATIONAL MATERIAL FORMAT  
(for instructional material)

Specifics: The actual happenings, items, instances, or bits of information in the material.

Generalizations: General information which can be deduced from examination of the interrelationship of specific items or facts. Generalizations relate directly to the topic of the material.

Major Concepts: Over-reaching or universal views or positions which are abstracted from generalizations. Concepts can be applied to diverse topics and across fields of study.

POINT DISTRIBUTION FOR RETELLING FORMATS

STORY MATERIAL	Maximum Points	INFORMATIONAL MATERIAL	Maximum Points
Character Analysis:			
Recall	15	Specifics	40
Development	15	Generalizations	30
Events	30	Major Concepts	30
Plot	20		
Theme	20		

some of the answers to the nine questions to compute the Grammatical Relationships and Comprehension Patterns. The RMI questions which determine the Grammatical Relationships Pattern are Correction (question six), Grammatical Acceptability (question seven) and Semantic Acceptability (question eight). The pattern produced is designed to "give insight into how concerned the reader is that his oral reading sounds like language." (op cit p 71). There are eighteen possible answer combinations amongst these three variables and these combinations have been categorized according to the degree to which they indicate the Readers strength in using the grammatical and meaning cue systems. Table 1.4 sets out the possible patterns and the various combinations which make up each one. The RMI questions which determine the Comprehension Pattern are Correction (question six), Semantic Acceptability (question eight) and Meaning Change (question nine). The answers to these questions are used to produce a "pattern which gives insight into whether there has been a meaning loss" (op cit p 75). Table 1.5 lists the possible Comprehension patterns and the various combinations which produce each one. The final stage of RMI administration is the drawing up of each subjects "Reader Profile". This involves the summarizing of the subjects Reading Performance by showing his scores on 'Comprehension Pattern', 'Sound/Graphic Relationships' and 'Grammatical Relationships'. Bar graphs which demonstrate the relative percentages assigned to each of the various categories are produced for each of these measures. Table 1.6 shows how the bar graph for "Comprehension Pattern" is drawn up and Table 1.7 shows the format used for the 'Sound/Graphic Relationships' and 'Grammatical Relationships' bar graphs.

Table 1.4: PATTERNS OF GRAMMATICAL RELATIONSHIPS

Strength (Uses grammatical and meaning cues)	Partial Strength (Uses grammatical cues only)	Weakness (Fails to use grammatical or meaning cues)	Overcorrection (Overuse of correction strategies)
6Y + 7N + 8N	6N + 7Y + 8N	6N + 7N + 8N	6Y + 7Y + 8Y
6Y + 7P + 8N	6N + 7Y + 8P	6N + 7P + 8N	6P + 7Y + 8Y
6Y + 7Y + 8N	6P + 7Y + 8N	6N + 7P + 8P	
6Y + 7P + 8P	6P + 7Y + 8P	6P + 7N + 8N	
6Y + 7Y + 8P		6P + 7P + 8N	
6N + 7Y + 8Y		6P + 7P + 8P	

Table 1.5: PATTERNS OF COMPREHENSION

Patterns which cause NO LOSS of Comprehension

6Y + 8Y + 9N
6Y + 8P + 9P
6Y + 8P + 9Y
6Y + 8N + 9Y
6N + 8Y + 9N
6N + 8P + 9N

6Y + 8P + 9N
6Y + 8N + 9N
6N + 8N + 9N
6Y + 8Y + 9P
6Y + 8N + 9P
6Y + 8Y + 9Y

Patterns which Cause PARTIAL LOSS of Comprehension

6N + 8P + 9P
6N + 8Y + 9P
6P + 8Y + 9N
6P + 8Y + 9Y
6N + 8Y + 9Y

6P + 8N + 9P
6P + 8P + 9P
6P + 8Y + 9P
6P + 8P + 9N
6P + 8N + 9N

Patterns which Cause LOSS of Comprehension

6N + 8N + 9P
6N + 8N + 9Y
6N + 8P + 9Y
6P + 8N + 9Y
6P + 8P + 9Y

Table 1.6. CALCULATION OF COMPREHENSION BAR GRAPH.

	NO LOSS	PARTIAL LOSS	LOSS
COLUMN TOTAL	16	2	7
PERCENTAGE	64%	8%	28%
QUESTION TOTAL	25		

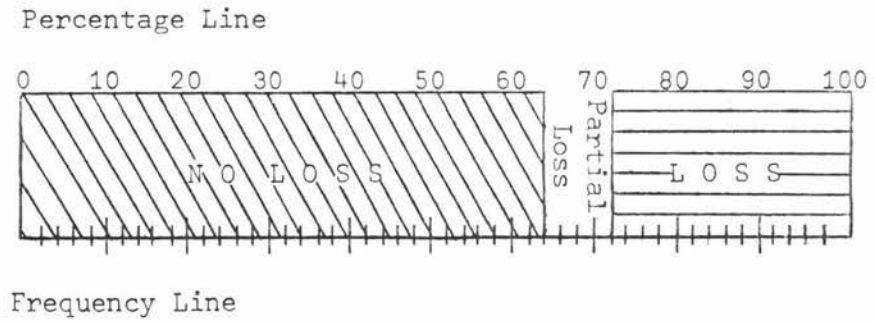


Table 1.7 SOUND/GRAPHIC RELATIONSHIPS AND GRAMMATICAL RELATIONSHIPS

SOUND/GRAPHIC RELATIONSHIPS						GRAMMATICAL RELATIONSHIPS						
SOUND			GRAPHIC			FUNCTION			RELATIONSHIPS			
High	Some	None	High	Some	None	Identical	Indeterminate	Different	Strength	Partial Strength	Weakness	Overcorrection
100	100	100	100	100	100	100	100	100	100	100	100	100
90	90	90	90	90	90	90	90	90	90	90	90	90
80	80	80	80	80	80	80	80	80	80	80	80	80
70	70	70	70	70	70	70	70	70	70	70	70	70
60	60	60	60	60	60	60	60	60	60	60	60	60
50	50	50	50	50	50	50	50	50	50	50	50	50
40	40	40	40	40	40	40	40	40	40	40	40	40
30	30	30	30	30	30	30	30	30	30	30	30	30
20	20	20	20	20	20	20	20	20	20	20	20	20
10	10	10	10	10	10	10	10	10	10	10	10	10

## 1.44 ORE Research During the Transition Period 1968-72

## 1.441 American Research

During the late 1960's and until the publication of the RMI in 1972 a transition period can be distinguished in which investigators began to consider ORE from a Psycholinguistic point of view.

Following her 1968 Review of the literature Weber carried out what she termed a linguistic analysis of the reading errors of 1st grade subjects. Such a study was designed to rectify many of the deficits in the ORE research that she had presented in her review. Her study was "designed to provide insight into the strategies that readers bring to the reading task" (p 429). Her sample consisted of 21 New York 1st grade pupils (Chronological Age mean = 6.9 years, IQ mean = 109), twelve of which were identified as 'fast movers' and 9 as 'slow movers'. The subjects were tested regularly over a year and errors were classified into four classes - substitutions, omissions, insertions and reversals. A total of 1072 miscues were so classified, 639 of which were made by the high ability group, and 403 by the low ability group. Substitutions made up 79.9% of the errors made (High group 78.7%, Low group 81.6%), Insertions 9.2% (High = 9.5%, Low = 9.2%), Omissions 8.4% (High = 9.4%, Low = 7.2%) and Reversals 2.4% of the miscues (High = 2.5% and Low = 2.4%). Weber compiled a rather complicated Graphic Similarity Index to compare Substitutions (Oral Response) with the text (Expected Response). She found a definite suggestion that good readers miscues were likely to resemble the S word more than the poor readers. However she only applied the Index to substitutions in which at least one letter was the same and this resulted in over 20% of the substitutions being excluded from such analysis. Errors were also classified as to whether they were syntactically acceptable, whether they were semantically acceptable and whether they represented the appropriate part of speech (nouns, verbs, noun modifiers, adverbs, personal pronouns, function words, proper nouns, animal sounds, and nonsense.) She found that 91% of the cues were syntactically acceptable, 92% were semantically appropriate within the sentence, and 64% represented the appropriate part of speech. Weber concluded that "the analysis of the level of grammatical structure did not indicate

that the children had to learn to use the constraints of grammatical structure in Reading. Rather, it suggested that from the very beginning the children expected the sentences that they read to conform to the structure of the language they already know and that they actively used this knowledge while they read." (p 50).

Yetta Goodman (1968) investigated the ORE pattern of six beginning readers. Her subjects were examined at nine one monthly intervals and the miscues gathered were examined in terms of (1) level of the cueing system used within the language (2) how subjects handled miscues once they had been produced and (3) the types of miscues produced. The results led her to conclude that: (1) the type of miscues made change qualitatively as the reader matures; (2) dialect appeared to play a greater role in producing miscues that did semantics and (3) syntax had a greater role in cueing than did semantics.

Allen (1969) used a sample of 15 subjects, 5 each from the 2nd, 4th and 6th Grades. The subjects were randomly selected from class lists from which teachers had eliminated the 8 best and 8 poorest readers. Pupils Reading from a basal series not used in the school, but of an equivalent difficulty level to their current instructional material, was tape recorded and the 1521 miscues so obtained were classified according to the revised Goodman Taxonomy of Miscues. Of the four variables examined - graphic, phonemic, syntactic and semantic acceptability, syntactic acceptability was found to be the highest at each level. Seventy percent of the miscues had full syntactic acceptability over all three Grade levels. Twenty-one percent of the fourth grade miscues, 15% of the 6th grade miscues and 10% of the 2nd grade miscues were not semantically acceptable in any sense.

Burke (1969) studied the miscue patterns of six proficient 6th Graders who were required to read and retell from a basal 8th grade text. She found that the error rate varied from 2.4 to 5.2 per 100 running words and that there was no significant relationship between the number of miscues, comprehension and self-correction rate. Eighty one percent of the miscues were syntactically acceptable and 61% semantically acceptable. She also noted that readers can operate



with proficient oral reading skill while gaining only minimal and superficial meaning.

1.442 NZ Research during the Transition Period - The Contribution of Marie Clay.

Even before 1968 ORE Research from a Psycholinguistic viewpoint was being pioneered in New Zealand by Marie Clay of Auckland University. Clay's early research seems to initially have been granted insufficient attention overseas, presumably because of both geographical and status gaps! Clay's particular interest has been in beginning readers and this is mirrored by the title of her 1966 Ph.D Dissertation - "Emergent Reading Behaviour". In 1967 Clay published an article in the New Zealand Journal of Educational Studies entitled "A Syntactic Analysis of Reading Errors". In this study 100 randomly selected, representative 5-year-olds were observed reading orally over a week and 10,525 errors were obtained. 73% of the errors were found to be substitutions and 72% of these substitutions occurred in equivalent morpheme-class or morpheme-sequence structures. Only 41% of the single word substitutions showed "that the child might be responding to some visual characteristics of the letters" (p 437). Twenty-six percent of the 10,525 errors were self-corrected and she found that some types of error were more likely to be self-corrected - for example pronouns were more likely to be self-corrected than nouns. She also concluded that since equivalent word substitutions (79%) occurred more frequently than sequence substitutions (58%) "it appears that some of the constraints of the correct linguistic environment are not available in sequence substitution." (p 437).

In a related MA Thesis carried out under Clay's supervision, Williams (1968) investigated the Oral Reading Behaviour of Std 1 children. Williams used 120 subjects randomly selected from 6 schools, 40 (15 boys and 25 girls) being selected from two schools in areas of a High Socio-Economic Level, 40 (21 boys and 19 girls) from two schools in a Middle Socio-Economic Level areas and 40 (21 boys and 19 girls) from two schools in Low Socio-Economic Level areas. Each subject was administered the Burt Oral Word Reading Test, The Peabody Picture Vocabulary Intelligence Test and up to five passages of increasingly

difficult graded prose material taken from American Basal Readers. The length of the prose passages varied from 137 to 221 words. The subject was not required to continue reading if he took more than five minutes to read a particular passage. Williams found that 50% read all the material with 95% accuracy and 85% with 90% accuracy. He found that reading ability varied considerably according to the level of the Socio-Economic group the subject came from. Seventy per cent of the pupils in the HSE group were highly accurate (95% accuracy), 50% of the MSE group were highly accurate but that only 27.5% of the LSE group could be so described. Out of all the errors made, 50% were simple substitutions, 27.93% Omissions and 13.12% Insertions. Although Williams used four other categories (return sweep, errors of intonation or accent, complex substitutions and complex reversals) these three categories described more than 90% of all error behaviour. He also noted that "Reversals, generally viewed as one of the large bogeys of reading problems were of only minor significance" (p 124). A tendency was observed for Average and Low Ability Readers to produce a higher percentage of omissions and for High Accuracy Readers to make more insertions. Williams gave considerable attention to the relative incidence of word-function both in the test passages and in the error patterns. He concluded that "analysis of incidence of word function in graded passages did not reveal any distinct patterns although the functions which are recognised as conveying most meaning in a text, namely nouns and verbs, were clearly the most prevalent functions..... The percentage occurrence of errors according to the respective grammatical function of the expected responses did not vary greatly from the actual percentage occurrence of the various grammatical functions in the texts..." (p 126). Of all the miscues analysed 60% were found to have an equivalent grammatical function and 88% had some semblance of functional equivalence. Seventy-two percent of the errors were found to be totally syntactically acceptable, another 11% syntactically acceptable when considered with the words preceding the miscue in the sentence and 2% when compared with the words following it. Semantic Acceptability revealed a similar pattern "though the force of the semantic cues was not as powerful." (p 128). Forty percent of the miscues were totally acceptable, 16.73% were acceptable with the immediately preceding words, 3.07% with the following words and 5.83% within the sentence structure only. A significant difference was found amongst the 3 SE groups in terms of miscues that were totally semantically acceptable. Subjects

from the HSE group had 55% of their miscues totally semantically acceptable, those from the MSE group 37% and for those from the LSE groups only 30.2% of the miscues were totally semantically acceptable. No similar relationship was found in the other categories of semantic acceptability. Eighty-six per cent of the miscues were grapho-phonically acceptable and of those that were acceptable, the beginning letter(s) of the S word was equated in 80% of the miscues, and the final letter(s) in 53%. Minimal attention was found to be given to the median elements. He found that the less able used letter-sound relationships cues more often than the more able readers and that phonic cues were used most successfully in a checking, correcting role and least successfully when used to attack unknown words. Self-correction rate varied from 1:3 in the high ability readers to 1:8 in low ability readers. Forty-two percent of total self-correction behaviour involved regression with high accuracy readers being more likely to use this technique than low accuracy readers. Williams also investigated the relationship between Burt Test scores and Reading performance and, while critical of the over-use of this test in the schools in which he was working, concluded that there was a definite role for such a test but that it needed to be developed and standardized in New Zealand conditions. His overall conclusion was that "the most powerful cues in reading at the Standard One level are those based upon the Oral Language patterns the children themselves use." (p.206).

Marie Clay also supervised Watson (1973) in her M.A. Thesis. Watson investigated the Oral Reading strategies of 3rd form students. She was interested in whether the errors made by these pupils provided any evidence of the ways in which they used syntactic and semantic cues in the reading text and whether there were differences in the way they used these strategies. She set herself four specific areas of investigation: (1) the extent to which students have acquired the necessary reading skills by the time they have reached the third form; (2) what happens to reading behaviour as difficulty increases; (3) in what ways have reading skills been refined and extended in the case of better readers and (4) in what ways are the poorer readers responding differently from the better readers. Her subjects comprised the entire third form of a North Shore High School, the mean of their Chronological Age being 13.9 years with a Standard Deviation of 5.5

months. The total sample was separated into quartile groups (Low, Lower Middle, Upper Middle and High) on the basis of their PAT Comprehension scores. Each subject was required to read from Form A of the Neale Analysis of Reading Ability which consists of passages of prose graded for difficulty from 7 to 12 year old Reading ability. Seventeen of the Subject's Reading performances were so poor that they were only required to read the first three passages. Error scores calculated did not include self-corrections and the total of 5,044 errors obtained were assigned to one of seven categories. Substitutions were found to comprise 56% of the total errors, omissions 28%, Insertions 12%, Reversals 0.8%, Complex Substitutions 1.2%, Complex Reversals 0.4% and Errors of Intonation or Accent 2.1%. The three most common Error types (Substitutions, Insertions and Omissions) were then compared for relative incidence amongst the quartile groups. Incidence of Substitutions and Insertions were found to consistently increase with Reading ability and relative incidence of Omissions to consistently decrease. When errors were considered as to whether they involved real words or non-words another consistent trend was noted - the greater the ability of the reader, the more likely the error was to involve a 'proper' word. Watson also considered the syntactic and semantic acceptability of the miscues using the same criteria as had been used by Williams. Table 1.8 summarizes her results

Table 1.8 SYNTACTIC AND SEMANTIC ACCEPTABILITY OF MISCUES (after Watson 1973)

	Totally Syntactically Acceptable(%)	Partly Syntactically Acceptable(%)	Totally Semantically Acceptable(%)	Partly Semantically Acceptable(%)
L	49	21	32	26
L-M	60	19	47	24
U-M	67	16	51	24
U	80	14	64	25

Again, two clear trends can be observed. Firstly, the better the reader the more likely his miscues are to be syntactically and semantically acceptable and secondly that, amongst all groups, syntactic constraints would appear to be more potent than semantic ones. Watson also found that the "syntactic and semantic acceptability of the errors made decreased rapidly with the increasing difficulty of the

text passages, regardless of the relative ability of the reader. The complexity of the material however, has a greater effect on poorer readers who lose control of semantic and syntactic constraints at a more elementary level than do the proficient readers." (p 49).

Although the studies described above constitute the main ORE research done in New Zealand, Clay's interest in the interrelationships of Language and Reading has not been confined to ORE as any perusal of a list of her publications will quickly show. Clay, like Goodman, has a strong pedagogical interest and her recent publications aimed at improving the quality of Reading Instruction "Reading: The Patterning of Complex Behaviour"(1972) and "The Early Detection of Reading Difficulties"(1972) represent a major contribution to the field of Reading Instruction. These publications have made available to New Zealand teachers many of the direct educational implications of Psycho-linguistic research into Reading and New Zealand Reading Teachers have been uniquely lucky to have such material readily available. The overall contribution of Clay in the interpreting of modern thought about Reading to the classroom practitioner can be equated in importance with Goodmans.

#### 1.45 ORE Research Since 1972

##### 1.451 Introduction

Since the publication of the RMI in 1972 a large number of studies have been carried out investigating ORE patterns using either Goodman's Taxonomy or the RMI. Most studies have been concerned with investigating the variations in error types and miscue patterns with different subjects under different conditions. These studies can be classified according to the conditions under which the miscue patterns were being investigated.

##### 1.452 Miscue Patterns in Languages other than English

Psycho-linguistic views of the Reading Process consider that the nature of the process applies universally and that this should be reflected in the error patterns of subjects using

languages other than English. Romatowski (1972) studied the ORE patterns of 3 bilingual (English and Polish) students. The subjects read one story in English and one in Polish, retold both and the errors were then classified according to Goodmans taxonomy. He found no significant differences between relative use of syntax, semantics and self-correction. Hoda (1977) investigated the ORE patterns of 6 bilingual students whose predominant language was Yiddish. Subjects read from Yiddish and English books of equal reading difficulty and the RMI was used to classify the errors. She found no significant differences in error patterns and concluded that the RMI was "completely useful" with a language having a different alphabetical and directional system

#### 1.453 The Effects of Dialect on Miscue Patterns.

Sims (1972) examined the effect of North American black dialect on ORE by comparing the patterns of 10 2nd graders, each reading one story written in standard English and a second one written in black dialect. Reading and Retelling were recorded and errors were then classified according to Goodmans Taxonomy. He found that any differences in Reading performance were a function of the relative Reading proficiency of the subject rather than of the differing dialect structure of the stories. He concluded that it did not appear to be efficacious to develop dialect-specific readers for widescale use in beginning reading instruction with dialect speakers. Rigg (1974) used the RMI to classify the first 50 miscues of 9 subjects 5 of whom were speakers of a rural black dialect and 4 of whom were speakers of an urban black dialect. He found widely varying individual levels of reading proficiency but concluded that those differences had no relationship with dialect-type. Bean (1976) studied the ORE of 50 Hawaian Island dialect speakers in Grades 4,5, and 6. The first 50 miscues of each subject were classified using the RMI. He found that miscues which could be attributed to dialect were mainly phonological in nature and did not interfere with the attaining of meaning. Neither did they result in an error pattern any different from what was expected. He also noted a developmental trend in that 4th graders were more reliant on Grapho-Phonic cues than 5th or 6th graders and that the 6th graders were more adept at using semantic cues.

1.454 Miscue Patterns in Subjects with Personality and Learning Style Differences.

Most of the research in this area has concentrated upon the ORE pattern differences between students who can be classified as 'reflective' and those who can be classified as 'impulsive'. Butler (1972) selected 15 reflective and 15 impulsive students of average Reading ability by reference to their scores on the Matching Familiar Figures (MFF) test. A total of 2,813 miscues were classified according to the Goodman Taxonomy. He found that the subjects classified as reflective made significantly greater repetitions and had a higher self-correction rate (21.04%) than did the impulsive subjects (13.2%). He found no significant differences as to the number of miscues, the percentage of miscues which were syntactically and semantically acceptable and in the number of hesitations. Hood (1973) also used the MFF test to select 79 subjects from 4 1st grade classes, 39 of whom he classified as impulsive and 40 as reflective. He found that the reflective readers produced fewer miscues that differed from the text and that reflective readers were more likely to self-correct substitution miscues than impulsive readers when the miscue was syntactically and/or semantically inappropriate. Butl (1974) selected 15 impulsive and 15 reflective subjects of average Reading ability out of a population of 109 2nd grade boys. He compared their ORE patterns according to Miscue frequency, semantic acceptability, frequency of hesitations, repetitions and rate of self-corrections. He found significant differences between the groups in rate of self-correction and frequency of Repetitions. Readence (1975) also used the MFF to select 41 3rd grade boys and girls of average reading ability which he divided into three groups - impulsive, reflective and 'mixed'. He used the RMI to analyze the first 25 miscues produced upon the Reading of basal material. He found no significant sex differences but did find differences amongst the groups in terms of relative use of graphic and sound cues.

Gutknecht (1972) investigated the error patterns of perceptually handicapped subjects. He used the ITPA to confirm the diagnosis of 5 pupils who had been referred to neurologists as perceptually handicapped. He found no significant differences in their ORE patterns compared with 'normal' subjects and suggested that the classification and treatment of the perceptually handicapped should be seriously examined.



Kaplan (1973) investigated the role of anxiety in error patterns. He used the Childrens Manifest Anxiety Scale and analysis of human figure drawings to select 6 high anxiety and 6 low anxiety subjects, all of whom were of average intelligence and Reading ability. He found that the low anxiety group did not tend to correct syntactically and semantically acceptable miscues as much as did the high anxiety group, and that the low anxiety group were better able to interpret, to interrelate and to deal with abstractions than were the high anxiety group.

Blustein (1977) investigated the relationship between Problem Solving Ability and OR strategies in a group of 90 randomly selected 6th grade pupils. Reading was tested on passages from Basal Instructional texts of appropriate difficulty level and problem-solving ability on eight permutations of circular patterns of eight black and white dots. He found that efficiency in problem solving was 'moderately' positively correlated with the efficient use of semantic and syntactic cues.

1.455 Miscue Patterns Where Different Purposes for Reading are Set.

Miscue Analysis has also been used to investigate the effect Reading for different purposes has upon the Reading Process. Stafford (1972) used a group of 45 3rd grade students and 45 6th grade students all of average Reading ability. The 90 subjects were separated into 3 treatment groups and were required to read passages from Form A of the Gilmore Oral Reading Test. The first group was instructed simply to read carefully, the second group was required to read for general purposes and the third for specific purposes. He found no significant differences in Miscue patterns amongst the three groups. In a study concerned mainly with the investigation of effects of exposure to a Ludington Reading Room, Thornton (1973) compared the ORE patterns of 16 slightly below average 5th Grade Readers, eight of whom had been exposed to a Ludington Room and eight of whom hadn't. He observed that when a specific purpose for reading was set, 'interference phenomena' appeared to reduce the efficiency of the reading process - a greater proportion of syntactically and semantically unacceptable cues were produced.



1.456 Miscue Patterns Where Different Types of Reading Material are Used.

Carlson (1970) investigated the miscue patterns of 6 average 4th graders reading two sections from each of Basal Reading, Science and Social Studies texts. The 1857 miscues generated were classified according to the Goodman Taxonomy. The error patterns found led him to conclude that the basic process being used to read the three different sets of material was "the same". He did note, however, that the ratio of non-correction to correction of miscues was much higher in the content area materials than in the Basal Reader stories, and that content area miscues had a lower semantic acceptability score. Kolezynski (1973) used the RMI to analyze the miscues of average readers in their encounters with the language patterns found in four content areas - Science, Social Studies, Maths and Literature. His 20 6th graders of average or above average reading ability were required to read one passage from each section area. He found no significant differences in the relative syntactic and semantic acceptability of the subjects miscues. Brazee (1976) compared the miscue patterns of 55 8th graders of average Reading ability on Reading materials which were described as Expository with those where the Prose could be described as Narrative. He found significant difference in seven of the eighteen categories of miscue categories used. Reading Expository material the subjects relied more on graphophonic cues and produced more intonation miscues. On the Narrative material a significantly higher percentage of miscues resulting in Comprehension Loss were found but the retelling scores were higher!

1.457 Miscue Patterns in Readers Who Have Been Subjected to Different Teaching Methods.

Some investigators have investigated the error patterns of subjects who have had the use of Ludington Reading Rooms as part of their Reading Instructional programs. Thornton (1973) compared the miscue patterns of two groups of pupils, only one of which had been exposed to a Ludington Reading Room. Both groups were required to read two stories, one for which a specific purpose for reading had been set. The miscues of both groups on both stories were analysed according to the Goodman Taxonomy. On the general purpose Reading Thornton found that those who had been exposed to the Ludington Room were more proficient

in utilising efficient strategies and that they maintained the deep meaning of the author better. The difference, however, disappeared when the Reading was for a specific purpose. Watson (1974) compared the error patterns of 27 5th graders before and after they had been exposed to a Ludington Reading Room. Errors generated were analyzed according to the RMI. She found significant gains occurred in the pupils ability to utilise syntactic and semantic cues and on Comprehension of content and characters. All of the group gained in Reading proficiency but the greatest gain was amongst the Readers of low ability.

Anderson (1974) used the RMI to evaluate the effects of a supplemental language program. Five subjects were exposed to the program and five were not. The miscue patterns were studied both before and after the experimental group had taken part in the program. The treatment group made significant gains in comprehension and in the percentage of their miscues which were syntactically and semantically acceptable. The number of miscues they made declined.

Roberts (1974) observed the oral interaction of three 1st-grade Teachers with 50 subjects divided into 3 groups according to whether their Reading ability was low, middle or high. Twenty-seven Reading Group sessions were videotaped and the RMI used to investigate the relationship between teachers responses and ORE patterns. She found that teacher behaviours of correction and information consistently increased as Reading Group level decreased but that no significant differences attributable solely to frequency or type of Teacher Response could be found.

Carder (1975) used the RMI to compare the ORE patterns of 15 children who had been assigned to "Learning Disabled" Classes with 15 children who had been assigned to "Remedial Reading" Classes. He found no significant differences.

Tartelli 1974 used the RMI to assess the effect of Reading Strategy lessons on the ORE patterns of 12 below average Grade 4, 5 and 6 children from different linguistic backgrounds. He concluded that the concept of basing Reading instruction upon the ways each reader found his own language helped him to acquire meaning from the printed language of an author was "useful".

Dank (1976) investigated the effect of exposure to different Basal Reading Programs. He used the RMI to investigate the ORE patterns of 20 subjects, 10 of whom had been using the Ginn 'Reading 360' Instructional Program and 10 of whom had been using the McGraw-Hill "Programmed Reading" Basal system. This system highlights letter-sound relationships whilst 'Reading 360' is a language-experience oriented program. He found that those subjects who had been exposed to 'Reading 360' produced a higher percentage of semantically acceptable miscues and that they had higher retelling scores. Those who had been using 'Programmed Reading' generated a higher percentage of miscues with high graphophonic similarity and produced more 'nonwords'.

Norton (1976) used the RMI to compare the ORE patterns of 40 pupils, 20 of whom had been taught in schools whose instructional programs could be described as 'Synthetic-Phonic' and 20 in schools whose instructional programs could be described as Analytic-Eclectic. He found that those subjects who had been taught in programmes with a 'Synthetic-Phonic' bias produced less semantically acceptable miscues, a higher percentage of graphophonically acceptable miscues, a higher number of non-words, a lower self-correction percentage and lower Comprehension scores.

#### 1.458 Miscue Patterns of Subjects for whom English is a Second Language.

A number of interesting studies have been carried out to investigate the English ORE patterns of subjects for whom English is not their native language. Folman (1973) studied the ORE patterns of 5 Israeli non-native speakers of English reading an unadapted American story. Analyzing their miscues according to the Goodman Taxonomy she found (1) a preoccupation with accurate acoustic rendition to the extent of overlooking syntactic and semantic considerations and (2) their Reading was not characterized by miscues that clearly reflect the subject's ability to predict syntactic and semantic structure. Williamson (1977) compared the ORE patterns of 30 monolinguals with 30 bilinguals (Spanish/English) on English Reading materials. Ten of each group were from the 4th, 5th and 6th Grades. She found that monolinguals demonstrated more sensitivity to grammatical

and semantic cues and that their miscues were less likely to result in Comprehension loss. DuBois (1977) studied four Navajo children over a period of two years. He required them to read two types of stories - one set from a typical American basal series, and the other from stories which were 'culturally relevant'. He found that the subjects produced many miscues which were Second-Language-Involved, and that a greater amount of this type of miscue was found on the culturally relevant stories than on the basal ones. He found a higher percentage of syntactically acceptable than semantically acceptable miscues on the basal stories, and the percentage of semantically acceptable miscues was much higher on the culturally relevant passage. He found that his subjects were more successful in producing acceptable English grammar than in comprehending what they had read and concluded that it appeared that the subjects may believe the purpose of Reading is to learn English or produce acceptable English grammar!

#### 1.459 Miscue Patterns in High Ability and Low Ability Readers.

Coomber (1972) used Webers Graphic Similarity Index to compare the Grapho-Phonic acceptability of the miscues of 30 3rd Graders. Ten were of below average Reading ability, 10 of average Reading ability and 10 of above average ability. Each subject started Reading upon materials of 1st Grade difficulty level and continued Reading progressively more difficult material for 15 minutes or until they had a 20% error rate. He found that good Readers miscues were more likely to resemble the stimulus word in both initial and final aspects. Menovsky (1972) investigated the ORE patterns of 18 subjects using Goodmans Taxonomy to analyze their errors. Three of his subjects were Grade 2 pupils of average Reading ability, 3 each were below average, average and above average 4th Graders, and 3 each were average 6th and 8th Graders. He found a significant difference between good and poor Readers on the length of the passage they needed to 'pick up the context'. He found that on passages of 200 words or less, all groups produced a higher than average percentage of errors that were totally unacceptable both syntactically and semantically, but that the improvement in percentages of acceptable miscues occurred much more quickly for the better readers. He also found that all group's miscues were more likely to be syntactically than semantically acceptable and

that as readers went further through each passage they appeared to use Grapho-Phonic cues less. Heffner (1974) studied the ORE patterns of 5 Junior College Students of below average Reading ability. He used the RMI to analyse their miscues and found that miscues were more likely to be syntactically than semantically acceptable and that as the passage difficulty increased so did the use of grapho-phonetic cues. Brady (1974) compared two groups of readers, both reading at the Fourth Grade level but one of which had a mean Chronological Age of 11.2 and the other a mean CA of 9.4. He found that the remedial (high CA) group made more miscues and made less efficient use of grapho-phonetic cues. He also found that in the first one-third of the text low ability Readers were just as good at producing syntactically and semantically acceptable miscues as were the proficient ones but that in successive segments of the text the low proficiency groups use of cueing systems declined markedly. Little (1975) used the RMI to compare one group of 15 disabled Readers with 15 readers of average ability selected according to their scores on the Silvaroli Classroom Reading Inventory. The CA of the groups ranged from 8.7 to 9.7. The IQ of all the subjects as measured by the Slosson Intelligence Test was between 90 and 110, the subjects had at least a 90% attendance rate and none of the subjects had any 'primary emotional maladjustment'. Each subject was required to read the same 400-word passage which had a 4th-Grade Reading level. He found that the substitutions of good Readers were significantly more syntactically and semantically acceptable than those of the below average readers. Leslie (1977) used a similar method of selecting subjects, her sample consisting of 20 subjects currently Reading at a 4th Grade Instructional level, but 10 of whom were 4th Graders and 10 of whom were 7th Graders. She found that the low ability group made more uncorrected miscues which resulted in meaning loss and that they tended to make their miscues on high frequency words whereas average readers made theirs on low frequency words. Levine (1977) used the Gray Oral Reading Test to distinguish between good and poor readers at 1st, 2nd, 3rd and 5th Grades and then analyzed the errors they had made on the Gray. He found that both good and poor Readers at all Grade levels were equally influenced by the visual configuration of the stimulus word but that the good at all levels produced significantly more nonword errors. Dewitz (1977) selected 25 good Readers and 25 poor Readers by using two 'recognised tests' and teacher opinion. He found that the poor readers

ignored grammatical constraints to substitute a graphically similar word far more frequently. Dolqueist (1976) investigated the ORE patterns of groups of Average 2nd Grade, Average 4th Grade and Disabled 4th Grade Readers. The subjects read material of difficulty level one Grade higher than their current instructional level. Miscues were analyzed according to their syntactic, semantic, and grapho-phonetic acceptability. He found: (1) no significant differences amongst the groups in types of Oral Reading Miscues; (2) the 2nd Grade and slow 4th Grade subjects made greater use of grapho-phonetic cues, most attention appearing to be concentrated upon the first letter; (3) all groups errors had a high level of syntactic and semantic acceptability except that the slow 4th Grade groups' scores were relatively higher than the 2nd Grades group, and (4) the slow 4th Grade group had the highest self-correction rate.

#### 1.4510 Other Relevant Studies

Mortelock (1971) used six highly skilled middle school readers to investigate relationships between Oral and Written language. He had them read orally a passage, retell orally, retell in writing and then read their own written retelling. Oral and written retellings were analysed for miscues, comprehension and T-Unit segmentation. Comprehension was found to be higher and T-Units longer in the written retellings. He concluded that a relationship was indicated between T-Unit, length, semantics and literary style.

Glen (1976) investigated silent and oral Reading. He divided 39 4th graders of average Reading ability into three groups. Group one read the passage orally then sat a cloze test designed to measure comprehension. Group two read the passage silently and then sat the cloze test. Group three read the passage silently, sat the Cloze test and then read the passage orally. Miscues so produced were analyzed according to selected criteria of the RMI. He found: (1) no difference in the number or type of miscues amongst the groups; (2) Comprehension was no better for Group 2 compared with Group 1, and (3) Oral reading was not improved by Silent Reading first i.e. Group 3.

Greene (1975) investigated multiple (repeated) miscues i.e. those that occur more than once in the OR of a particular passage. He used

a sample of 56 2nd, 4th and 6th graders, including readers of low, average and high Reading Ability. He examined these repeated miscues in terms of their self-correction rate, graphic proximity, sound proximity and syntactic and semantic acceptability. He found no consistent developmental trend in graphonic acceptability but did find a trend of increasing syntactic and semantic acceptability on higher Reading levels.

Lipsit (1976) used 30 5th Grade subjects of average intelligence and Reading ability to study the nature of Regressions in Oral Reading and their relationship to Comprehension. The first 50 miscues from the reading of two selections of 6th Grade basal readers were classified according to relative incidence of self-corrections and semantic acceptability. He concluded that Regressions were beneficial to the Reading process and should be regarded as such by Teachers of Reading.

Blair (1977) used the RMI to compare 12 younger readers with 12 more mature readers matched according to comparable percentile level scores on the Nelson - Derry Standardized Reading Test. The first 25 substitution errors were analyzed and a Retelling score computed. He found that syntactic acceptability was the most important cueing system for each group and that both groups had the same rate of miscueing and self-correction. He found, however, that the more mature readers had better Comprehension and Retelling Scores.

Raisner (1978) studied both the use of the cueing systems by 14 Adult (CA 22-45) Black College students who were poor readers, and their knowledge of the cueing systems they were using, by using both RMI and Introspection. The subjects were required to read selections taken from College Textbooks in Sociology, Psychology, Chemistry and Political Science. He found that: (1) all the subjects made use of all three cue systems; (2) all the subjects relied more heavily on grapho-phonetic cues as the difficulty level of the reading material increased; (3) the ability to produce syntactically and semantically acceptable miscues varied widely with the materials; (4) higher rates of miscueing were produced on easier material than on the more difficult material; (5) there was no correspondence between miscue rate and level of comprehension and (6) retrospection by the subjects revealed strong awareness of graphic cues, some awareness of the role of semantic cues but virtually no awareness of the use they made of syntactic cues.



Reuter (1976) used a sample of 17 6th graders of average Reading ability to examine the relative difficulty of six 'classics' of childrens literature. Each subject was required to read a 500-700 word selection from each of three of the six books. The error patterns were then analyzed using the RMI and the relative difficulty levels then calculated. Three of the classics - 'Winnie the Pooh', 'The Wizard of Oz' and 'Black Beauty' were found to have a much lower level of Reading difficulty than the other three - 'Robinson Crusoe', 'Treasure Island' and 'Wind in the Willows'.

Allouche (1977) used the nature of Hebrew lithography to investigate the role of grapho-phonetic cues. The printed form of the Hebrew language is such that the visual display available to the Reader may be reduced by removing the sublinear vowels. He used a random sample of 4 boys and 4 girls from a local afternoon religious school. Oral Reading on a passage of Hebrew from which the sublinear vowels had been removed was analysed and the first 25 miscues analyzed according to selected RMI categories. He found that the Reduction of the graphic display did not seem to have promoted a more efficient or more effective use of the various cueing systems.

#### 1.5 The Research Problem: Miscue Patterns at Independent and Frustration Levels and their Interrelationships.

A quick perusal of the Miscue Research summarized above indicates serious weaknesses in the experimental design of many of the studies. A lot of the studies have used very small samples, the selection methods of which are questionable if attempts are to be made to make inferences for the general population from the results of the subjects comprising the samples. In many cases more than one scorer has been used and this raises problems of consistency in the constructing of miscue patterns. Some of the results obtained appear to be inconsistent and differences in Research Method must be excluded as a possible explanation for such disagreements before significance can be assigned to the respective results. Such design weaknesses are only typical of a newly instigated and rapidly expanding field of interest.

One of the most serious deficiencies in the research to date, is



the failure to give sufficient attention to the level of difficulty of the Reading material being used to 'stimulate' the production of miscues. In their enthusiasm to gather miscues most researchers have tended to require their subjects to Read material which is for them, relatively difficult. As Fry (1977 p 265) observes "when giving a miscue inventory a relatively hard and long passage is chosen so that there will be plenty of miscues to analyze". Such an approach is based on the assumption that the miscue patterns produced by a subject will be identical whether he is Reading material that he finds easy or he is Reading material that he finds difficult. The New Zealand studies of Watson and Williams described earlier, represent some of the best designed studies in the field, but both have based their design on this assumption. In William's study, for example, those Readers who read only the first three passages would have made a high proportion of their miscues on Reading material at their Frustration level. At the other extreme, the most competent Readers amongst his subjects would have made almost all their miscues on material which was at their Independent level. The evidence to support such an assumption has yet to be produced and if there is, in fact, a significant difference between Independent level and Frustration level miscue patterns studies which compare the miscue patterns of subjects will have produced invalid results unless the subjects' miscues had been collected on passages which each subject found equally difficult. Absence of evidence to confirm this assumption is perhaps explained by difficulties in defining, let alone quantifying, three of the variables concerned i.e. (1) the Independent Reading Level of the Reader; (2) the Frustration Reading Level of the Reader and (3) the Reading Difficulty Level of any particular piece of prose. However, the investigation of this assumption not only has important implications for the interpreting of the Research Literature, but also has substantial pedagogical implications, so that there is an urgent need for some detailed consideration to be given to this problem. If, for example, significant differences were found between the miscue patterns of good and poor Readers at their Independent Reading Level and/or their Frustration Reading Level new light could be thrown upon the instructional needs of Low Ability Readers.

This then is the Research Problem to which this study is directed - are the miscue patterns which Readers produce at their Independent and Frustration Levels the same, and is the relationship between the miscue

patterns at the two levels equally consistent for groups of differing sex, age and ability.

In addition, the study has three secondary aims. These are:

(1) to fill a gap in Research data on the ORE patterns of New Zealand subjects. At present no studies of the miscue patterns of New Zealand middle Primary school children (i.e. Ages 8, 9, 10) have been published;

(2) to evaluate the utility of the RMI as a diagnostic tool for the practising classroom teacher, with particular regard to the return in terms of useful diagnostic information obtained, giving regard to the time and effort invested.

(3) to see if there are any significant differences between the miscue patterns of pupils who have scored highly on the PAT Listening Comprehension Test and low on the PAT Reading Comprehension and Reading Vocabulary tests and the miscue patterns of pupils who have scored high or low on all three tests.

## Chapter Two : Research Procedure

### 2.1 Basic Research Design

To enable formal evaluation of the Research Problems outlined in Chapter One the ORE patterns at both Independent and Frustration Reading Levels of 30 high ability and 30 low ability Readers drawn in equal numbers from both sexes and three age levels (8,9,10) were analyzed and compared.

### 2.2 The Selection of Subjects for the Investigation

#### 2.21 The Sample

The pupils of two Palmerston North Primary Schools were chosen to comprise the initial sample from which the subjects were drawn. It was originally intended to obtain all the subjects from one school, but it was found that this school could not supply sufficient numbers of low-ability ten year old girl readers and the remainder of the subjects were obtained from the second school. As a result 93% of the subjects finally selected for the study were drawn from the first school and 7% from the second. All the pupils at both the schools had been administered the Progressive Achievement Tests in Listening Comprehension, Reading Vocabulary and Reading Comprehension the previous month and inspection of the means and standard deviations of the test scores at each age level and for both sexes gave no reason to suspect that the pupils of these schools did not comprise a representative sample of the total New Zealand population. The subjects that comprised the sample (i.e. the total populations of both schools) were further subsampled on a stratified basis. The criteria for such selection were (1) ability, (2) age and (3) sex. In addition any potential subjects with characteristics which suggested that they would not be representative of typical New Zealand pupils of the same age (e.g. recent immigrants), were discarded prior to the initial selection process beginning.

#### 2.22 Definitions of the Criteria Used for Subject Selection.

## 2.221 Ability

Traditional definitions of Reading ability are not distinguished by their unanimity or preciseness. Relative degrees of Reading Ability are usually defined in terms of the 'difficulty level' of the prose which a particular subject can accurately read. The difficulty level of any particular piece of prose is described by assigning to it, the mean age of the Readers for whom that piece of prose is the most difficult that they can read independently. Such setting of the Reading level of prose passages is traditionally calculated by both subjective opinion as to what a particular age group will deal with 'comfortably' and by the use of a variety of formulae (e.g.: Elley Noun Count, Fry Readability Scale). The assigning of difficulty level to prose passages by the use of such methods is not noted for the unanimous agreement of the classifiers but provided the difficulty level of a prose selection has been calculated with due care the assigning of such levels does have sufficient accuracy for most purposes. A high ability Reader is considered to be one who can read successfully, material which has been assigned a difficulty level above that of his chronological age. A low ability Reader is one for whom the most difficult passage he can read independently has a difficulty level below his chronological age. How much a Reader's 'Reading Age' has to be above or below his chronological age to qualify as a High Ability or Low Ability Reader, varies considerably in the literature.

For the purposes of this study it was decided to adopt more precise definitions of relative ability but before the definitions adopted can be described a consideration of what does and what does not constitute Independent Reading is necessary.

### 2.2211 Definitions of Independent and Frustration Reading Levels.

The Reading Literature contains a large number of terms used to describe the relationship between a particular passage's Reading difficulty level and the Reading ability of a particular Reader. 'Independent Level', 'Recreational Level', 'Instructional Level' and 'Frustration Level' are the terms most commonly used but these are not used to refer to precisely the same phenomena and users of the terms

rarely bother to define them as categories which are mutually exclusive. A portion of text is most commonly regarded as being at a subject's Reading Frustration Level if it is of such difficulty that the Reader cannot extract 'sufficient' meaning from it - i.e. he is not able to read it accurately enough to be able to sufficiently decode the writers (encoders) deep level meaning. Such unsuccessful decoding is almost invariably recognised as such by the Reader and it is from this lack of success that the term 'frustration' has arisen - dissatisfaction caused by lack of success. A prose passage is regarded as being at a subject's Independent level of Reading difficulty if he can competently decode the encoder's message with almost complete success and without any additional 'external' help. A passage is usually considered to be at a subject's Instructional level if it is somewhere between the two i.e. where accuracy is high enough to both: (1) allow him to achieve sufficient success in decoding for him to be able to feel that he is succeeding at the task and (2) to stimulate the Reader to develop and practise new skills and strategies.

For the purposes of this study it was decided to define the Independent and Frustration Levels of Reading in terms of the rates per 100 running words of miscues which resulted in meaning loss. Frustration level was defined in terms of the level of difficulty of prose upon which the Reader made more than four miscues which resulted in meaning loss i.e.: a success rate of less than 96%. Independent level was defined as the difficulty level of the most difficult piece of prose upon which the Reader made 4 or less miscues which resulted in meaning loss. i.e. a success rate of 96% or greater.

#### 2.2212 Definitions of High Ability and Low Ability Readers.

For the purposes of this study the following definitions were adopted:

(1) Low ability 8-year old Reader. An 8-year-old whose Independent Reading Level is  $1\frac{1}{2}$  years lower than his chronological age.

(2) High ability 8-year old Reader. An 8-year-old whose Independent

Reading Level is  $1\frac{1}{2}$  years above his chronological age.

(3) Low ability 9-year-old Reader. A 9-year-old whose Independent Reading Level is 2 years below his chronological age.

(4) High ability 9-year-old Reader. A 9-year-old whose Independent Reading Level is 2 years above his chronological age.

(5) Low ability 10-year-old Reader. A 10-year-old whose Independent Reading Level is 2 years below his chronological age.

(6) High ability 10-year-old Reader. A 10-year-old whose Independent Reading Level is 2 years above his chronological age.

The lower difference between Chronological age and Independent Reading Level for the 8-year-old group reflects the varying value of the year unit according to the developmental status of the Reader.

Thirty pupils of high Reading ability and thirty pupils of low Reading ability were selected for this study according to the criteria outlined above.

#### 2.222 Age

The subjects for this study were selected from three age groups:

- (1) 8 years old. Range 7.7 to 8.6
- (2) 9 years old. Range 8.7 to 9.6
- (3) 10 years old. Range 9.7 to 10.6

Ten of the thirty high ability Readers were selected from the 8-year-old Age range, ten from the 9-year-old range and ten from the 10-year-old range. An identical selection procedure was followed in selecting the 30 low ability Readers.

## 2.223 Sex.

In the subgroup of 10 high ability 8-year-old Readers, 5 of the group selected were boys and 5 were girls. An identical selection procedure was followed in selecting the other five groups of ten subjects.

## 2.224 Sectional Summary.

Sixty subjects were selected for this study, thirty of whom were classified as high ability Readers and thirty of whom were classified as low ability Readers. Thirty of the sixty were boys and thirty were girls. Twenty of the Group were eight year olds, twenty were nine year olds and twenty were ten year olds. Table 2.1 summarizes the composition of the group.

Table 2.1 Composition of the Sample Group

Chronological Age	8		9		10		
	Boys	Girls	Boys	Girls	Boys	Girls	
Low Ability	5	5	5	5	5	5	30
High Ability	5	5	5	5	5	5	30
	10	10	10	10	10	10	
	20		20		20		n = 60

## 2.23 The Selection Process

## 2.231 Initial Selection

The setting of the selection criteria outlined above meant that potential subjects had to be tested for their ability to meet the criteria rather than selected by any type of random sampling. Initial selection of subjects by ability was carried out by referring to their PAT Comprehension Level Scores. Potential subjects were then tested on Reading material at the difficulty level indicated by their level score and either accepted or rejected as subjects according to their performance on the Reading material. The potential subjects had

sat the PAT tests during March 1978 and the testing sessions on prose material took place during April 1978. If the subject's performance on the Reading material confirmed the Reading Level diagnosis of the PAT Comprehension Levels Score then the subjects were included in the sample and a minimum of 25 miscues gathered at both their Independent Reading Level and their Frustration Reading Level. As a result of this process 78 potential subjects were tested, 18 having to be discarded as not meeting the criteria set for subject selection. This represents a rejection rate of 23%. The PAT Level Scores are widely used in schools to match Readers with Reading material of appropriate difficulty level and such scores are sometimes attributed an aura of divine mystique by teachers and educational administrators. Because of the high rejection rate found necessary in subject selection a detailed consideration will be given to the accuracy of the PAT Comprehension Level Scores in establishing the Independent Reading level of each subject.

#### 2.2311 Reading Ability as Predicted by the PAT Level Scores.

The Progressive Achievement Test battery currently includes three tests which are designed to assist teachers in assessing Reading ability. These are the Reading Comprehension Test, the Reading Vocabulary Test and the Listening Comprehension Test. The Reading Vocabulary and Reading Comprehension tests were first published in 1969 and the Listening Comprehension Test in 1971. Each test consists of three forms - A, B and C. Forms A and B are used in alternate years in schools and Form C is reserved for use by the Test's publishers. The Reading Comprehension and Vocabulary tests assess the Reading of pupils from Std 2 to Form IV and the Listening Comprehension Tests starts one year earlier at Std One. All three tests use an overlapping format - each test booklet contains the items needed for all the age groups, the particular set of items a subject sits being determined by their age. In all three tests raw scores are converted into percentile rankings and level scores according to the chronological age of the subject. Six-monthly intervals are used in classifying chronological age. The PAT Vocabulary Test is designed to measure the number of common words understood by each pupil. Each word is placed in the context of a short sentence and the subject's task is to select the best synonym from a list of five words. Reliability coefficients



for this test are .91 and above. The Reading Comprehension Test is designed to measure both factual and inferential Comprehension of prose material. Particular skills and types of Reading material upon which the tests are based were determined and weighted by a cross-section of 300 New Zealand teachers and by 10 committees of Reading Specialists set up in each Education Board district. Each 200-300 word passage is followed by 4, 5 or 6 multiple choice items. Fifty per cent of the Prose Passages are Narrative prose, twenty-five per cent Descriptive and twenty-five percent Expository. Reliability Coefficients for this test range upwards from a minimum of .83 and the Correlations with other well-known Reading Comprehension Tests are .75 or higher. The Listening Comprehension Test is very similar to the Reading Comprehension Test except that in this case the prose passage is read to the pupils by the tester and the subjects do not have a copy of the passage in front of them. A factor analytic study by Read and Hughes (1974) suggests that the Listening Comprehension Test samples the relevant factors in different proportions to the other two tests, and a large discrepancy between Listening Comprehension Test score and Reading Comprehension Test score is usually assigned considerable significance as an indicator of failure to read at 'potential' ability level. The Reading Comprehension Test levels are a set of mutually exclusive categories based upon Noun Frequency Readability Rating and each level is assigned an "age" which is variously described as "the equivalent age level" (Manual, p11); "the average age of children performing at each level" (p 11), the "present level of achievement" (p 9) and as the level at which the subject "can be expected to read with adequate Comprehension" (p 9). To summarize, then, the age levels provided are designed to provide a guide as to the difficulty level of the Reading material upon which a subject can be expected to read independently.

2.2312 Interviews - Establishment of Rapport and Task Specification.

Each initially selected subject was required to read orally a varying number of prose selections, this Reading being tape recorded. Before the subject was asked to read he was told that the experimenter was interested in hearing him read passages some of which he would find easy and some of which would

be found to be quite difficult. The experimenter would then remove the prose passage and he would be asked to tell the experimenter all that he could remember about what he had just read. This, too, was recorded. The subject was told that he would probably find the first passages quite easy but that they would probably get more difficult as the session went on. Care was taken to make it clear that while he was to try as hard as he could, errors were expected and the making of them would not be regarded with great 'concern' by the Tester. Few problems were experienced in establishing rapport and gaining maximum effort from the subjects. During the process of Reading many subjects came across words that they either could not or would not attempt. In such cases they were told the particular word or words by the Tester. During the Retelling of a passage just read, some subjects needed no prompting by tester questioning but most needed some form of such prompting, especially when Reading material at their Frustration Level. Each subject was initially asked to read a passage the difficulty level of which the experimenter expected to be below his Independent Level. Passages of increasing difficulty were then presented until the subject had either reached frustration level or his concentration was starting to waver. The session was then terminated, the subject thanked for his help and told that he might be needed again at a later date. Recordings of the passages read were then analyzed using the Reading Miscue Inventory, Independent and Frustration levels were established and Miscues tallied to see if 25 miscues had been obtained at both Independent and Frustration levels. Some of the initially - selected subjects had to be discarded at this stage as their Independent Level of Reading did not meet the criteria for inclusion in the final sample. Most of those accepted as meeting the ability criteria had to be re-tested, to either further clarify independent and frustration level and/or to gather more miscues at their independent and frustration levels. A small number of subjects had to be tested a third time to complete the gathering of the required data.

2.2313 Prose Passages Used in Testing to Establish the Independent and Frustration Levels of Subjects and to Gather Miscues at Subjects Independent and Frustration Reading Levels.

The prose passages used as stimuli material for the subject's Reading performance were drawn from three separate sources.

(1) The McIlroy Graded Passages

This set of prose passages consists of 14 passages selected from American basal readers of sequentially graded levels of difficulty. The difficulty levels of the passages were independently confirmed before inclusion, and the set was made up with the intention of assisting Remedial Reading Teachers to establish the appropriate Instructional Level of each subject. The passages have been widely used by both students and teachers in the Palmerston North area for this purpose. Table 2.2 outlines the characteristics of these passages.

Table 2.2 McIlroy Graded Passages

Passage No.	Difficulty Level	No. of Words	Prose-type
1	6-6½	134	Narrative
2	6-6½	118	"
3	6½-7	132	"
4	6½-7	136	"
5	7-7½	125	"
6	7-7½	143	"
7	7½-8	131	"
8	7½-8	143	"
9	8-8½	241	"
10	8-8½	144	"
11	8½-9	153	"
12	8½-9	177	"
13	9-10	193	"
14	9-10	183	"

## (2) Holdaway Informal Reading Inventory Prose Passages.

These passages form part of the Holdaway Informal Prose Inventory, a test which is designed to provide specific diagnostic information about individual Readers by assessing their Reading on a set of graded passages of increasing difficulty (Manual p 59). These passages were used to both supplement the McIlroy passages and to extend the range covered by the passages. Table 2.3 summarizes the characteristics of the various prose passages

Table 2.3 Holdaway Reading Inventory Prose Passages

Passage No.	Difficulty Level	No. of Words	Prose-type
A	5-6	94	Narrative
B	6-7	93	"
C	7-8	115	Expository
D	8-9	162	"
E	9-10	168	"
F	10-11	200	"
G	11-12	181	"
H	12-13	216	"
I	13-14	360	"

## (3) Selections from "Economics" by P.A. Samuelson

Even passages H and I from Holdaways Inventory were not sufficiently difficult to be at the Frustration Level of some high ability 10-year-old Readers so it was necessary to draw passages from a third source. Two passages were selected from Samuelsons "Economics" (1964), a book which has been used as a Textbook for Economics I at Victoria University. Testing of Readability Level by the Elley Noun Count and the Revised Fry Readability Formula showed the passage to be of "Undergraduate" difficulty level. Table 2.4 summarizes the characteristics of the two passages.

Table 2.4 Extracts from "Economics" by P.A. Samuelson

Passage No.	Difficulty Level	No. of Words	Prose-type
1	16+	218	Expository
2	16+	167	"

All the passages used in the testing of pupils are reproduced in the Appendix.

2.2314 Comparisons of the Independent Reading Levels assigned as a result of PAT Comprehension Levels Scores with Levels assigned after Testing On Prose Passages.

2.23141 Introduction

Before outlining the procedure used to quantify these differences it is important to note that the test constructors do not encourage such quantification. Nor do they claim that their test is capable of discriminating so finely amongst the Independent Reading Levels of subjects especially at the eight-year-old and below level. (Manual p 10). They even state that there is, for example, "not a reliable difference between levels 3a, 3b and 3c." (p 9). To allow numerical comparisons with the results obtained by the prose testing outlined above, some such quantification was necessary, but the results so obtained should be interpreted bearing the above reservations in mind.

2.23142 Conversion of PAT Reading Comprehension Level Scores to Equivalent Age Scores.

Each Reading Comprehension Level Score is assigned an age level which is then further divided into a series of sublevels varying in number from a minimum of four (Levels 2, 4, 5, 6 and 7) up to maximum of seven (level 10). The length of the age levels is not homogenous. Level One for instance, is described as "below 8 years", Level Two as "8-8½ years", Level Five as "10 years"

and Level Ten as "Over 16 years". This means that there is a lot of overlap in age levels and it is difficult to sort out exactly what is the length of the interval a particular level is intended to indicate. For example Level Three's age interval is described as  $8\frac{1}{2}$ -9, Level Four's as  $9\frac{1}{2}$  and Level Five as 10. Does this mean that the interval length of Level 4 is from 9.3 to 9.9 or from 9.3 to 9.10? Does the Level 10 Interval stretch from 9.6 to 10.6 or from 9.9 to 10.3? To calculate the ages that could reasonably be assigned to each level the length of the interval a level appeared to cover was calculated and the midpoint of that interval taken as the appropriate age level for that Level score. Table 2.5 summarizes the classification of Level Scores as Reading Age Scores. The midpoint of the age level assigned from so interpreting the PAT Level Scores and the midpoint of the age-interval assigned to each subject after the Prose Reading Testing Sessions were then compared. Table 2.6 shows the result of these comparisons. Table 2.7 summarizes the relationship between these measures. T-tests were then used to determine whether the discrepancies were likely to be significantly different for boys, girls, 8-year-olds, 9-year-olds or 10-year-olds and high or low ability Readers. No significant differences were found at the .05 level.

Table 2.5 PAT Level Scores up to 9A Converted to Reading Age Intervals

Level Score	Six-month interval	Midpoint	Level Score	Six-month interval	Midpoint
1f	5.0-5.6	5.3			
1e	5.6-6.0	5.9	5b	10-10.6	10.3
1d	6.0-6.6	6.3	5a	10.3-10.9	10.6
1c	6.6-7.0	6.9	6d	10.6-11.0	10.9
1b	7.0-7.6	7.3	6c	10.9-11.3	11.0
1a	7.6-8.0	7.9	6b	11.0-11.6	11.3
2d	7.10.5-8.4.5	8.1.5	6a	11.3-11.9	11.6
2c	8.0-8.6	8.3	7d	11.7.5-12.1.5	11.10.5
2b	8.1.5-8.7.5	8.4.5	7c	12.0-12.6	12.3
2a	8.3-8.9	8.6	7b	12.9.5-12.10.5	12.7.5
3e	8.4.2-8.10.2	8.7.2	7a	12.9-13.3	13
3d	8.5.4-8.11.4	8.8.4	8e	13.1.8-13.7.8	13.4.8
3c	8.6.6-9.0.6	8.9.6	8d	13.6.4-14.0.4	13.9.4
3b	8.7.8-9.1.8	8.10.8	8c	13.11-14.5	14.2
3a	8.9-9.3	9.0	8b	14.3.8-14.9.8	14.6.8
4d	8.10.5-9.4.5	9.1.5	8a	14.9-15.3	15
4c	9.0-9.6	9.3	9e	14.11.4-15.5.4	15.2.4
4b	9.1.5-9.7.5	9.4.5	9d	15.1.8-15.7.8	15.4.8
4a	9.3-9.9	9.6	9c	15.4-15.10	15.7
5d	9.6-10.0	9.9	9b	15.6.4-16.0.4	15.9.4
5c	9.9-10.3	10	9a	15.9-16.3	16

Table 2.6 A Comparison of Independent Reading Levels  
with Reading Levels Predicted by PAT  
Reading Comprehension Levels.

Subject No.	Sex	Age	Ability	PAT Level Score	Converted Reading Score	Reading Level	Discrepancy <sup>+</sup> (months)
1	M	8	P	1b	7-7.5	7-7½	0
2	M	8	A	1e	5.6-6	8-8½	4
3	M	8	A	1c	6.6-7	7½-8+	2
4	M	8	P	1f	5-5.6	5-5½	0
5	M	8	P	1b	7-7.6	6-6½	2
6	M	8	P	1f	5-5.6	6-6½+	2
7	M	8	P	1b	7-7.6	6½-7-	1
8	M	8	G	8d	13.6.4-14.0.4	11-12+	4
9	M	8	G	6a	11.3-11.9	11-12+	0
10	M	8	G	7b	12.4.5-12.10.5	11-12+	2
11	M	8	G	8b	14.3.8-14.9.8	11-12+	4
12	M	8	G	7b	12.4.5-12.10.5	12-13	0
13	M	8	G	5d	9.6-10.0	10-11	1
14	M	8	P	3e	8.4.2-8.10.2	5-5½-	4
15	F	8	P	1e	5.6-6	7-7½	3
16	F	8	G	1b	7.0-7.6	8½-9+	3
17	F	8	P	1f	5.0-5.6	5½-6	1
18	F	8	P	1d	6.0-6.6	7-7½	1
19	F	8	P	1d	6.0-6.6	7½-8+	3
20	F	8	P	1e	5.6-6	7-7½-	2
21	F	8	G	5d	9.7.5-9.10.5	9-10+	0
22	F	8	G	7c	12.0-12.6	11-12	1
23	F	8	G	5b	10-10.6	9-10+	1
24	F	8	G	5a	10.3-10.9	9½-10-	1
25	F	8	G	3b	8.7.8-9.1.8	9-10+	1
26	M	9	G	6a	11.3-11.9	12-13-	1
27	M	9	G	8d	13.6.4-14.0.4	12-13-	2
28	M	9	G	7d	11.7.5-12.1.5	11-12+	0
29	M	9	G	4a	9.3-9.9	10-11++	2
30	M	9	G	4a	9.3-9.9	10-11+	2
31	M	9	P	2b	8.1.5-8.7.5	8-8½	0
32	M	9	P	1b	7.0-7.6	6½-7+	1
33	M	9	P	1b	7.0-7.6	7-7½-	0
34	M	9	P	2d	7.10.5-8.4.5	6½-7	2
35	M	9	P	1d	6.0-6.6	7-7½	2
36	M	9	P	1a	7.6-8.0	7-7½+	1
37	M	9	P	1d	6.0-6.6	6½-7+	1
38	F	9	G	8a	14.9-15.3	11-12+	4
39	F	9	G	8e	13.1.8-13.7.8	12-13	1
40	F	9	G	7b	12.4.5-12.10.5	13-14	1
41	F	9	H	7a	12.9-13.3	12-13	1
42	F	9	H	5a	10.3-10.9	11-12	2
43	F	9	L	2d	7.10.5-8.4.5	6-6½-	4
44	F	9	A	2d	7.10.5-8.4.5	8½-9	1
45	F	9	A	3b	8.7.8-9.1.8	9-9½	0
46	F	9	L	2b	8.1.5-8.7.5	7½-8+	1
47	F	9	L	3b	8.7.8-9.1.8	7½-8+	2
48	F	9	A	5a	10.3-10.9	9½-10-	0
49	F	9	A	5a	10.3-10.9	9-9½+	2
50	F	9	L	2d	7.10.5-8.4.5	6½-7	2
51	M	10	H	7b	12.4.5-12.10.5	11-12+	1
52	M	10	H	8c	13.11-14.5	12-13+	3
53	M	10	H	9e	14.11.4-15.5.4	12-13+	4
54	M	10	H	8e	13.1.8-13.7.8	13-14-	0
55	M	10	H	7c	12.0-12.6	11-12+	1
56	M	10	L	2a	8.3-8.9	7-7½	2
57	M	10	A	3d	8.5.4-8.11.4	9½-10-	1
58	M	10	L	2c	8.0-8.6	8-8½-	0
59	M	10	L	1f	5.0-5.6	7½-8+	4
60	M	10	L	1f	5.0-5.6	7½-8+	4
61	M	10	L	2a	8.3-8.9	8-8½	0
62	M	10	L	1b	7.0-7.6	7-7½	0
63	M	10	L	3b	8.7.8-9.1.8	7-7½+	2
64	F	10	H	8d	13.6.4-14.0.4	13-14+	0
65	F	10	H	8d	13.6.4-14.0.4	12-13+	2
66	F	10	H	8b	14.3.8-14.9.8	13-14-	2
67	F	10	H	8e	13.1.8-13.7.8	13-14-	0
68	F	10	H	9e	14.11.4-15.5.4	13-14-	3
69	F	10	H	8b	14.3.8-14.9.8	12-13+	3
70	F	10	A	3b	8.7.8-9.1.8	9½-10+	1
71	F	10	A	4d	8.10.5-9.4.5	9-10	0
72	F	10	L	4d	8.10.5-9.4.5	8½-9+	0
73	F	10	L	5d	9.6-10.0	8½-9+	1
74	F	10	L	4d	8.10.5-9.4.5	8½-9	0
75	F	10	L	3d	8.5.4-8.11.4	9-9½	1
76	F	10	L	3a	8.9-9.3	9-9½	1
77	F	10	A	3d	8.5.4-8.11.4	9½-10	2
78	F	10	A	3b	8.7.8-9.1.8	9½-10	1

<sup>+</sup> 0 = 0 - 5 months discrepancy    3 = 18 - 23 months discrepancy  
 1 = 6 - 11 months discrepancy    4 = 24 - 30 months discrepancy  
 2 = 12 - 17 months discrepancy

Table 2.7 Average discrepancy between Reading Ages  
 derived from PAT Reading Comprehension  
 Level Scores and from testing on Prose  
 Passages. (in months).

	Mean X	Standard Deviation S	Standard Error $\sigma_{\bar{x}}$
All (n=78)	11.95	8.9	1.01
Boys (n=39)	11.56	7.4	1.19
Girls (n=39)	12.33	10.27	1.64
8-year-olds (n=24)	12.83	8.98	1.67
9-year-olds (n=25)	10.68	7.83	1.57
10-year-olds (n=29)	12.31	8.98	2.04
High Ability (n=36)	12.08	8.69	1.49
Average Ability (n=9)	12.11	7.32	2.44
Low Ability (n=32)	11.75	9.88	1.75

2.232 Characteristics of the Subjects Finally Selected.

2.2321 High Ability Subjects

- Sex: Boys 15 (5 each at ages 8,9 and 10)  
 Girls 15 (5 each at ages 8,9 and 10)

- |                        | <u>Mean</u> | <u>S.D.</u> |
|------------------------|-------------|-------------|
| 2. Age: 8 years old 10 | 8yrs 4mths  | 2.4mths     |
| 9 years old 10         | 9yrs 5mths  | 3.8mths     |
| 10 years old 10        | 10yrs 4mths | 4.1mths     |

- Ability:
  - PAT Scores



Table 2.8. PAT Test Scores of High Reading Ability Subjects

	PAT Listening Comprehension		PAT Reading Vocabulary		PAT Reading Comprehension	
	%le	S.D.	%le	S.D.	%le	S.D.
All	84.3	17.76	85.5	12.12	87.27	11.0
Girls	84.2	5.58	88.2	11.2	88.88	9.33
Boys	84.4	13.61	82.8	12.72	85.67	12.56
8 y.o	82.3	26.18	87.2	13.6	89.8	10.82
9 y.o	85.3	11.79	82.5	14.2	83.2	14.54
10 y.o	85.3	13.61	86.8	8.48	88.8	5.75

(b) Independent Reading Scores

Table 2.9 Independent Reading Ages of High Reading Ability Subjects

	Average	S.D.
8 y.o. Boys	11.2	8.2
Girls	10.2	5.3
9 y.o. Boys	11.4	9.3
Girls	12.8	10.3
10 y.o. Boys	12.6	8.2
Girls	13.2	6.6

\* Calculated by taking midpoint of interval as score.

## 2.2322 Low Ability Subjects

1. Sex As for high ability

	<u>N</u>	<u>Mean</u>		<u>S.D.</u>
		Years	Months	Months
2. Age 8 years old	10	8	6	3.5
9 years old	10	9	5	3.7
10 years old	10	10	7	4.7

## 3. Ability

## (a) PAT Scores

Table 2.10 PAT Scores of Low Reading Ability Subjects

	Listening Comprehension		Reading Vocabulary		Reading Comprehension	
	%le	S.D.	%le	S.D.	%le	S.D.
All	33.2	32.31	16.79	9.54	16.62	15.27
Girls	27	28.07	19.57	10.07	22.64	18.35
Boys	39.4	35.96	14.2	7.76	11	9.15
8 y.o.	23.6	27.68	11.778	8.899	18.44	18.82
9 y.o.	38.3	10.973	16.6	8.113	12.4	10.01
10 y.o.	37.7	35.22	21.5	9.857	19.2	16.725

## (b) Independent Reading Scores

Table 2.11 Independent Reading Ages  
of Low Ability Readers.

		Mean		S.D.
		Years	Months	Months
8 y.o.	Boys	6	2	5.8
	Girls	6	11	3.4
9 y.o.	Boys	7	2	4.7
	Girls	7	9	4.6
10 y.o.	Boys	7	8	4.7
	Girls	8	2	5.9

## 2.2323 Combined Group - Ability

## (a) PAT Scores

Table 2.12 PAT Scores of all Subjects

	Listening Comprehension		Reading Vocabulary		Reading Comprehension	
	%le	S.D.	%le	S.D.	%le	S.D.
All	58.75	36.49	51.64	37.31	52.63	36.97
Girls	55.6	38.11	56.55	36.47	55.41	36.59
Boys	61.9	35.18	46.9	38.1	49.9	37.76
8 y.o.	52.95	39.93	54.63	38.65	52.84	41.18
9 y.o.	61.8	34.89	47.45	37.9	49.9	36.04
10 y.o.	61.5	35.66	53	37.02	55.15	35.41

## (b) Independent Reading Scores

Table 2.13 Independent Reading Ages of All Subjects.

		Mean		S.D.
		Years	Months	Months
8 y.o.	Boys	8	7	24.1
	Girls	8	4	17.3
9 y.o.	Boys	9	1	18.6
	Girls	9	9	21.3
10 y.o.	Boys	10	2	26.1
	Girls	10	10	27.3

## 2.3 Treatment of the Data Obtained - Variable Selection and Quantification.

## 2.31 The Data Obtained

All the miscues obtained at both the Independent and Frustration levels of the sixty subjects finally selected, were analyzed using Goodman and Burkes Reading Miscue Inventory. The number of miscues analyzed at both levels varied considerably from subject to

subject but a minimum of 25 miscues at each level were analyzed for each subject. Three categories were added to Goodman and Burkes Inventory Sheet - Omissions, Substitutions and Insertions - to assist in scoring the analysis of error types. To summarize, then, each miscue was analyzed using the following categories: (1) dialect; (2) intonation; (3) omission; (4) substitution; (5) insertion; (6) graphic similarity; (7) sound similarity; (8) grammatical function; (9) correction; (10) grammatical acceptability; (11) semantic acceptability; (12) meaning change; (13) comprehension; (14) grammatical relationships and (15) retelling.

### 2.32 Variable Selection and Quantification

Once the analysis of all the miscues had been completed, the resulting scores were examined to determine which of the data obtained was relevant to the research aims of the study and was, therefore, suitable for further treatment. The data obtained was then classified as:

- (1) suitable for further treatment in their original form;
- (2) suitable for further treatment in a modified form; and
- (3) not relevant and therefore not suitable for any further treatment.

The results of this examination are outlined below.

#### 2.321 Error Type : Omissions, Insertions and Substitutions.

It was decided to classify all miscues as one of three error types - Omissions, Insertions or Substitutions. This was considered appropriate because: (1) the high percentage of miscues these three categories accurately describe (e.g. Williams, 1968 found that 97% of all miscues could be classified as Substitutions, Omissions, Insertions or Complex Substitutions and (2) the lack of agreement amongst investigators as to the nature of other error types where such investigators have used other categories in addition to these three. The scores attributed to each of these categories represented the percentage of all miscues that could be classified as one of these

three error types. All miscues could be so classified except for Omissions where the word was supplied by the tester. Each of these three measures were selected for further treatment without modification.

### 2.322 Dialect

This was not found to be a variable of particular relevance in the New Zealand situation. New Zealand does not host the same amount or variety of dialectical differences as the U.S. and New Zealand teachers seem to be more predisposed to regarding 'dialectical' miscues as acceptable than do American teachers. It was decided that Dialect scores had no value toward any further ends and therefore to discard them.

### 2.323 Intonation

This category refers to changes in pitch, stress or pause from what is expected. Such unexpected responses are only classified as miscues when they result in "changes in grammatical structure or the meaning of a passage" (RMI manual p 52). Such miscues are classified as Substitutions and further analyzed by using the Grammatical acceptability and Semantic acceptability categories. There appeared to be no reason for any further treatment of the category as a separate entity, and it was therefore discarded.

### 2.324 Graphic Similarity and Phonic Similarity

As with almost all the RMI categories there are three possible scores a miscue can be given to describe the varying degrees of Graphic or Phonic similarity the miscue has with the stimulus word. These three sub-categories are 'Yes', 'Partial' and 'No'. Using the RMI procedure a percentage is calculated for each of these three sub-categories which compare their relative frequencies with the total number of miscues which can be classified using this category. e.g.:

	Yes	Partial	No
Raw Score	$\frac{40}{70}$	$\frac{25}{70}$	$\frac{5}{70}$
% ages	57	36	7

To calculate a similarity score for these variables the 'Partial' percentage was divided by two and added to the 'Yes' percentage. This is a somewhat arbitrary scoring system but was devised to give recognition to the fact that a 'Partial' score indicates a higher degree of Graphic or Phonic similarity than does a 'No' score but not as high a degree as the 'Yes' score.

$$\begin{aligned} \text{e.g.: } Y + \frac{P}{2} &= \text{Similarity Score} \\ 57 + \frac{36}{2} &= 75 \end{aligned}$$

A similar scoring procedure was used in all variables where such a system of scoring was used.

The Graphic Similarity Percentage and the Phonic Similarity Percentage were combined to calculate a Grapho-Phonic Acceptability Percentage which was used for further treatment as a score for measuring subjects relative use of the Grapho-Phonic Cueing System.

$$\begin{aligned} \text{Grapho-Phonic Acceptability Percentage} &= \\ &= \frac{(\text{Graphic Similarity Percentage} + \text{Phonic Similarity Percentage})}{2} \end{aligned}$$

#### 2.325 Grammatical Function

The Grammatical Function category measures the extent to which a miscue serves the same grammatical function as the S word. It is also marked Y, P or N but in this case, P, does not mean partial, but instead refers to responses which are unclassifiable (manual p 56). This different role attributed to the P sub-category, and the large degree of duplication with the category of syntactic acceptability, led to this category being discarded.

#### 2.326 Correction Rate

The Correction Score was modified to produce a Self-Correction Percentage. The formula used in its calculation was:

$$\text{S.C. Percentage} = \left( Y + \frac{P}{2} \right)$$

The Correction Score was also used in the computation of the Syntactic and Semantic Acceptability Percentages.

### 2.327 Grammatical Acceptability and Semantic Acceptability

These two categories were also selected for further treatment as measures of subjects use of the syntactic and semantic cueing systems. These percentages were calculated in the same manner as outlined for other variables (i.e.  $Y + \frac{P}{2}$ ) except that another variable was also considered - N Responses that had been self-corrected. If a Response marked N had been successfully corrected it was also divided by two and added to the 'Yes' and  $\frac{\text{'Partial'}}{2}$  scores to calculate the final Acceptability Percentage. This was again, somewhat arbitrary, but was designed to give recognition to the fact that a self-corrected error is not as 'bad' as a non-corrected error but not as 'good' as a correct Response which did not need correcting in the first place.

$$\text{Acceptability Percentage} = (Y + \frac{P}{2} + \frac{\text{No. Corrected}}{2})$$

### 2.328 Meaning Change

Scores in the 'Meaning Change' category were used to: (1) assist in identifying a subjects Independent and Frustration levels and (2) to assist in calculating the Grammatical Relationships score. It appeared to have no independent relevance and was discarded.

### 2.329 Comprehension

This variable was selected for further treatment and was calculated by the following formula

$$\text{Comprehension Percentage} = (\text{No Loss} + \frac{\text{Partial Loss}}{2}).$$

### 2.3210 Grammatical Relationships

This variable was also selected for further treatment and was calculated by the following formula

$$\text{Grammatical Relationships Percentage} = (\text{Strength} + \frac{\text{Partial Strength}}{2}).$$

## 2.3211 Retelling Score

The accuracy with which a subject can retell what he has Read is undoubtedly one of the best measures of Comprehension available. However, the amount of tester involvement in Response elicitation varies considerably amongst subjects and as such differences may indicate differences in cognitive organization and level of understanding the scores compiled using the RMI's standardized scoring system could be misleading. For this reason the subject's Retelling scores were not selected for further treatment although subjective impressions gained from the subject's Retelling were used in distinguishing subject's Independent and Frustration levels.

## 2.3212 Socio-Economic Status

To provide an additional measure which would allow some evaluation of the role of Socio-Economic Status in Reading Performance each subject was assigned a SES score ranging from 1-6 using the Elley and Irving Revised Socio-Economic Index for New Zealand (1972). Using this scale subjects are classified from 1 to 6 according to fathers occupation. Class 1 occupies the position of highest SES and Class 6 the lowest. The categories are not equivalent in the proportion of the population assigned to them. Rather 5.8% of the male labour force are classified as Class 1, 19.3% as Class 2, 13.3% as Class 3, 28.2% as Class 4, 21.3% as Class 5 and 12.1% as Class 6. In eleven cases information regarding the nature of the fathers occupation was not available. In nine of these cases the mother was employed outside of the home so the subject was assigned the value of her occupation as if it had been the fathers. In the other two cases the mothers were not employed outside the home and these two subjects were not scored on this measure. The scores on this test were used as a variable for further treatment in an unmodified form.

## 2.3213 Sectional Summary

From the data obtained from analyzing the miscues of all the subjects at both their Independent and Frustration Reading Levels the following Variables were selected for further investigation

- |   |   |   |
|---|---|---|
| <ol style="list-style-type: none"> <li>1. Omissions</li> <li>2. Insertions</li> <li>3. Substitutions</li> </ol> | } | To investigate the relative Frequency of error types. |
|---|---|---|



- |     |                          |   |
|-----|--------------------------|---|
| 4.  | Grapho-Phonic Similarity | } To investigate relative use of the three cueing systems in Reading Performance. |
| 5.  | Syntactic Acceptability  |   |
| 6.  | Semantic Acceptability   |   |
|     |                          |   |
| 7.  | Self-Correction Rate     | - to investigate the relative frequencies of self-correction behaviour.           |
|     |                          |   |
| 8.  | Comprehension            | } To investigate the utility of these measures as provided from use of the RMI.   |
| 9.  | Grammatical Relationship |   |
|     |                          |   |
| 10. | Socio Economic Status    | - to investigate the role of SES in Reading performance.                          |

#### 2.4 Statistical Treatment of the Selected Variables

Scores on each of the ten variables summarized above were further investigated using the SPSS Programme on the B6700 Computer at Massey University. Each subgroup of 5 subjects was entered in the programme as a separate subfile to allow the analysis of different combinations of subjects for different purposes.

##### 2.41 Subfile Combinations Used

1. All. This combination used the scores of all subjects together. ( $n=60$ ).

2. High Reading Ability and Low Reading Ability. This separately grouped the scores of high ability and low ability subjects. ( $n_1 = 30$ ;  $n_2 = 30$ ).

3. Sex. This combination separately grouped the scores of all boys and all girls. ( $n_1 = 30$ ;  $n_2 = 30$ ).

4. Age. This combination separately grouped the scores of all 8-year-olds, all 9-year-olds and all 10-year-olds. ( $n_1 = 20$ ;  $n_2 = 20$ ;  $n_3 = 20$ ).

5. Sex and Ability. This combination separately grouped high ability boys, high ability girls, low ability boys and low ability girls. ( $n_1 = 15$ ;  $n_2 = 15$ ;  $n_3 = 15$ ;  $n_4 = 15$ ).

6. Age and Ability. This combination separately grouped high ability 8-year-olds, low ability 8-year-olds, high ability 9-year-olds, low ability 9-year-olds, high ability 10-year-olds and low ability 10-year-olds. ( $n_1 = 10$ ;  $n_2 = 10$ ;  $n_3 = 10$ ;  $n_4 = 10$ ;  $n_5 = 10$ ;  $n_6 = 10$ ).

7. Age, Sex, and Ability. This combination separately ran each subfile. ( $n_1 = 5$ ;  $n_2 = 5$ ;  $n_3 = 5$ ;  $n_4 = 5$ ;  $n_5 = 5$ ;  $n_6 = 5$ ;  $n_7 = 5$ ;  $n_8 = 5$ ;  $n_9 = 5$ ;  $n_{10} = 5$ ;  $n_{11} = 5$ ;  $n_{12} = 5$ ).

8. Listening Comprehension. This combination separately grouped subjects who had a pattern of high PAT Listening Comprehension Scores and Low PAT Reading Comprehension and Reading Vocab Scores and all other subjects. This grouping could only be used with the T-Test. ( $n_1 = 5$ ;  $n_2 = 55$ ).

#### 2.42 SPSS Programs Used

The following SPSS programs were used to investigate the research problem.

1. FREQUENCIES - used to describe the distribution of each variable. Provided means, mode, range, standard error, standard deviation, minimum, maximum and variance.

2. PEARSON CORR - used to describe the relationships amongst variables. Provided Pearson Product - Moment Correlation Coefficients and significance levels.

3. T-TESTS - used to assess the significance of differences in the means between variables. Provided the mean, standard deviation and standard error of the differences between the mean, the T-value, the degrees of freedom and the two-tailed probability.

## 2.5 Summary

### 2.51 Subject Selection

1. Sixty subjects were selected according to defined criteria of ability, sex and age.

2. Potential subjects were selected from two representative Palmerston North schools using PAT Reading Comprehension Level Scores.

3. Potential subjects were then tested on an oral prose Reading programme which was used to

(i) confirm their eligibility for selection - 18 potential subjects had to be discarded.

(ii) establish each subjects Independent and Frustration Reading levels and

(iii) collect from those finally included in the sample a minimum of 25 miscues at both their Independent and Frustration Reading Levels.

4. The sample finally selected consisted of

(i) 5 low reading ability 8-year-old boys

(ii) 5 low reading ability 8-year-old girls

(iii) 5 high reading ability 8-year-old boys

(iv) 5 high reading ability 8-year-old girls

(v) 5 low reading ability 9-year-old boys

(vi) 5 low reading ability 9-year-old girls

(vii) 5 high reading ability 9-year-old boys

(viii) 5 high reading ability 9-year-old girls

(ix) 5 low reading ability 10-year-old boys

(x) 5 low reading ability 10-year-old girls

(xi) 5 high reading ability 10-year-old boys

(xii) 5 high reading ability 10-year-old girls

### 2.52 Data Collection

Each subject's miscues at both independent and frustration Reading levels were analyzed using the RMI. In addition to the categories used by the RMI, miscues were analyzed using two other categories:

(1) Error Type (Omissions, Insertions or Substitutions)  
and (2) Socio-Economics Status.

#### 2.53 Variable Selection and Quantification

From the data collected the following variables were defined and scores on them collected for further investigation

1. Omissions
2. Insertions
3. Substitutions
4. Grapho-Phonic Similarity
5. Syntactic Acceptability
6. Semantic Acceptability
7. Self-Correction Rate
8. Comprehension
9. Grammatical Relationships
10. Socio-Economic Status.

#### 2.54 Statistical Treatment of the Selected Variables

Scores for each subject on all the ten variables listed above were further investigated using the SPSS Programme on the B6700 Computer at Massey University. Programmes run were FREQUENCIES, PEARSON CORR, and T-TEST.

## CHAPTER THREE : Results

## 3.1 Introduction

The statistical procedures used in this investigation produced a wealth of data, some of which it is not practical to report here. In all, 864 sets of descriptive statistics (mean, mode, median, standard error, standard deviation and cumulative frequencies) and more than 20,000 Correlation and T-Test scores were calculated. To record all such data here would be both impractical and unnecessary. Results are only listed here, then, if they were relevant and meaningful in terms of the Research Aims of the investigation as defined in Chapter One.

Results are presented under the following headings:

- 3.2 The Relationship between Socio-Economic Status and Reading Ability
- 3.3 The Relationship between Self-Correction Rates at Independent and Frustration Levels.
- 3.4 Error Types at Independent and Frustration Level.
- 3.5 Graphophonic Acceptability, Syntactic Acceptability and Semantic Acceptability Scores at Independent and Frustration Levels.
- 3.6 The Relationship between Grammatical Relationships and Syntactical Acceptability Scores and between Comprehension and Semantic Acceptability Scores.

For the purposes of measuring the significance of results a .05 level of significance was adopted. A summary of results is presented in Section 3.7

### 3.2 The Relationship Between Reading Ability and Socio-Economic Status

A strong relationship was found between the Reading Ability of subjects and their SES Rating. Subjects who had been classified as High in Reading Ability tended to have much higher ranking (i.e. lower scores) on the Elley-Irving Scale than did Readers who had been classified as Low in Reading Ability. Table 3.1 lists the means, standard deviations and percentile rankings of scores on the Elley-Irving Scale for the various subject groupings. Table 3.2 shows the significance level of the differences between the means of various groups as measured by T-tests. No significant differences were found between groups when the differentiating characteristics were age or sex. No significant difference was found, either, between the scores of the group of Low Reading Ability subjects who had scored highly on the PAT Listening Comprehension Test and the rest of the subjects. A significant difference was found between all groups where the differentiating factor was ability except between High and Low ability 10-year-olds. Such a result suggests that the role of SES in influencing relative Reading performance tends to decline with age. The results also suggest that the influence of SES may be slightly more significant for High Ability girls than High Ability boys.

### 3.3 The Relationship Between Self-Correction Rates at Independent and Frustration Reading Levels.

Self-Correction Rates for subjects at their Independent and Frustration Levels were compared. Table 3.3 shows the results. Self-Correction Rates were found to be significantly lower at Frustration Level for all groups. The significance of the differences between the means at both Independent and Frustration level of groups differentiated by sex, age and ability was also measured by T-tests. No significant differences were found. Table 3.4 lists these scores. Pearson Product-Moment Correlations between SC scores at Independent and Frustration levels were also calculated for the various groupings to measure the stability of individual SC scores at the two levels. No significant relationships were found. Table 3.5 summarizes these results

The results suggest that differences in self-correction rate are a function of difficulty level of the material only, rather than of sex, age or ability.

Table 3.1 Socio-Economic Status Level of Subjects according to Elley and Irvings (1972) Levels.

<u>Subfile Name</u>		<u>Mean</u>	<u>Std Deviation</u>	<u>Percentile Ranking</u>
All		3.5	1.589	47.5
Ability	High	2.833	1.44	63.9
	Low	4.167	1.464	29.64
Sex	Boys	3.667	1.583	42.78
	Girls	3.333	1.605	52.21
Age	8-year-olds	3.45	2.34	48.91
	9-year-olds	3.711	1.49	41.58
	10-year-olds	3.354	1.725	48.27
Ability and Sex	High ability boys	3.133	1.457	57.85
	High ability girls	2.533	1.407	68.8
	Low ability boys	4.2	1.568	28.94
	Low ability girls	4.133	1.407	30.4
Ability and Age	Low ability 8-year-olds	4.5	1.08	22.63
	Low ability 9-year-olds	4.3	1.418	26.81
	Low ability 10-year-olds	3.7	1.829	41.96
	High ability 8-year-olds	2.4	1.35	69.58
	High ability 9-year-olds	3.1	1.37	59.78
	High ability 10-year-olds	3	1.633	61.6
Listening Comprehension Ability	Low Ability Readers with high PATL score	3.0	1.581	61.6
Age,  Sex and  Ability	Low ability 8-year-old boys	4.4	1.342	24.68
	Low ability 8-year-old girls	4.6	0.894	28.74
	High ability 8-year-old boys	2.2	1.643	72.24
	High ability 8-year-old girls	2.6	1.14	66.92
	Low ability 9-year-old boys	4.2	1.483	26.94
	Low ability 9-year-old girls	4.4	0.678	24.68
	High ability 9-year-old boys	3.4	1.14	49.8
	High ability 9-year-old girls	2.8	1.643	64.26
	Low ability 10-year-old boys	4	0.949	33.2
	Low ability 10-year-old girls	3.4	1.673	49.8
	High ability 10-year-old boys	3.8	1.304	39.04
	High ability 10-year-old girls	2.2	1.643	72.24

Table 3.2 Significance of Differences Between  
Means of SES scores as measured by T-Tests.

Groups Being Compared		Significance Level
Sex -	Boys <u>and</u> Girls	.421
Age -	8 <u>and</u> 9-year-olds	.613
	8 <u>and</u> 10-year-olds	.85
	9 <u>and</u> 10-year-olds	.497
Ability -	Low ability 8-year-olds <u>and</u> High ability 8-year-olds	.001
	Low ability 9-year-olds <u>and</u> High ability 9-year-olds	.07
	Low ability 10-year-olds <u>and</u> High ability 10-year-olds	.379
	Low ability boys <u>and</u> High ability boys	.044
	Low ability girls <u>and</u> High ability girls	.004
	Low ability with high PAT Listening Comprehension Score <u>and</u> Rest	.494



Table 3.3 Frequency of Self-Corrections at Independent and Frustration Reading Levels

Subfile Group		Percentage of Self-Corrections at Independent Level		Percentage of Self-Corrections at Frustration Level		Significance of Difference Between Means as Measured by T-Tests
		Mean	S.D.	Mean	S.D.	(2-tailed probability)
All		21.95	1.49	11.92	1.14	0.000
Ability	High	23.43	10.52	12.47	9.05	0.002
	Low	20.47	12.50	11.37	8.66	0.000
Sex	Boys	20.13	9.83	9.84	11.65	0.000
	Girls	23.76	12.96	13.97	10.18	0.003
Age	8	21.7	14.48	11.05	8.2	0.008
	9	23.21	9.33	14.35	9.95	0.008
	10	20.95	10.73	10.35	8.04	0.003
Ability	Low ability boys	21.67	8.88	11.33	6.67	0.001
And	High ability boys	18.6	10.8	8.4	6.71	0.011
	Low ability girls	25.2	11.99	13.61	11.08	0.02
Sex	High ability girls	22.33	14.13	14.3	9.57	0.048
Ability	Low ability 8-year-olds	24.14	11.76	10.42	7.73	0.011
	High ability 8-year-olds	19.71	17.07	11.77	9.02	0.226
And	Low ability 9-year-olds	22.14	8.22	17.76	11.2	0.214
	High ability 9-year-olds	24.32	10.66	11.00	7.67	0.02
Age	Low ability 10-year-olds	24.17	12.16	9.31	5.71	0.015
	High ability 10-year-olds	17.83	8.54	11.42	10.07	0.089
Low Ability and High PAT Listening Comprehension Score		21.8	10.61	11.4	7.63	0.002

Table 3.4 Significance of the Differences Between Means of Self-Correction Scores at Independent and Frustration Reading Level as Measured by T-Tests.

Groups being Compared		Significance Level (2-tailed)	
		Independent Level	Frustration Level
Sex	- Boys <u>and</u> Girls	.227	.102
Age	- 8-year-olds <u>and</u> 9-year-olds	.7	.26
	- 9-year-olds <u>and</u> 10-year-olds	.484	.171
	- 8-year-olds <u>and</u> 10-year-olds	.853	.787
Ability	- High and Low Ability	.176	.594
	- Low Ability and High PAT Listening Comprehension Score <u>and</u> Rest	.975	.882

Table 3.5 Pearson Product - Moment Correlations between Self-Correction Scores at Independent and Frustration Level.

Subfile Groups		Correlation	Significance Level (2-tailed)
All		.043	.745
Ability	- High	.054	.776
	- Low	.014	.94
Sex	- Boys	.049	.798
	- Girls	- .015	.933
Age	- 8-year-olds	.066	.78
	- 9-year-olds	.052	.828
	- 10-year-olds	- .048	.841

### 3.4 Error Type Frequencies

#### 3.41 Error Type Frequencies at Independent and Frustration Levels

Table 3.6 shows the percentages of errors that could be categorised as Omissions, Insertions and Substitutions at both Independent and Frustration levels for all the possible subfile groupings. Substitutions were easily the most prevalent error type at both Independent and Frustration level for all groups. Table 3.7 shows the significance of the differences between the means of the three Error categories at Independent and Frustration levels as measured by T-Tests. There were considerable decreases in Insertions Scores at Frustration level and this was significant for the All, High Ability, Boys and 10-year-old Groupings. The statistics for Omissions and Insertions should be interpreted with considerable caution, however, because they represented such a small percentage of the miscues generated. An Insertion Rate of 4% for instance, may mean as little as one-out-of-twenty five miscues collected.

#### 3.42 Differences Between Groups in Relative Incidence of Error Types.

Table 3.8 shows the significance level of mean differences in relative incidence of the various Error Types between groups. There were no significant differences found between groups where the distinguishing characteristic was sex. Neither were there any significant differences between the 8 and 9-year-old groups but the substitutions score at Independent level was significantly higher (.028) for the 9-year-old group when compared with the 10-year-old group. Between the 8-year-old and 10-year-old groups substitutions at the Independent level were significantly higher (.028) for the 8-year-old group whilst Insertions at the same level were significantly higher (.011) for the 10-year-old group. Between high ability and low ability groups significant differences were found in all error categories at both Independent and Frustration levels. At the Independent level Omissions and Insertions were significantly higher (0.017 and 0.000) and substitutions significantly lower (0.000) for the High Ability group. At Frustration Level the same relationships

Table 3.6 Error Type Frequencies at Independent and Frustration Reading Levels

Subfile Grouping		Number of Subjects	Independent Level						(Percentage)						Frustration Level		Total Number of Errors
			Omissions		Insertions		Substitutions		Total Number of Errors	Omissions		Insertions		Substitutions			
			Mean	S.D.	Mean	S.D.	Mean	S.D.		Mean	S.D.	Mean	S.D.	Mean	S.D.		
All		60	8.6	6.672	7.15	7.44	84.85	10.905	1759	9.683	8.730	3.3833	4.35	85.58	10.862	1802	
Ability	Low	30	6.3	4.928	3	4.518	91.13	7.642	966	7.5	7.324	1.7667	2.487	88.93	9.913	1048	
	High	30	7.43		11.3	7.12	78.5667	10.092	793	9.56	11.867	5	5.186	82.22	10.887	754	
Sex	Boys	30	8.433	6.015	8.97	8.075	83.567	12.184	850	11.1	9.546	2.833	3.752	83.933	11.107	968	
	Girls	30	8.767	7.21	5.33	5.892	86.133	9.489	909	8.267	8.35	3.933	4.877	87.233	10.536	834	
Age	8-years-old	20	6.95	6.476	6.15	7.081	87.35	10.363	465	8.05	7.082	2.8	5.512	87.7	10.682	617	
	9-years-old	20	8.95	6.809	4.75	5.2	87.4	10.53	536	8.85	8.028	3.7	4.305	86.2	10.222	558	
	10-years-old	20	9.9	6.719	10.55	8.153	79.8	10.521	758	12.15	10.589	3.65	3.048	82.85	11.609	627	
Sex	High Ability Boys	15	11.13	5.78	14.93	6.386	75.4	10.528	402	15.067	10.471	3.93	4.33	78.867	11.224	391	
And	Low Ability Boys	15	5.733	5.092	3.0	4.243	91.73	7.33	448	7.13	6.739	1.73	2.789	89	8.635	577	
Ability	High Ability Girls	15	10.67	9.005	7.67	5.996	81.73	8.868	391	8.67	7.662	6.067	5.873	85.6	9.76	363	
	Low Ability Girls	15	6.867	4.868	3.0	4.928	90.53	8.149	518	7.867	8.088	1.8	2.242	88.867	11.537	471	
Age	High Ability 8-year-olds	10	10.3	6.717	10.9	7.109	80.6	9.336	234	10.0	8.807	5.1	7.156	84.1	11.05	233	
	Low Ability 8-year-olds	10	3.6	4.3	1.4	2.271	94.1	6.19	231	6.1	4.458	0.5	1.08	91.3	9.487	384	
And	High Ability 9-year-olds	10	12.7	7.602	7.9	5.065	81	11.431	248	8.5	6.704	6.3	4.572	83.3	8.028	255	
	Low Ability 9-year-olds	10	5.2	2.974	1.6	3.062	93.8	3.521	288	9.2	9.531	1.1	1.792	89.1	11.723	303	
Ability	High Ability 10-year-olds	10	9.7	8.354	15.1	7.662	74.1	8.774	311	17.1	11.21	3.6	3.239	79.3	13.442	266	
	Low Ability 10-year-olds	10	10.1	5.043	6.0	6.018	85.5	9.192	447	7.2	7.525	3.7	3.02	86.4	8.708	361	
Age,	Low Ability 8-year-old boys	5	4.8	5.718	1.0	2.236	93.8	7.43	143	7.8	4.604	0	0	87	11.979	116	
	Low Ability 8-year-old girls	5	2.4	2.302	1.8	2.49	94.4	5.55	91	4.4	4.037	1.0	1.414	95.6	3.578	117	
Sex	High Ability 8-year-old boys	5	10.4	1.14	15.4	5.37	78.0	5.148	106	16.4	7.403	3.6	6.07	78.8	8.899	232	
	High Ability 8-year-old girls	5	10.2	10.01	6.4	5.86	83.2	12.357	125	3.6	4.159	6.6	8.532	89.4	11.194	152	
and	Low Ability 9-year-old boys	5	3.8	2.775	1.4	2.19	94.8	3.56	124	8.2	10.208	0.8	1.789	91	9.153	141	
	Low Ability 9-year-old girls	5	6.6	2.702	1.8	4.02	92.8	3.564	124	10.2	9.884	1.4	1.949	87.2	14.481	114	
Ability	High Ability 9-year-old boys	5	12.4	10.164	10.6	4.879	77.8	15.369	166	8.4	6.656	4.2	4.382	82.4	8.989	160	
	High Ability 9-year-old girls	5	13.0	5.148	5.2	3.962	84.2	5.675	122	8.6	7.537	8.4	4.099	84.2	7.887	143	
and	Low Ability 10-year-old boys	5	8.6	5.857	6.6	5.37	86.6	8.385	135	5.4	5.273	4.4	3.209	89	4.123	134	
	Low Ability 10-year-old girls	5	11.6	4.159	5.4	7.197	84.4	10.807	176	9.0	9.566	3.0	3	83.8	11.692	132	
Ability	High Ability 10-year-old boys	5	10.6	3.05	18.8	5.907	70.4	8.849	176	20.4	13.831	4	3.082	75.4	15.821	185	
	High Ability 10-year-old girls	5	8.8	12.071	11.4	6.986	77.8	7.791	271	13.8	8.012	3.2	3.701	83.2	10.872	176	
High Listening Comprehension and low ability	Low ability with High PAT Listening Comprehension Score.	5	6.8	4.025	2.0	2.121	91.2	4.97	140	4.6	2.966	3.4	3.286	92	4.062	154	

existed (0.039, 0.006 and 0.016). Significant differences were also found between the low ability group who had scored highly on the PAT Listening Comprehension Test and the Rest with regard to Insertions and Substitutions at Independent Level and Omissions and Substitutions at Frustration level. However in interpreting these results it should be borne in mind that this was a very small group and that it was being compared with all the rest of the subjects rather than the other low ability subjects.

### 3.43 Individual Stability in Error Patterns.

Table 3.9 summarizes the relative stability of individual error patterns as measured by Pearson Product-Moment Correlations. Correlations are generally positive but low, only substitutions .421 (.001) being significant although Omissions were significant at the .06 level. Stability in Insertions was higher for low ability Readers (.402) than for High ability Readers (-.1475) and for Boys (.347) then Girls (.1088). No developmental trends were found although substitutions seemed to correlate slightly higher with age (8-year-old = .332, 9-year-old = .346, and 10-year-old = .48).

## 3.5 Grapho-Phonic Acceptability Syntactic Acceptability and Semantic Acceptability Scores.

### 3.51 Grapho Phonic Acceptability , Syntactic Acceptability and Semantic Acceptability Scores at the Independent and Frustration Levels.

Table 3.10 shows the mean scores and standard deviations on these three variables for all groupings. At the Independent level the Syntactic Acceptability score was the highest for all groupings and for most groupings the Grapho-Phonic Acceptability score was the second highest. At Frustration level Grapho-Phonic Acceptability displaced Syntactic Acceptability as the highest score but only by a marginal level. For almost all groupings Semantic Acceptability was the lowest score at Independent level, and at the Frustration level it was clearly the lowest score for all groupings.

Table 3.7 Differences between Means of Error Categories at Independent Level and Frustration Level as measured by T-Tests.

Subfile Group	N	Variables being Compared (at Independent and Frustration Levels)	Level of Significance
All	60	Omissions Insertions Substitutions	.385 .000 .629
Ability High	30	Omissions Insertions Substitutions	.637 .001 .097
Low	30	Omissions Insertions Substitutions	.418 .118 .289
Sex Boys	30	Omissions Insertions Substitutions	.142 .000 .873
Girls	30	Omissions Insertions Substitutions	.773 .298 .59
Age 8	20	Omissions Insertions Substitutions	.597 .075 .899
9	20	Omissions Insertions Substitutions	.959 .344 .656
10	20	Omissions Insertions Substitutions	.379 .002 .242

Table 3.11 summarizes the significance of differences between means amongst groups. Significant differences were found between groups of High ability and Low ability on all six variables except Semantic Acceptability at Frustration level. Grapho-Phonic Acceptability scores were significantly higher at both Independent (.000) and Frustration (.000) levels as were the Syntactic Acceptability Scores (.000 and .000). Semantic Acceptability score at the Independent level was significantly lower (.003) for the High Ability group. It was also lower at the Frustration level but this was not significant (.081). The only significant differences between the sexes were in Semantic Acceptability

Table 3.8 Error Type Frequencies: Differences in Relative Incidence Amongst Groups As Measured By T-Tests.

Significance Levels of Differences

		<u>Independent Level</u>			<u>Frustration Level</u>		
		Omissions	Insertions	Substitutions	Omissions	Insertions	Substitutions
Sex	Boys <u>and</u> Girls	.849	.052	.367	.212	.332	.243
Age	8-year-old <u>and</u> 9-year-old	.347	.481	.988	.74	.569	.658
	9-year-old <u>and</u> 10-year-old	.166	.077	.028	.159	.551	.177
	8-year-old <u>and</u> 10-year-old	.659	.011	.028	.274	.966	.339
	High ability <u>and</u> Low ability	.017	.000	.000	.039	.006	.016
Ability	Low ability with high PAT Comprehension Score <u>and</u> rest	.369	.001	.032	.009	.991	.013

at Frustration level where Girls scores were found to be significantly higher than Boys. (.022). There were no significant differences amongst age groups except that the Semantic Acceptability score of 8-year-olds was significantly higher (.027) than that of 9-year-olds. The low ability group who had scored on the PAT Listening Comprehension Test had significantly lower scores on Grapho-Phonic Acceptability at both Independent and Frustration levels than the rest of the sample. This group also scored significantly lower on Syntactic Acceptability at the Independent level (.029) but although this group's mean score was lower at Frustration level it was not significant at the .05 level (.071).



Table 3.9 Pearson Product-Moment Correlations between Error Type Frequency Scores at Independent and Frustration Level.

Subfile Group		n	Error Type	Correlation between Scores at Independent and Frustration Level	Significance Level (2-tailed)
All		60	Omissions	.2457	.058
			Insertions	.202	.122
			Substitutions	.421	.001
Ability	High	30	Omissions	.1645	.384
			Insertions	-.1475	.436
			Substitutions	.38	.038
	Low	30	Omissions	.1944	.304
			Insertions	.402	.028
			Substitutions	.213	.258
Sex	Boys	30	Omissions	.2929	.116
			Insertions	.347	.06
			Substitutions	.427	.19
	Girls	30	Omissions	.2244	.234
			Insertions	.1088	.568
			Substitutions	.393	.032
Age	8-years-old	20	Omissions	.0942	.692
			Insertions	.2233	.344
			Substitutions	.332	.153
	9-years-old	20	Omissions	.3282	.158
			Insertions	.4949	.026
			Substitutions	.346	.132
	10-years-old	20	Omissions	.2288	.332
			Insertions	.0321	.894
			Substitutions	.484	.031
Age	Low Ability Boys	15	Omissions	.0032	.99
			Insertions	.356	.192
			Substitutions	-.180	.52
	High Ability Girls	15	Omissions	.1946	.488
			Insertions	.2295	.61
			Substitutions	.36	.188
	Low Ability Girls	15	Omissions	.3551	.194
			Insertions	.4654	.08
			Substitutions	.48	.136
	High Ability Boys	15	Omissions	.1585	.572
			Insertions	.265	.34
			Substitutions	.245	.38



Table 3.10 Grapho-Phonic Acceptability Syntactic Acceptability and Semantic Acceptability Scores at Independent and Frustration Levels. (Percentages)

		<u>Independent Level</u>						<u>Frustration Level</u>						
		<u>Grapho-Phonic</u>			<u>Syntactic</u>		<u>Semantic</u>		<u>Grapho-Phonic</u>		<u>Syntactic</u>		<u>Semantic</u>	
		N	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
All		60	73.183	11.5	83.73	60.842	63.0	15.462	76.05	13.08	73.35	18.978	41.183	18.465
Ability	High	30	78.73	17.112	89.5	6.791	56.7	15.685	85.567	7.722	83.93	14.429	37.167	20.261
	Low	30	67.63	10.781	77.967	11.146	69.3	12.581	66.53	10.075	62.767	17.112	45.2	15.606
Sex	Girls		73.967	11.592	83.167	10.406	59.767	12.803	75.5	13.572	70.133	19.727	35.767	17.581
		30	72.4	11.551	84.3	11.411	66.23	17.346	76.6	12.794	76.567	17.95	46.6	17.997
Age	8-years-old	20	72.25	8.546	84.05	10.894	68.65	17.358	73.1	13.696	70.75	17.041	37.6	17.706
	9-years-old	20	72.55	13.648	81.2	12.125	57.85	11.681	78.15	13.355	72.95	21.763	44	21.827
	10-years-old	20	74.75	12.143	85.95	9.344	62.5	15.48	76.9	12.328	76.35	18.374	41.95	15.696
Ability And Sex	High Ability Boys	15	78.93	7.713	88.667	4.865	54.0	11.958	86.0	8.08	85.867	6.39	31.467	17.707
	Low Ability Boys	15	69.0	12.884	77.67	11.654	65.53	11.192	65.0	8.944	54.4	15.324	40.067	16.943
	High Ability Girls	15	78.533	11.179	90.333	8.389	59.4	18.734	85.133	7.605	82	19.556	42.867	21.613
	Low Ability Girls	15	66.267	8.413	78.267	11.016	73.067	13.123	68.067	11.19	71.133	14.889	50.33	13.189
Age And Ability	Low Ability 8-year-olds	10	70.4	8.631	80.9	12.801	77.1	10.493	62.7	9.429	59.1	15.899	46.3	19.437
	High Ability 8-year-olds	10	74.1	8.491	87.2	8.039	60.2	19.165	83.5	8.168	82.4	7.662	28.9	10.767
	Low Ability 9-year-olds	10	65.1	12.556	72.7	9.934	61.1	12.06	68.2	9.727	64.1	17.026	48.2	17.555
	High Ability 9-year-olds	10	80	10.593	89.7	7.15	54.6	10.916	88.1	7.795	81.8	23.151	39.8	25.659
	Low Ability 10-year-olds	10	67.4	11.257	80.3	9.557	69.7	10.584	68.7	10.904	65.1	19.439	41.1	9.433
	High Ability 10-year-olds	10	82.1	8.034	91.6	4.695	55.3	16.899	85.1	7.249	87.6	7.321	42.8	20.725
Age And Sex	Low Ability 8-year-old boys	5	72.0	11.958	82.0	15.684	74.4	3.697	63.4	9.813	46.6	7.021	32.2	16.724
	Low Ability 8-year-old girls	5	66.8	4.266	79.8	10.941	79.8	14.704	62.0	10.124	71.6	11.349	60.4	8.562
	High Ability 8-year-old boys	5	75.0	5.196	86.6	5.899	62.6	12.973	84.6	5.731	82.8	5.63	29.4	11.036
	High Ability 8-year-old girls	5	73.2	11.541	87.8	10.474	57.8	25.371	82.4	10.09	82.0	10.0	28.4	11.76
	Low Ability 9-year-old boys	5	70.4	14.893	74.4	9.813	55.6	8.142	66.8	6.834	63.6	16.149	52.8	18.794
	Low Ability 9-year-old girls	5	59.8	7.918	71.0	10.886	66.6	13.612	69.6	12.7	64.6	19.769	43.6	16.95
	High Ability 9-year-old boys	5	82.6	9.864	88.8	2.387	53.6	5.771	89.6	7.197	88.2	6.261	25.6	15.241
	High Ability 9-year-old girls	5	77.4	11.76	90.6	10.359	55.6	15.241	86.6	8.905	75.4	32.624	54.0	27.295
	Low Ability 10-year-old boys	5	64.6	13.353	76.6	9.737	66.6	11.653	64.8	11.389	53.0	18.097	35.2	7.887
	Low Ability 10-year-old girls	5	70.2	9.338	84.0	8.746	72.8	9.602	72.6	9.99	77.2	12.518	47.0	7.141
Sex	High Ability 10-year-old Boys	5	79.2	6.907	90.6	5.683	45.8	11.054	83.8	10.33	86.6	7.266	39.4	24.825
	High Ability 10-year-old girls	5	85.0	8.746	92.6	3.847	64.8	17.167	86.4	2.702	88.6	8.081	17.922	8.015
Low Ability and High PATL Score		5	58.2	8.672	71.2	9.576	58.6	8.591	60.8	9.576	55.6	18.105	40.2	15.466

Table 3.11 Differences Between Subgroups in Grapho-Phonic Acceptability Scores, Syntactic Acceptability Scores and Semantic Acceptability Scores at Independent and Frustration Levels as measured by T-Tests.

		<u>Independent Level</u>			<u>Frustration Level</u>		
		<u>Grapho-Phonic</u>	<u>Syntactic</u>	<u>Semantic</u>	<u>Grapho-Phonic</u>	<u>Syntactic</u>	<u>Semantic</u>
Sex	Boys/Girls	.602	.689	.106	.748	.192	.022
Ability	High/Low	.000	.000	.003	.000	.000	.081
Age	8 years old/9	.934	.439	.027	.245	.724	.315
	9 years old/10	.593	.174	.293	.76	.597	.735
	8 years old/10 years old	.457	.557	.246	.362	.324	.416
Low Ability and High PATL Score/Rest		.011	.029	.312	.015	.071	.89

### 3.52 The Relationships between the Independent and Frustration Level scores of each Acceptability Measure.

#### 3.521 Relationships between Group Scores

Table 3.12 shows the significance of differences between scores at the two levels for all three Acceptability measures. For the group as a whole significant differences were found between the Independent Level and Frustration Level scores for both Syntactic Acceptability Scores (.000) and Semantic Acceptability Scores (.000). In addition the difference between Grapho-Phonic Acceptability scores at the two levels was very close to being significant (.054). For the High Ability group Grapho-Phonic Acceptability was significantly higher at the Frustration level (.000) while for the Low Ability group it was slightly lower, but not at a significant level. For both Boys and Girls Grapho-Phonic Acceptability scores were higher at the Frustration level but not at a significant level. (.446 and .06). For all three age groups the Grapho-Phonic Acceptability scores were higher at Frustration level but the differences were not significant (.75, .06 and .283). When Age groups were further subdivided according to sex and ability there was some evidence to suggest that differences between Independent and Frustration level scores were not as large amongst the older subjects.

For all Groups the Syntactic Acceptability score was lower at Frustration level than at Independent level. For the whole Group this was significant at the .000 level. The difference was more significant for Low Ability Readers (.000) than for High Ability Readers (.073) and for Boys (.000) than Girls (.023). The difference was less significant for 9-year-olds (.084) than for 8 or 10-year-olds. (.006 and .006).

For all Groups, Semantic Acceptability score was lower at the Frustration level. This difference was significant for All subjects (.000), both High and Low Ability groups (.000 and .000), both sexes (.000 and .000) and all three Age groups (.000, .008 and .000).

Table 3.12 Relationships Between Grapho-Phonic Acceptability, Syntactic Acceptability and Semantic Acceptability Scores at Independent And Frustration Level as Measured by T-Test.

Subgroup		N	Levels of Significance of differences between Grapho-Phonic Acceptability Scores at Independent and Frustration Level	Levels of Significance of differences between Syntactic Acceptability Scores at Independent and Frustration Level	Levels of Significance of differences between Semantic Acceptability Scores at Independent and Frustration Level
All		60	.054	.000	.000
Ability	High	30	.000	.073	.000
	Low	30	.646	.000	.000
Sex	Boys	30	.446	.000	.000
	Girls	30	.06	.023	.000
Age	8-year-olds	20	.753	.006	.000
	9-year-olds	20	.068	.084	.008
	10-year-olds	20	.283	.006	.000
Sex And Ability	Low Ability Boys	15	.001	.000	.001
	High Ability Boys	15	.001	.115	.002
	Low Ability Girls	15	.622	.037	.000
	High Ability Girls	15	.014	.17	.021
Age And Ability	Low Ability 8-year-olds	10	.039	.008	.000
	High Ability 8-year-olds	10	.001	.306	.000
	Low Ability 9-year-olds	10	.559	.113	.081
	High Ability 9-year-olds	10	.018	.353	.062
	Low Ability 10-year-olds	10	.698	.022	.000
	High Ability 10-year-olds	10	.698	.066	.181

## 3.522 Relationships Between Individuals Scores

Pearson Product-Moment Correlations were used to test individual stability in scores upon the three Acceptability measures under the two conditions. Table 3.13 shows these correlations. The most stable score was the Grapho-Phonic Acceptability score which had a correlation level for the whole group of .5839 (significance level = .002). Grapho-Phonic scores tended to be more stable for the High Ability Group than the Low Ability Group (.61 and .22) and there was a slight developmental trend over the three age groups. (.50, .54 and .74). Girls were slightly less consistent than boys (.53 and .63), low ability Girls at both the 9 and 10-year-old levels being the least consistent groups of subjects.

Individuals relative Syntactic Acceptability scores were relatively consistent for the whole group with a correlation score of .39. The High Ability group tended to be less consistent (-.07) than the Low Ability group (.23), Girls (.34) to be less consistent than boys (.43) and a strong developmental trend appeared. (.11 at 8-year-old, .40 at 9-year-old and .67 at 10-year-old.)

Semantic Acceptability scores had a slightly negative correlation for the whole group (-0.2541) although it was quite high for girls (.45) compared with boys (-0.13). The correlation between Semantic Acceptability scores was highest for low ability girls (.7333). There were no significant differences between Sex and Ability groups.

Table 3.13 The Relationship Between Grapho-Phonic Acceptability, Syntactic Acceptability and Semantic Acceptability Scores at Independent and Frustration Levels as Measured by Pearson Product-Moment Correlations.

		Grapho-Phonic Score at Independent level with Grapho-Phonic Score at Frustration level	Syntactic Score at Independent level with Syntactic Score at Frustration level	Semantic Score at Independent level with Semantic Score at Frustration level	
All		.5839 .002	.3905 .002	.254 .05	Correlation Level of Significance
Ability	High	.6148 .002	-.0718 .706	.1537 .418	
	Low	.2276 .226	.2319 .218	.2334 .214	
Sex	Boys	.6373 .002	.4308 .018	-.1392 .464	
	Girls	.5375 .002	.348 .06	.4572 .012	
Age	8-years-old	.5092 .022	.1132 .634	.4884 .028	
	9-years-old	.5412 .014	.4006 .08	-.3503 .13	
	10-years-old	.7476 .002	.6733 .002	.0935 .696	
Sex And Ability	Low Ability Boys	.4624 .082	-.0768 .786	-.4172 .122	
	Low Ability Girls	.0256 .928	.6094 .016	.7733 .002	
	High Ability Boys	.6842 .004	.3684 .088	-.1838 .256	
	High Ability Girls	.588 .02	-.1376 .624	.2646 .34	
	Low Ability 8-year-olds	.3771 .282	-.0049 .99	.3992 .254	
	High Ability 8-year-olds	.7553 .012	-.5877 .074	.3496 .322	
	Low Ability 9-year-olds	.1338 .926	.4377 .206	.0519 .886	
	High Ability 9-year-olds	.5732 .084	-.1091 .764	.5257 .118	
	Low Ability 10-year-olds	.5714 .084	.4478 .194	.7694 .01	
	High Ability 10-year-olds	.5531 .098	.5702 .086	-.0426 .906	

3.53 Relationships Between Grapho-Phonic Acceptability, Syntactic Acceptability and Semantic Acceptability Scores.

3.531 Correlations Amongst Grapho-Phonic Acceptability, Syntactic Acceptability and Semantic Acceptability at the Independent Level.

Table 3.14 shows the correlations amongst the three Acceptability Scores at Independent Level for the various groupings. For the group as a whole, a low (.2985) but significant (.02) correlation was found between Grapho-Phonic Acceptability and Syntactic Acceptability scores. This relationship was stronger for the High ability group (.19) than the low ability group (-.025) and for Girls (.39) than for Boys (.20). Grapho-Phonic Acceptability scores had a negative correlation (-.3087, significant level .002) with semantic Acceptability this relationship being more marked for the High Ability Group (-.47) than for the Low Ability Group (.03). There was no significant correlation between Syntactic Acceptability score and Semantic Acceptability scores for the whole group but a relatively high correlation (.588, significance level .002) was found for the Low Ability group compared with the High Ability group (.216). There were no significant age or sex differences.

3.532 Correlation Scores Amongst Grapho-Phonic Acceptability, Syntactic Acceptability and Semantic Acceptability Scores at the Frustration Level.

Table 3.15 shows the Correlation Amongst the three Acceptability scores at Frustration Level for the various groupings. At Frustration Level the Correlation between Grapho-Phonic Acceptability and Syntactic Acceptability was much higher for the whole group than at the Independent level (.5348, significance level .002). At the Frustration Level, however, correlation scores were much higher for Boys (.81) than Girls (.07) and for Low Ability Readers (.40) than High ability Readers (-0.06). No significant correlation scores were found between Grapho-Phonic Acceptability and Semantic Acceptability except that there was a strong negative score for 8-year-olds (-.53). A marked difference was found between the High Ability (-.57) and Low

Table 3.14 Relationships Amongst Acceptability Scores at Independent Level as Measured by Pearson Product-Moment Correlations.

Subfile Group		Grapho-Phonic Acceptability Scores with Syntactic Acceptability Scores	Grapho-Phonic Acceptability Scores with Semantic Acceptability Scores	Syntactic Acceptability Scores with Semantic Acceptability Scores	
					Correlation Level of Significance
All		.2985 .02	.3087 .02	.089 .25	
Ability	High	.1953	.4715	.2158	
		.302	.008	.252	
	Low	.0251 .448	.0326 .432	.5885 .002	
Sex	Boys	.2042	.3344	.0068	
		.28	.07	.912	
	Girls	.3946 .03	.4135 .024	.1296 .494	
Age	8-years-old	.5121	.417	.1816	
		.024	.068	.666	
	9-years-old	.6148	.3801	.03	
		.004	.098	.9	
	10-years-old	.5004 .024	.4482 .048	.0461 .848	
Sex And Ability	Low Ability Boys	.0209	.0743	.565	
		.802	.792	.028	
	Low Ability Girls	.057	.28	.656	
		.84	.312	.008	
	High Ability Boys	.0831	.333	.0663	
	.768	.226	.814		
	High Ability Girls	.247	.5382	.2968	
		.374	.038	.282	



Table 3.15 Relationships Amongst Acceptability Scores at Frustration Level as Measured -  
By Pearson Product-Moment Correlation Scores.

Subfile Group		Grapho-Phonic Acceptability Scores with Syntactic Acceptability Scores	Grapho-Phonic Acceptability Scores with Semantic Acceptability Scores	Syntactic Acceptability Scores with Semantic Acceptability Scores	Correlation Level of Significance
All		.5348 .002	-.17 .194	-.1528 .244	
Ability	High	-.0684 .72	-.0738 .68	-.5713 .002	
	Low	.403 .028	.0443 .816	.5399 .002	
Sex	Boys	.8117 .002	-.2254 .232	-.0889 .64	
	Girls	.0747 .696	.0744 .696	-.3534 .056	
Age	8-years-old	.5643 .01	-.5348 .016	-.0576 .81	
	9-years-old	.3927 .086	.0188 .938	-.3524 .128	
	10-years-old	.6928 .002	-.1105 .642	.0258 .914	
Ability and Sex	Low Ability Boys	.5373 .038	.1768 .528	.4999 .053	
	Low Ability Girls	.2567 .356	-.1967 .482	.4119 .128	
	High Ability Boys	.4358 .104	-.2896 .296	-.428 .112	
	High Ability Girls	-.2694 .332	.1387 .622	-.6481 .008	
Ability and Age	Low Ability 8-year-olds	-.1302 .72	-.1444 .69	.7676 .01	
	High Ability 8-year-olds	.4527 .188	-.5263 .118	-.5895 .072	
	Low Ability 9-year-olds	.7036 .024	.1969 .586	.6286 .052	
	High Ability 9-year-olds	-.397 .256	.354 .316	-.7722 .008	
	Low Ability 10-year-olds	.4866 .154	.239 .506	.3059 .39	
	High Ability 10-year-olds	.4363 .208	-.5671 .088	-.4063 .244	

Ability (.53) groups on the correlation between Syntactic Acceptability and Semantic Acceptability. This relationship was consistent at all age levels although the difference between the groups tended to decrease slightly with age.

### 3.533 Relationships Between Each Acceptability Score at Independent Level and the other two Acceptability Scores at Frustration Level.

Correlation scores were calculated between each variable at Independent level and the other two variables at Frustration level. Grapho-Phonic Acceptability scores correlated quite highly with Syntactic Acceptability at Frustration level for the whole group (.45; significance level .002), the correlation score being higher for High Ability Readers (.35) than low ability Readers (.16).

A strong developmental trend was evident, correlation scores being .14 for the 8-year-old group, .40 for the 9-year-old group, and .70 for the 10-year-old group. There was no significant Correlation score for the whole group between Grapho-Phonic Acceptability scores at Independent level and Semantic Acceptability Scores at Frustration level (-0.03) although there was a sizeable difference between High Ability (-0.111) and Low Ability (.3127) groups.

A relatively high correlation score for the whole group (.4454) was also found between Syntactic Acceptability scores at Independent level and Grapho-Phonic Acceptability Scores at Frustration level with Boys having a slightly higher Correlation (.52) than Girls (.36). There was no significant correlation between Syntactic Acceptability scores at Independent level and Semantic Acceptability Scores at Frustration level (-.12) although again there was a sizeable difference between Boys (-.48) and Girls (.1438).

A relatively high negative Correlation was found between Semantic Acceptability scores and Grapho-Phonic scores at Frustration level. (-.4079; significance level .002). There were sizeable differences between the High Ability (-.40) and Low Ability groups (.04) correlation scores and a strong developmental trend was also present. (8-year-Old =

Table 3.16 Relationships Between Each Acceptability Score at Independent Level with the other two Acceptability Scores at Frustration Level, as measured by Pearson Product-Moment Correlationscores.

		IGP <sup>①</sup> with FRSYN <sup>②</sup>	IGP with FRSEM <sup>③</sup>	ISYN <sup>④</sup> with FRGP <sup>⑤</sup>	ISYN with FRSEM	ISEM <sup>⑥</sup> with FRGP	ISEM with FRSYN
All	Correlation	.4507	-.0326	.4454	-.1286	-.4079	-.2004
	Level of significance	.002	.804	.002	.328	.002	.124
Ability	High	.3528	-.111	-.0069	.0936	-.4051	-.1934
	Low	.056	.56	.972	.622	.026	.306
Sex	Boys	.1655	.3127	.1371	.0984	.0409	.2885
	Girls	.382	.092	.47	.604	.83	.122
Age	8-year-olds	.4619	.0548	.5285	-.4825	-.4216	.4922
	9-year-olds	.01	.774	.002	.4825	.02	.003
Age	10-year-olds	.5375	-.2719	.365	.1438	-.4432	-.054
		.002	.146	.048	.4488	.014	.776
Ability	Low Ability Boys	.1432	-.1276	.0081	-.315	-.7143	-.2674
	Low Ability Girls	.546	.592	.974	.176	.002	.254
And	High Ability Boys	.4031	-.0279	.7374	.0893	.0211	-.0346
	High Ability Girls	.078	.906	.002	.708	.93	.884
Sex	Low Ability Boys	.7041	.0171	.6981	.0775	.3145	-.2787
	Low Ability Girls	.002	.944	.002	.746	.176	.234
And	High Ability Boys	.1375	-.3884	.2234	-.5277	-.025	-.3099
	High Ability Girls	.626	.152	.434	.044	.93	.26
Sex	Low Ability Boys	.4838	.3661	.464	.4472	.0058	.5849
	Low Ability Girls	.068	.18	.1236	.094	.984	.022
And	High Ability Boys	.4911	-.1164	.1926	-.3248	-.2018	-.1299
	High Ability Girls	.064	.68	.492	.238	.47	.644
Age	Low Ability Boys	.3408	-.1061	-.1183	.2453	-.5589	-.1899
	Low Ability Girls	.214	.706	.674	.378	.03	.498
Ability	Low Ability 8-year-olds	.189	.2449	-.2203	-.366	-.4085	.5687
	High Ability 8-year-olds	.602	.496	.54	.298	.242	.086
And	Low Ability 9-year-olds	.3392	-.5044	-.6659	.2737	-.7843	-.2934
	High Ability 9-year-olds	.338	.138	.036	.444	.008	.41
Age	Low Ability 10-year-olds	.1314	.5458	.4606	.0692	.7102	.6749
	High Ability 10-year-olds	.718	.104	.18	.85	.022	.032
And	Low Ability 8-year-olds	.3185	-.251	.3455	.0947	-.053	-.3706
	High Ability 8-year-olds	.37	.484	.328	.794	.884	.292
Age	Low Ability 9-year-olds	.5111	.1356	.4637	.5296	.184	.0444
	High Ability 9-year-olds	.132	.708	.178	.116	.305	.451
And	Low Ability 10-year-olds	.6128	-.1287	.5432	-.3538	-.1436	.019
	High Ability 10-year-olds	.06	.362	.104	.316	.692	.958

- ① Grapho-Phonic Acceptability Score at Independent Level  
 ② Syntactic Acceptability Score at Frustration Level  
 ③ Semantic Acceptability Score at Frustration Level  
 ④ Syntactic Acceptability Score at Independent Level  
 ⑤ Grapho-Phonic Acceptability Score at Frustration Level  
 ⑥ Semantic Acceptability Score at Independent Level

-.71; 9-year-old = .02 and 10-year-old = .31). There was a small negative correlation between Semantic Acceptability scores at the Independent level and Syntactic Acceptability scores at the Frustration level for the whole group (-.2004). There were sizeable differences between High Ability (-.1934) and Low Ability groups (.2885) and Boys (.49) and Girls (.05).

### 3.6 The Relationship between Grammatical Relationships and Syntactical Acceptability Scores and between Comprehension and Semantic Acceptability Scores.

#### 3.61 Introduction

The 'Grammatical Relationships' and 'Comprehension' Scores of the RMI represent more complex measures of the subject's ability to apply his knowledge of Language to the Reading Process and to decode the author's intended message than do the 'Syntactic Acceptability' and 'Semantic Acceptability' scores. Two aspects of the Grammatical Relationships and Comprehension Scores were considered: (1) are there significant differences between scores at Independent and Frustration Reading levels and (2) what are the relationships between (a) Syntactic Acceptability and Grammatical Relationship Scores and (b) Semantic Acceptability and Comprehension Scores?

#### 3.62 Relationships between Grammatical Relationships and Comprehension Scores at Independent and Frustration Levels.

Tables 3.17 and 3.18 show the means and standard deviations of both Grammatical Relationships and Comprehension Scores at both Independent and Frustration levels. Syntactic and Semantic Acceptability scores are also included in the tables to facilitate comparisons of the scores. Table 3.19 shows the significance of differences between means at Independent and Frustration levels for Grammatical Relationships, Syntactic Acceptability, Comprehension and Semantic Acceptability. There were significant differences between Independent Level scores and Frustration Level scores for both Grammatical Relationships and Comprehension. Differences found were very similar to the differences found between means for Syntactic Acceptability and Semantic Acceptability.

Table 3.20 shows Correlations between Grammatical Relationships and Comprehension Scores at Independent and Frustration Level. Correlations for Syntactic Acceptability and Semantic Acceptability Scores at Independent Level and Frustration Level are presented in the same table. For the whole Group, a low but significant correlation was found between Grammatical Relationships Scores at Independent and Frustration Levels

Table 3.17 Syntactic Acceptability and Grammatical Relationships Scores at Independent and Frustration Levels.

Subfile Group	Syntactic Acceptability		Grammatical Relationships		Syntactic Acceptability		Grammatical Relationships		
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	
All	83.73	10.84	62.82	12.15	73.35	18.98	49.88	13.53	
Ability	High	89.5	6.79	65.43	10.1	83.93	14.43	54.133	16.44
	Low	77.97	11.15	60.2	14.19	62.77	17.11	45.633	8.04
Sex	Boys	83.17	10.41	58.8	8.39	70.13	19.72	45.67	12.18
	Girls	84.3	11.41	66.8	14.62	76.57	17.95	54.17	13.65
Age	8	84.05	10.89	55.3	15.19	70.75	17.04	45.95	15.56
	9	81.2	12.12	52.5	11.14	72.95	21.76	51.6	13.24
	10	85.95	9.34	57	10.2	76.35	18.37	52.1	11.25

Table 3.18 Semantic Acceptability and Comprehension Scores at Independent and Frustration Levels.

		Independent Level				Frustration Level			
		Semantic Acceptability		Comprehension		Semantic Acceptability		Comprehension	
Subfile Group		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
All		63	15.46	54.93	14.1	41.18	18.46	31.1	14.46
Ability	High	56.7	15.68	53.77	15.01	37.16	20.26	27.83	13.75
	Low	69.3	12.58	56.1	13.27	45.2	15.6	34.67	14.64
Sex	Boys	59.77	12.8	53.07	13.02	35.77	17.58	35.77	15.29
	Girls	66.23	17.35	56.8	15.08	46.6	18.0	46.6	13.71
Age	8	68.65	17.36	55.3	15.12	37.6	17.71	28.15	12.45
	9	57.85	11.68	52.5	12.69	44	21.83	33	18.67
	10	62.5	15.58	57	14.7	41.95	15.7	32.15	11.47

Table 3.19 Relationships Between Syntactic Acceptability, Grammatical Relationships, Semantic Acceptability and Comprehension scores at Independent and Frustration Levels as Measured by T-Tests.

Subfile Group	Syntactic Acceptability Score at Independent Level and at Frustration Level	Grammatical Relationships Score at Independent Level and at Frustration Level	Semantic Acceptability Score at Independent Level and at Frustration Level	Comprehension Score at Independent Level and at Frustration Level
All	.000	.000	.000	.000
Ability	High	.073	.000	.000
	Low	.000	.000	.000
Sex	Boys	.000	.000	.000
	Girls	.023	.01	.000
Age	8-years-old	.006	.000	.000
	9-years-old	.084	.006	.000
	10-years-old	.006	.003	.000



(.274, significance level .034), and a low but not significant correlation (.207 significance level .113) was found for Comprehension scores at the two levels. The correlation between Grammatical Relationships Score was higher for the Low Ability group (.322) than the High Ability group (-.047) and for Boys (.379) than Girls (.101). Correlations between Comprehension scores were higher for High Ability Readers (.31) than for the Low Ability group (.071)

### 3.63 Relationships Between Grammatical Relationships and Syntactic Acceptability Scores.

Table 3.17 shows that Grammatical Relationships (GR) scores were lower than Syntactic Acceptability (SA) scores and T-Tests confirmed the significance of these differences. Trends amongst scores according to Sex, Age and Ability were similar but scores in Table 3.21 show that the significances of differences between means were not identical. No significant differences between means were found amongst the various age groups as had been so with the SA scores. However, where as there had been no significant difference between sexes in SA at either Independent or Frustration level a significant difference was found between GR at the Independent Level (.012) but not at the Frustration Level (.078). Differences between the High Ability and Low Ability Groups in SA scores were significant at both Independent and Frustration levels (.000) but differences between GR scores for the two groups were not significant at either the Independent (.099) or Frustration level.

Table 3.22 shows the correlations between SA and GR at both Independent and Frustration levels. At both levels the correlation is moderate and significant (.001 level). At Independent level little difference was found in the correlation size amongst the various groups except that the correlation for 9-year-olds was considerably higher (.72) than that of 8-year-olds (.24). At Frustration Level, however, the Low Ability Group's correlation was considerably higher (.60) than the High Ability Group's (.04) and Boys considerably higher (.72) than Girls (.26). There was also a noticeable age trend for the three age groups. (.32, .51 and .78).

Table 3.20 Relationships Between Syntactic Acceptability, Grammatical Relationships, Semantic Acceptability and Comprehension Scores at Independent and Frustration Levels as Measured by Pearson Product-Moment Correlations.

Subfile Group	Syntactic Acceptability Score at Independent Level with Syntactic Acceptability Score at Frustration Level	Grammatical Relationships Score at Independent Level with Grammatical Relationships Score at Frustration Level	Semantic Acceptability Score at Independent Level with Semantic Acceptability Score at Frustration Level	Comprehension Score at Independent Level with Comprehension Score at Frustration Level
All	Correlation .3905 Significance Level .002	.274 .034	.2541 .05	.207 .113
Ability	High -.0718 .706	-.047 .807	.1537 .418	.31 .095
	Low .2319 .218	.322 .047	.2334 .214	.071 .709
Sex	Boys .4308 .018	.379 .039	-.1392 .464	.123 .517
	Girls .348 .06	.101 .596	.4572 .012	.271 .147
Age	8-year-olds .1132 .634	.236 .315	.4884 .028	.248 .291
	9-year-olds .4006 .08	.45 .043	-.3503 .13	.188 .428
	10-year-olds .6733 .002	.39 .089	.0930 .696	.257 .275

Table 3.21 Significance of Differences Between Means for Syntactic Acceptability, Grammatical Relationships, Semantic Acceptability and Comprehension at Independent and Frustration Levels.

Subgroups being compared	I N D E P E N D E N T   L E V E L				F R U S T R A T I O N   L E V E L			
	Syntactic Acceptability	Grammatical Relationships	Semantic Acceptability	Comprehension	Syntactic Acceptability	Grammatical Relationships	Semantic Acceptability	Comprehension
Boys <u>with</u> Girls	.689	.012	.106	.309	.192	.078	.022	.48
High <u>with</u> Low Ability	.000	.099	.003	.316	.000	.079	.081	.04
8-years-old <u>with</u> 9-years-old	.439	.141	.027	.53	.724	.168	.315	.341
9-years-old <u>with</u> 10-years-old	.174	.792	.293	.307	.597	.457	.735	.863
8-years-old <u>with</u> 10-years-old	.557	.193	.246	.721	.324	.126	.416	.297

Table 3.22 Correlations between (1) Syntactic Acceptability and Grammatical Relationships and (2) Semantic Acceptability and Comprehension of Independent and Frustration Levels.

Subfile Groupings	Syntactic Acceptability Score at Independent level with Grammatical Relationships Score at Independent Level	Syntactic Acceptability Score at Frustration Level with Grammatical Relationships Score at Frustration Level	Semantic Acceptability Score at Independent Level with Comprehension Score at Frustration Level	Semantic Acceptability Score at Frustration Level with Comprehension Score at Frustration Level
ALL	.4429 .001	.4374 .001	.529 .001	.2578 .028
Ability				
High	.4245 .01	.0452 .406	.6052 .001	.0609 .379
Low	.4201 .01	.6058 .001	.4663 .005	.532 .001
Sex				
Boys	.3314 .037	.7284 .001	.4595 .005	.4871 .003
Girls	.5582 .001	.2666 .077	.5598 .001	.0864 .325
Age				
8-years-old	.2372 .157	.3218 .083	.5028 .012	.2612 .133
9-years-old	.7186 .001	.5093 .011	.6725 .001	.5605 .005
10-years-old	.5535 .006	.7796 .001	.4953 .013	-.2693 .125

### 3.64 Relationships between Comprehension and Semantic Acceptability Scores.

Table 3.18 shows that Comprehension (C) scores were lower than those of Semantic Acceptability (SeA) and T-Tests confirmed the significance of these differences for all groupings except the High Ability group. Table 3.21 compares the significance levels of differences between groups for both variables at both levels. For SeA the only significant age difference was between 8 and 9-year-olds at the Independent Level (.027) but the score difference between 8 and 9-year-olds was not significant (.53). Between ability groups SeA score was found to be significantly lower for the High Ability group (.003) at the Independent level but the difference between C scores was not significant (.316). However the differences in scores at Frustration Level were significantly lower for the C Score (.04) but not for the SeA score (.081). A significant Sex difference was found on the SeA scores at Frustration level with Boys scoring significantly lower (.022) than the Girls. The sex difference for C scores was not significant (.48).

Table 3.22 shows the correlations between SeA and C at both levels for the various groupings. At the Independent level a moderately high Correlation existed (.529, significance level .000) and this trend was consistent throughout all the groupings. However at Frustration Level the Correlation was lower (.258, significance level .000) and subgroup scores were not so consistent. The Correlation was considerably lower for the High Ability Group (.06) than for the Low Ability Group (.53) and the Boys correlation Score was considerably higher (.48) than that of Girls (.08). Age group correlations varied considerably.

### 3.65 Relationships Between Grammatical Relationships and Comprehension at Frustration Level.

As noted earlier (see Table 3.15) a significant difference was found between Ability groups when Correlation scores of Syntactic Acceptability and Semantic Acceptability scores at Frustration level were compared. Table 3.23 sets out Correlations between Grammatical Relationships and Comprehension scores at Frustration level. Although the Correlation for the Low Ability group was higher (.61) than that for the High Ability group (.34) the difference was nowhere near as great as it had been for Syntactic and Semantic Acceptability. The Correlation size tended to decrease with age.

Table 3.23 Relationships Between Grammatical Relationships Scores and Comprehension Scores at Frustration Level as measured by Pearson Product-Moment Correlations.

Subfile Grouping		Correlation	Significance Level
All		.4189	.002
Ability	High	.6116	.001
	Low	.3438	.031
Sex	Boys	.259	.676
	Girls	.4371	.016
Age	8-year-olds	.4887	.03
	9-year-olds	.3926	.086
	10-year-olds	.2267	.336
Ability And Sex	Low Ability Boys	.631	.01
	Low Ability Girls	.6087	.016
	High Ability Boys	.5136	.05
	High Ability Girls	.257	.356

### 3.7 Chapter Summary.

#### 3.71 Socio Economic Status and Reading Ability

1. High ability Readers have significantly higher SES ranking than Low Ability Readers.

2. The significance of differences between the SES ranking of High and Low Ability Readers tends to decline with age.

#### 3.72 Self-Correction Rates.

1. SC rates were found to be significantly lower at Frustration Level for all groups.

2. Sex, age and ability were not found to affect this trend or its significance.

3. Correlations between SC scores at Independent and Frustration level were not found to be significant for any group.

4. The results obtained suggest that SC rate is a function of the difficulty level of the material being Read rather than of ability, age or sex.

#### 3.73 Error Types.

##### 3.731 Frequencies

1. Substitutions were the most prevalent error type for all groups at both Independent and Frustration levels.

2. Insertions were significantly less frequent at Frustration than at Independent level.

##### 3.732 Differences Amongst Groups in Relative Incidence

###### 3.7321 Sex.

No significant differences were found between the two groups.

## 3.7322 Age.

No important differences were found between 8 and 9-year-olds. Substitutions at Independent level were significantly higher for 9-year-olds than 10-year-olds. Substitutions at Independent level were significantly higher for 8-year-olds than 10-year-olds whilst Insertions at Independent level were significantly higher for the 10-year-olds.

## 3.7323 Ability.

Significant differences were found between High and Low ability groups on all six variables. The High ability group had significantly higher scores than the Low ability group on Insertions and Omissions at both levels and significantly lower scores on Substitutions at both levels.

## 3.733 Individual Stability in Error Patterns.

1. Correlations between Error Type Frequencies at Independent and Frustration levels tended to be positive but low.

2. Insertion Error scores were not as consistent for High Ability Readers as they were for Low Ability Readers.

## 3.74 Grapho-Phonic Acceptability, Syntactic Acceptability and Semantic Acceptability scores.

## 3.741 Relative scores of Grapho-Phonic Acceptability, Syntactic Acceptability and Semantic Acceptability at Independent and Frustration Levels.

1. At Independent level Syntactic Acceptability was the highest score, followed by Grapho-Phonic Acceptability.

2. At Frustration level Grapho-Phonic Acceptability had the highest score with Syntactic Acceptability next but the differences between the scores was only marginal .

3. Significant differences were found between the High and Low Ability groups on five of the six measures. At both



Independent and Frustration level Grapho-Phonic Acceptability and Syntactic Acceptability were significantly higher for the High ability group. Semantic Acceptability scores were lower for the High Ability group at both Independent and Frustration levels but the difference was only significant at the Independent level.

4. Semantic Acceptability scores at Frustration level were significantly higher for Girls. This was the only significant Sex difference.

5. Semantic Acceptability Scores of 8-year-olds at Independent level were significantly higher than 9-year-olds. This was the only significant difference amongst age groups.

### 3.742 Comparisons Between Acceptability Scores at Independent and Frustration Levels.

#### 3.7421 Group Trends.

1. Significant differences were found between Syntactic Acceptability and Semantic Acceptability scores at the two levels. Differences between Grapho-Phonic Acceptability scores were very close to being significant (.054)

2. Grapho-Phonic Acceptability Scores for High Ability Readers were significantly higher at the Frustration level (.000) than those of the Low Ability group. Grapho-Phonic Acceptability scores were lower at Frustration level for low ability Readers but the difference was not significant.

3. Syntactic Acceptability scores were significantly lower for low ability Readers at Frustration level. Although lower for high ability Readers the difference was not significant. Syntactic Acceptability scores were also significantly lower at Frustration level for both sex groups, 8-year-olds and 10-year-olds.

4. Semantic Acceptability scores were significantly lower at Frustration level for all groups.

### 3.7422 Individual Trends.

1. Grapho-Phonic Acceptability Scores at Independent and Frustration level had the highest correlation (.58) of the three variables. The correlation tended to be higher for high ability subjects (.61) than low ability subjects. (.22).

2. Syntactic Acceptability Scores at Independent and Frustration level also correlated relatively highly (.39) and Correlations were lower for the High Ability group (-.07) than for the low ability group (.23). Correlation Scores tended to increase with age (.11, .40 and .67).

3. Semantic Acceptability Scores at Independent and Frustration levels had a low positive correlation (.25). Boys had a considerably lower correlation score (-.13) than Girls (.48).

### 3.743 Relationships Amongst Grapho-Phonic Acceptability, Syntactic Acceptability and Semantic Acceptability Scores.

#### 3.7431 At Independent Level

1. There was a low (.29) but significant (.02) correlation between Grapho-Phonic Acceptability and Syntactic Acceptability scores. The correlation was higher for Girls than Boys and for high ability than low ability subjects.

2. A negative correlation (-.31) was found between Grapho-Phonic and Semantic scores. The negative relationship was stronger for High ability than Low ability subjects.

3. No significant Correlation was found for the total sample between Syntactic and Semantic Acceptability scores. Low ability subjects had a higher Correlation score than did High ability subjects.

#### 3.7432 At Frustration Level

1. Correlations for Grapho-Phonic and Syntactic scores were higher than at Independent level (.53). The

correlation was higher for Boys than Girls and Low Ability than High Ability.

2. Grapho-Phonic Acceptability and Semantic Acceptability scores had a negative but not significant correlation (-.17). This correlation was highest for the 8-year-old group (-.53).

3. Syntactic and Semantic Acceptability scores. Although there was no significant Correlation for the group as a whole, a major difference between High ability and Low ability subjects was found. High ability Readers had a negative correlation score of -.57 whilst Low ability subjects had a positive correlation of .53. This relationship was consistent at all three age levels.

3.7433 Between each variable at Independent Level and the other two variables at Frustration Level.

1. There was a moderately high correlation between Grapho-Phonic Acceptability scores at Independent level and Syntactic Acceptability scores at Frustration level (.45). The correlation was higher for high ability subjects and tended to become higher with age.

2. The correlation between Grapho-Phonic Acceptability scores at Independent Level and Semantic Acceptability scores at Frustration level was not significant. Correlations were considerably higher for the Low Ability than the High Ability group.

3. There was a moderately high correlation between Syntactic Acceptability scores at Independent Level and Grapho-Phonic Acceptability scores at Frustration Level (.45).

4. There was no significant correlation between Syntactic Acceptability scores at Independent level and Semantic Acceptability scores at Frustration Level. Correlations were, however, considerably higher for Girls (.14) than Boys (-.48).

5. The correlation between Semantic Acceptability scores at Independent level and Grapho-Phonic Acceptability scores at Frustration level was negative and moderately high (-.4079; significance level .002). There was a strong developmental trend over the three age groups (-.71, .02 and .31).

6. There was a small negative correlation between Semantic Acceptability scores at Independent and Syntactic Acceptability scores at Frustration level (-.20). The Low Ability group's correlations were considerably higher (.49) than those of the High Ability group (-.19) and Boys considerably higher (.49) than Girls (-.05).

### 3.75 Grammatical Relationships and Comprehension Scores.

#### 3.751 Scores at Independent and Frustration Levels

1. Significant differences were found between Independent and Frustration level scores on both Grammatical Relationships and Comprehension.

2. A low but significant correlation (.27, significance level .04) was found between Grammatical Relationship scores at Independent and Frustration level. The correlations were higher for the Low Ability group (.322) than the High Ability group (-.047) and for Boys (.379) than Girls (.101).

3. A low and not significant Correlation was found between Comprehension scores at the Independent and Frustration levels (.207; significance level .113). Correlations were higher for the High Ability (.31) group than the Low Ability group (.071).

#### 3.752 Grammatical Relationships and Syntactic Acceptability Scores.

1. Grammatical Relationships scores were significantly lower than Semantic Acceptability scores. Relative score trends amongst groups followed the same general pattern but there were some differences in the significance levels of differences between means.

2. Correlations between GR scores and SA scores at both Independent Level and Frustration Level were moderate and significant. (.45 and .44).

### 3.753 Comprehension and Semantic Acceptability Scores

1. Comprehension scores were significantly lower than Semantic Acceptability scores. Relative score trends amongst groups followed the same general pattern but there were some differences in the significance levels of differences between means.

2. Correlation between C and SeA scores at Independent level were moderately high (.529; level of significance .000).

3. At Frustration level the Correlation was much lower (.238) and was considerably lower for high ability subjects (.06) than low ability (.53) and for Girls (.08) than Boys (.48).

## Chapter Four: Discussion of Results and Conclusions

### 4.1 Introduction

In this chapter the results obtained are organised into sections which are appropriate to the Research Problems set in Chapter One, and implications and conclusions are drawn. This involves some duplication of material, both between Chapters Three and Four and within sections of Chapter Four, but this was considered to be justified as an aid to simplify the interpretation of such a large amount of data. The first section is concerned with the differences between miscue patterns at Independent and Frustration Reading levels. The second section examines differences in Socio-economic status and miscue patterns amongst groups differentiated according to ability, age, sex and PAT Listening Comprehension scores. The third section contains a more subjective analysis of the value of the RMI as an evaluative tool, and alternative procedures for analyzing ORE patterns involving the utilization of different categorisation procedures for different tasks, are outlined. Summaries are made at the end of each of these sections. The fourth and final section summarizes the main conclusions drawn as a result of this study and makes suggestions for further research.

### 4.2 Differences in Miscue Patterns at Independent and Frustration Levels.

#### 4.21 Introduction

In this section the Self-Correction scores, Error Type scores and Cueing System utilization scores at Independent and Frustration levels are compared.

#### 4.22 Self-Correction Rates

Self-Correction scores were found to be significantly lower at Frustration Level than at Independent Level. Correlations between Self-Correction scores at the two levels were low and not significant. These results provide no evidence to support views of Self-Correcting as being a specific, trainable skill or trait which

some Readers perform more efficiently than others. Rather it would appear to be more appropriate to regard Self-Correcting as a necessary part of the active search for meaning which is necessary for successful Reading. At Independent Level such active interaction with the text is taking place, but at Frustration Level the subjects processing strategies are not able to be sufficiently utilised for Self-Corrections to occur. It is probably more realistic to interpret a low Self-Correction score as an indication that the subject is being tested on material which is too difficult for him, rather than as an indication that the subject has failed to develop a specific, trainable skill.

#### 4.23 Grapho-Phonic Acceptability, Syntactic Acceptability and Semantic Acceptability scores at Independent and Frustration Levels.

Relative percentage scores on the Grapho-Phonic, Syntactic and Semantic Acceptability measures are an indication of the extent to which a Reader is utilising the three cueing systems. Grapho-Phonic Acceptability scores at the Frustration Level were higher at a level that was very close to being significant (.054). Syntactic and Semantic Acceptability scores were significantly lower at Frustration level. At Independent Level the Syntactic Acceptability score was the highest, followed by Grapho-Phonic Acceptability and Semantic Acceptability. At Frustration Level Grapho-Phonic Acceptability displaced Syntactic Acceptability as the cueing system used most, but only by a marginal level. Semantic Acceptability scores remained the lowest.

The relatively lower Grapho-Phonic Acceptability and higher Syntactic Acceptability scores at Independent Level provide evidence that in active, efficient Reading it is the Reader's sense of language which has the most vital role. He makes predictions about what words or groups of words are appropriate by referring to the grammatical structure of the sections of the prose passage he has previously successfully decoded. The predictions he makes, he checks firstly by reference to the Grapho-Phonic characteristics of the stimulus words and only secondly by reference to their Semantic Acceptability. This contrasts markedly with what most Readers

believe about the cues they have used in decoding the text (e.g. Raisner, 1978). At Frustration Level the Reader's failure to accurately interpret the previous text makes the use of the grammatical structure of the passage as a source of cues impossible, and the Reader is forced to rely more upon the physical characteristics of the prose passage. The extent to which a Reader draws upon the Grapho-Phonic cueing system is a function of how much Syntactic information is available to him. It would appear that the Semantic Cueing system is of only relatively minor importance in the Reader's processing of print at either Independent or Frustration Level.

Some evidence was found to suggest that individual Readers are consistent in their relative use of the three cueing systems at the two levels. Grapho-Phonic Acceptability scores at the two levels had a positive correlation score of .58, Syntactic Acceptability Correlation scores were .39 and Semantic Acceptability Correlation scores .25. Correlations between Grapho-Phonic Acceptability scores and Syntactic Acceptability scores at both levels were positive (.30 and .53) whilst correlations between scores on these two variables and Semantic Acceptability scores were negative at both Levels. Correlations amongst the Acceptability scores at the two levels, further illustrate the dominant role of the Grapho-Phonic and Syntactic cueing systems. Correlations between (1) Grapho-Phonic Acceptability Score at Independent Level and Syntactic Acceptability Score at Frustration Level and (2) Syntactic Acceptability score at Independent level and Grapho-Phonic Acceptability at Frustration level were positive at a moderately high level. However Correlations between Semantic Acceptability Scores at the Independent level and Grapho-Phonic and Syntactic Acceptability scores at the Frustration level, and between Semantic Acceptability scores at the Frustration Level and Grapho-Phonic Acceptability and Syntactic Acceptability at the Independent Level were negative. These results should not be interpreted, however, as meaning that the Semantic Cueing system has only a minor role in the Reading process. A Reader's relevant background knowledge and the information he has gained from successful decoding of earlier sections of the text are obviously valuable. They do, however, suggest that Readers grant to the Semantic Cueing system, a relatively low priority both in making hypotheses about the printed word and in their checking.



#### 4.24 Error Type Frequencies

Substitutions and Omission scores were found to be slightly (but not significantly) higher at Frustration Level than at Independent Level. Insertion scores were found to be significantly lower at Frustration Level than at Independent Level. As with Self-Corrections, the significantly lower incidence of Insertions at Frustration Level would appear to indicate that the Reader is no longer actively engaged in interacting with the text in a dynamic, meaningful way. Insertions result from his attempts to predict the meaning of portions of text before checking his hypotheses by utilising the three cueing systems. At Frustration Level the subject is no longer actively involved in the two-way hypothesizing and verifying process. He is functioning merely as a passive translator of sets of graphic symbols rather than as an active language user and seeker of meaning. The presence of Insertions in a subject's Reading, then, provides evidence that the prose he is Reading is of a difficulty level that is appropriate for him.

This drop in active intercourse with the text at Frustration Level which the lower Insertion score indicates, may also provide grounds for reinterpreting the Omission and Substitution scores. It is possible that these Error types may have different causes at the two levels. It is likely that at Independent Level these two types of Errors are produced in the course of active use of the three cueing systems in the search for meaning. At Frustration Levels however, they are caused by passive, graphically oriented Responses to the text, rather than from efficient utilisation of all the cueing systems in an integrated, active searching for meaning. Such a difference in aetiology is not, however, reflected in the scores.

This view that the nature of the Reading process is fundamentally different when in action at Independent and Frustration levels, suggests alternative definitions for successful Reading and unsuccessful Reading from those traditionally used. Such definitions would be based in the processes being utilised by the subject in interaction with the text rather than in fluency of Oral Reading or Comprehension scores. It may, in fact be appropriate to redefine the term 'Reading' itself. At present the term 'Reading' is used to refer to both successful and unsuccessful decoding

efforts. It may be more appropriate to reserve the term 'Reading' for describing the active interacting with the text in the search for meaning which characterises successful Reading. A term such as 'word-calling' or 'passive interacting' may be more appropriate for decoding attempts which do not involve this active intercourse with the text.

Correlation scores which measured individual stability in relative Error Type frequency were positive but low. Such scores are not inconsistent with the interpretation of the Results outlined above.

#### 4.25 Summary and Conclusions

Significant differences were found between the miscue patterns of subjects at their Independent and Frustration Reading levels. These differences may be interpreted as indicating important differences in the way in which a Reader interacts with the text at the two levels which suggests that some redefinitions of 'successful Reading' and indeed 'Reading' itself may be necessary. No evidence was found to support definitions of 'self-correcting' as a specific, trainable skill that differs quantitatively from Reader to Reader. Rather self-correcting should be regarded as a necessary part of successful Reading and self-correction scores as an indication of the appropriateness of the difficulty level of the prose material for the Reader.

The difference in Miscue patterns at the two levels means that serious reservations must be held about the interpretation of much of the Miscue Research which has accumulated so far. Much of the data collected to formulate the miscue patterns of subjects has been gathered at a difficulty level that is too high to be described as the subjects Independent Reading Level. In some studies, then, comparisons between subjects miscue patterns have been restricted to comparisons of ~~their~~ miscues at Frustration level. In other studies the miscue patterns at the Independent Level of some subjects have been compared with the miscue patterns at Frustration Level of other subjects (e.g. Williams (1968) and Watson (1973)). The significant differences found between miscue patterns at the two levels certainly mean that Researchers in this field must pay far more attention to establishing appropriate difficulty levels before collecting miscues and must report in full the methods they have used in selecting the appropriate difficulty levels for each subject.

#### 4.3 Differences in SES scores and Miscue Patterns in Group's Differentiated by Ability, Sex, Age and PAT Listening Comprehension scores.

##### 4.31 Introduction

In this section the SES scores and Miscue patterns of different subgroups are compared. The comparisons are organised under the following sub-headings:

4.312 Differences between High and Low Ability Readers

4.33 Differences between Boys and Girls

4.34 Differences between 8-year-olds, 9-year-olds and 10-year-olds.

4.35 Differences between low ability Readers who scored highly on the PAT Listening Comprehension Tests and the rest of the sample.

At the conclusion of each sub-section a summary of the results is presented.

##### 4.32 Differences in SES scores and Miscue patterns in High and Low Ability Readers

###### 4.321 Socio-Economic Status

Readers of high ability were found to score significantly higher on SES measures than were low ability Readers. This confirms the results of Williams (1968) and many other investigators. There may be a wide variety of reasons for this finding including heredity, exposure to differing environmental conditions and to differing quality of instruction but it is not within the scope of this study to investigate such potential causes. It should be borne in mind that these findings are based on differences between groups and that an individual's SES group membership does not predetermine the ultimate performance of any particular individual.

#### 4.322 Self-Correction Rates

The Self-Correction scores of High Ability and Low Ability Readers at both Independent and Frustration levels were not significantly different. Neither were correlations between the scores at the two levels. This provides further support for the view expressed earlier that Self-Correction Rate Score is a function of the activeness of the subject's search for meaning - the activeness of this search being determined by the difficulty level of the material the subject has been asked to Read, rather than the indication of a discrete skill which differs quantitatively amongst Readers.

#### 4.323 Utilisation of the three Cueing Systems

Significant differences were found between the scores of the High Ability and Low Ability groups on five of the six measures which reflected relative use of the three cueing systems at the two levels. Grapho-Phonic Acceptability and Syntactic Acceptability scores were significantly higher for the High Ability group at both levels. Semantic Acceptability scores were lower for the High Ability group at both levels but this was not significant at the Frustration level (.081).

Significant differences were also found between the two groups in the levels of significance of differences between each of the three Acceptability Scores at the two levels. Semantic Acceptability scores at Frustration Level were significantly lower than Semantic Acceptability scores at Independent level for both groups. Syntactic Acceptability scores at Frustration Level were lower for both groups but this difference was only significant for the Low Ability group. Grapho-Phonic Acceptability scores at Frustration Level were significantly higher for the High Ability group whilst for the Low Ability group they were lower but not at a significant level. These results provide further evidence that the Syntactic sense of low ability Readers is weaker than that of high ability Readers and this is reflected in both the lower Syntactic Acceptability scores at both levels for the Low Ability group and the greater decrease between Syntactic Acceptability scores at the Independent and Frustration levels which occurred for the Low Ability group. It would also appear that high ability Readers make greater use of the

Grapho-Phonic cues available to them. This is reflected in the higher Grapho-Phonic Acceptability scores for the High Ability group at both levels and in the significant increase in Grapho-Phonic Acceptability scores for the High Ability Group when working at Frustration level which contrasts with the decrease between the scores at the two levels for the Low Ability group.

Correlations which measured the stability of individual students use of the cueing systems at the two levels also produced differences between the two groups. Correlations for Semantic Acceptability scores at the two levels were positive but low for both groups (.15 for the High Ability group and .23 for the Low Ability group). Correlations for the Grapho-Phonic Acceptability scores were considerably higher for the High Ability group (.61) than for the Low Ability group (.23). High ability Readers appear to make efficient and consistent use of the Grapho-Phonic cueing system at both levels, while low ability Readers use of the Grapho-Phonic system degenerates considerably at Frustration level and this is reflected in the lower correlation scores. Correlations for Syntactic Acceptability scores were slightly higher for the Low Ability group (.23) than the High Ability group (-.07). The lower (and insignificant) correlation scores of the High Ability group's members reflects the extent to which the Syntactic Cueing system is replaced by the Grapho-Phonic cueing system as the primary source of cues at the Frustration level. High Ability Readers individual stability in use of the Syntactic cueing system is disrupted by the increased role granted to the Grapho-Phonic cueing system.

Differences were also found between the two groups in Correlation scores amongst the different Acceptability scores at the two levels, and between the two levels. At Independent Level the Correlation between Grapho-Phonic and Syntactic Acceptability Scores was slightly higher for the High Ability group (.20) than the Low Ability group (-.02). Between Grapho-Phonic Acceptability and Semantic Acceptability there was no significant relationship for the Low Ability group (.03) but there was a moderately strong negative relationship for the High Ability group (-.47). Correlations between Syntactic and Semantic Acceptability scores were also higher for the Low Ability group (.58) than for the High Ability

group (.21). These results provide further evidence of the efficiency with which high ability Readers use Grapho-Phonic and Syntactic cues in an integrated way and the relatively little use they make of the Semantic cueing system. For low ability Readers all three cueing systems seem to be used in a non-preferential, non-sequential, rather confused manner. At Frustration level no major difference was found between the two groups in Correlations between Grapho-Phonic and Semantic Acceptability scores. There was, however a sizeable difference between Grapho-Phonic and Syntactic Acceptability scores. For the High Ability group there was a negative relationship (-.07) while for the Low Ability group there was a positive one (.40). This provides more evidence of the precisions with which high ability Readers use the cueing systems. At Frustration level where the Syntactic cueing system is not so readily available, the high ability Reader switches his attention to the Grapho-Phonic cueing system. He increases his reliance upon the Grapho-Phonic cues available and makes relatively less use of the others. For the low ability Reader however this process does not occur with the same efficiency and relative use of the cueing system remains a non-sequential pot-pourri rather than a sequential, problem-solving-oriented process. Correlations between Syntactic and Semantic Acceptability scores at the Frustration level further illustrate this difference between high and low ability Readers. For the High Ability group there was a negative Correlation (-.57) while for the Low Ability group a positive Correlation existed (.53). This difference was consistent over all three age groups. When high ability Readers are using whatever Syntactic cues are available at Frustration level they give clear preference to the Syntactic over the Semantic cueing system. For the low ability Reader either cueing system is equally likely to be used. Correlations between the use of one cueing system at Independent level and the other two cueing systems at Frustration level also illustrated this difference between high and low ability Readers in their methods of utilising the cueing systems. Between Grapho-Phonic Acceptability scores at Independent Level and Semantic Acceptability scores at Frustration Level there was a negative correlation for the High Ability group (-.11) and a positive one for Low Ability group (.31). Between Semantic Acceptability score at Independent Level and Grapho-Phonic score at Frustration level a similar difference existed (-.19 and .29) as it did between Semantic Acceptability at the Independent level and Syntactic Acceptability score at the Frustration level (-.41 and .04). High ability

Readers, then, give clear preference to the Grapho-Phonic and Syntactic cueing systems and use them in ways which indicate a high level of integration between them. Low ability Readers give more attention to the Semantic cueing system and their utilisation of all 3 cueing systems does not seem to occur in the same integrated, deliberate manner.

#### 4.324 Error Type Frequencies

Substitutions provided a significantly higher percentage of miscues, and Omissions and Insertions a significantly lower percentage of miscues for low ability Readers at both Independent and Frustration levels. This result suggests that even at their Independent Level low ability Readers are more limited in the activeness of their searching, predicting and verifying strategies than are high ability Readers. Low ability Readers would not appear to have as rich a set of total language resources available to bring to bear upon the Reading act as do High ability Readers. Individual patterns in error type stability at the two levels as measured by Correlations revealed no sizeable differences between the groups in either Omission or Substitution scores. There was, however, a moderately large difference between correlations for Insertions. Insertion scores for high ability Readers at the two levels had a negative correlation of  $-.14$ . For low ability Readers a positive correlation was found ( $.40$ ). This may be interpreted as a reflection of the more active nature of high ability Reader's search for meaning at Independent level, which then drops right away at Frustration level. For low ability Readers the much more stable Insertion scores reflect the lower level of his predicting, hypothesizing and verifying interaction with the text at Independent level. Because his utilisation of the cueing systems is less volatile at Independent level, the difference between his performance at Independent and Frustration levels is less dramatic. He has less to 'lose' at Frustration level and this is reflected in his correlation score.

#### 4.325 Summary

High and low ability Readers differ substantially in the resources they bring to the Reading task. Firstly, the lower Insertion scores of low ability Readers at Independent level are an



indication of the less active searching, predicting and verifying nature of the lower ability Readers interaction with the text in the search for meaning. Secondly, the low ability Readers ability to utilise the Syntactical cues provided within the language system with which he is involved, is much lower than that of the high ability Reader. This may be a result of either less knowledge of the syntactical patterns of his language, or merely an inability to apply the knowledge he does have to the Reading task. The effects of the lower utilisation of the Syntactic Cueing System by the low ability Reader may be magnified by the nature of the language patterns of the prose materials traditionally used in Instructional Reading material. These materials tend to reflect the language patterns of the writer rather than those of the person the material is intended to be Read by. The low ability Reader then, has a lower expectation that the patterns of Written Language will match the grammatical patterns that make up his own language. Thirdly the low ability Reader also has less ability to utilise the Grapho-Phonic cueing system than does the high ability Reader. Fourthly the low ability Reader makes more use of the Semantic Cueing system than does the high ability Reader. Fifthly the high ability Readers use of the Cueing systems available to him is organised and applied in an integrated, systematic and sequential way. When Reading at Independent Level the High Ability Reader gives first preference to the Syntactic Cueing system, second preference to the Grapho-Phonic cueing system and only third place to the Semantic Cueing system. When Reading at Frustration level where the Syntactic sense provided by successful decoding of previous sections of the text is no longer available, the high ability Reader relies firstly on the Grapho-Phonic cueing system and regulates to the Syntactic cueing system a less significant role. Semantic cues remain those that he makes least use of. For the low ability Reader this preferential sequencing which reflects integration is not present and utilisation of the respective cueing systems is made in a non-preferential, almost random manner.

The High ability group were also found to have significantly higher SES scores than the low ability group. No significant differences were found in the self-correction rates between the two groups at either Independent or Frustration level.



#### 4.33 Differences in SES scores and Miscue Patterns between Boys and Girls

##### 4.331 Socio-Economic Status

No significant differences were found between the SES scores of boys and girls. High Ability Girls had higher SES scores than High Ability Boys but this difference was not significant at the .05 level.

##### 4.332 Self-Correction Scores

Self-Correction scores were slightly higher for girls at both Independent and Frustration levels but this difference was not significant. Correlations between SC scores at the two levels differed little between the two groups.

##### 4.333 Utilisation of the three Cueing Systems

The only significant difference between the two groups in the six acceptability scores was in Semantic Acceptability Scores at Frustration Level. The Semantic Acceptability scores at both levels were higher for girls than boys but the difference was only significant at the Frustration Level. Despite the difference between the two groups selected according to Sex, Semantic Acceptability scores at both levels were still significantly lower for the High Ability group of each sex than they were for the Low Ability group of the same sex. Semantic Acceptability scores of girls also proved to be more stable across the two levels than did those of the boys. Correlation scores for girls were moderately high (.48) whilst for boys they were insignificant (-.13). The significance levels of the difference between each Acceptability scores at the two levels did not differ significantly between the two groups although the Girls groups rise in Grapho-Phonic Acceptability scores came much closer to being significant (.06) than did the boys (.446). Again, however, the differences in scores between High Ability and Low Ability groups of each sex were very similar.

The higher Semantic Acceptability scores of girls were reflected in different relative relationships amongst the three cueing systems at

each level and between the two levels. No significant differences were found between the two groups in correlations amongst the three Acceptability scores at Independent level. At Frustration Level, however, Grapho-Phonic Acceptability and Syntactic Acceptability scores were much more highly correlated for boys than girls. The size of the difference between the Low Ability groups of each Sex was not significant but the High Ability group of boys had a moderate positive correlation between Syntactic and Grapho-Phonic Acceptability (.43) whilst the High Ability girls group scores had a negative correlation (-.26). Between one cueing systems score at Independent level and the other two cueing system at Frustration level differences between the two groups tended to confirm the greater relative value girls gave to the Semantic Acceptability Cueing System.

#### 4.334 Error Type Frequencies

There were no significant differences between the two groups in Omission, Insertion or Substitution scores at either level. Insertion scores were very close to being significantly lower for girls at the Independent level (.052) but this difference was almost entirely contributed by differences between high ability subjects and scores for both High Ability groups were still significantly higher than for the equivalent sex Low Ability groups. At Frustration level the Insertion score was higher for High Ability girls than for High Ability Boys but not at a significant level. There were no important differences between the two groups in Correlations between the three Error Type scores at the two levels.

#### 4.34 Differences in SES scores and Miscue Patterns Amongst 8-year-olds, 9-year-olds and 10-year-olds.

##### 4.341 Socio-Economic Status

There were no significant differences amongst the SES scores of the three age groups. However the size of the difference between the SES scores of high and low ability Readers tended to decrease with age. The SES score (percentile ranking) of the 8-year-old High Ability group was .70 while that of the Low Ability group was .23.

At 9-year-old level the High Ability groups score was .60 and the Low Ability groups score was .27. At 10-year-old level the respective scores were .62 and .42. This would suggest that the predisposing factors toward Reading achievement that are reflected in SES scores play a less vital role as the Reader matures.

#### 4.342 Self-Correction Rates

A comparison of the Self-Correction Rates of the three age groups at Independent and Frustration levels revealed no important differences. Neither was there any sizeable difference in the size of the Correlation scores between SC rates at the two levels amongst the three groups.

#### 4.343 Error Type Frequencies

A comparison of the Error Type scores of the three age groups at the two levels revealed some differences between the groups. At the Independent level there were no significant differences amongst the scores on the Omissions Error category but Insertion Scores for the 10-year-old group were significantly higher than the scores of 8-year-olds (.011) and were very close to being significantly higher than those of the 9-year-old group (.077). Conversely Substitution scores were significantly lower at 10-year-old level than at 8-year-old (.028) and 9-year-old (.028) level. Insertion scores were higher for the High Ability group at all 3 age levels although the size of the difference between the two groups scores was lower at the 10-year-old level. Conversely Substitution scores were lower for the Low Ability group at each age level. The different Insertion scores were also reflected in differences in significance levels between Error Type scores at the two levels. Insertion scores were lower for all three groups at Frustration Level but the difference was only significant at the 10-year-old level. If, as suggested earlier, the Insertions score is an indication of the activeness of the subject's search for meaning and of his level of development in efficient usage of the three cueing systems these results merely illustrate the increasing ability of the maturing Reader.

No significant differences were found amongst the scores of the three groups at Frustration level and neither were there any significant differences amongst the three groups in correlation scores between each Error category at the two levels.

## 4.344 Utilisation of the three Cueing Systems

The only significant difference amongst the three groups in Acceptability scores was in Semantic Acceptability scores at Independent Level. On this measure the scores of 8-year-olds were significantly higher than those of 9-year-olds (.027). The Semantic Acceptability scores of the 10-year-old group were also lower than those of the 9-year-olds. This relationship applied consistently for both ability groups at each age level. At Frustration level no significant differences amongst the three age groups were found. It would appear then, that at Independent level at least, the younger Reader is more likely to make greater use of the Semantic cueing system than is the older Reader.

The levels of significance for differences between Acceptability scores at the two levels differed little amongst the three groups. The significance level of differences in Semantic Acceptability and Grapho-Phonic Acceptability scores at the two levels were very similar for the three groups. The levels of significance for differences in Syntactic Acceptability scores were significantly lower for the 8-year-old group (.006) and the 10-year-old group (.006) than they were for the 9-year-old group (.084). This difference would not appear to be of any importance.

Correlations between each Acceptability score at the two levels were also compared amongst the three age groups. In both Grapho-Phonic Acceptability and Syntactic Acceptability a clear developmental trend emerged (Grapho-Phonic = .50, .54 and .74; syntactic = .11, .40 and .67) indicating that as the Reader matures, and develops his skill in using each of the cueing systems, he is more likely to use the same cueing systems at Frustration Level as he is at Independent Level. At the 8-year-old and 9-year-old levels the High Ability Readers had higher Grapho-Phonic Acceptability Correlation scores than did the Low Ability group but in the 10-year-old group this difference had disappeared. Correlations between Semantic Acceptability scores at the 10-year-old level differed markedly between the Low Ability (.76) and High Ability (-.04) groups.

Relationships amongst the three cueing systems at Independent Level, Frustration Level and between the two levels were also compared amongst

the three age groups. At Independent and Frustration levels there were no significant differences amongst the Correlation scores of the three groups although the Correlation between Grapho-Phonic Acceptability and Semantic Acceptability scores at Frustration level was much lower for the 8-year-old (-.53) group than it was for the 9-year-old (.01) or 10-year-old groups (-.11). Comparing the Correlations of each Acceptability score at Independent level with the other two Acceptability scores at Frustration level showed developmental trends in the Correlation between Grapho-Phonic Acceptability scores at Independent Level and Syntactic Acceptability scores at Frustration level (.14, .40 and .70) and between Semantic Acceptability scores at Independent level and Grapho-Phonic Acceptability scores at Frustration Level (-.71, .02 and .31). The Correlation Score between Syntactic Acceptability score at Independent Level and Grapho-Phonic Acceptability score at Frustration Level was also much lower for the 8-year-old group (.008) than it was for the 9-year-old (.73) or 10-year-old (.69) groups. These trends all illustrate the developing integration of the three cueing systems as the Reader matures.

#### 4.345 Summary

There were no significant differences amongst the three age groups in SES scores although the size of the difference in scores between Low Ability and High Ability groups decreased with age. No significant differences were found amongst the three age groups in Self-Correction Rate scores at the two levels or in Correlations between scores at the two levels. Insertion scores at Independent Level were significantly higher for the 10-year-old group than for the 8-year-old group. Semantic Acceptability scores were significantly higher for the 8-year-old group at the Independent level. Correlations between Grapho-Phonic Acceptability scores at the two levels, and Syntactic Acceptability scores at the two levels were found to increase with age. Developmental trends were also found in correlations between:

- (1) Grapho-Phonic Acceptability scores at Independent Level and Syntactic Acceptability scores at Frustration Level
- (2) Semantic Acceptability scores at Independent level and Grapho - Phonic Acceptability scores at Frustration Level and
- (3) Syntactic Acceptability scores at Independent Level and Grapho-Phonic Acceptability scores at Frustration Level.

The results obtained illustrate the developing of the ability to

utilise the cueing systems and their synthesizing and integrating into a sequential, preferential pattern as the Reader matures.

- 4.35 Differences in SES scores and Miscue Patterns between the Low Ability group who had high PAT Listening Comprehension Scores and the rest of the sample.

4.351 Introduction

For a number of reasons the Results presented in this section should be treated with some caution. Firstly, the size of the subgroup was small and was not equally representative of either sex or age groupings. Secondly, the scores of this group were not submitted to all the statistical techniques used in the rest of the study. For example Correlation scores were not calculated separately for the group. Thirdly, the comparisons of scores carried out by the use of T-Tests compared the scores of this group (n=5) with the scores of all the other subjects used in the study (n=55) rather than with the other members of the Low Ability group or with the High Ability group. Lastly, when comparing the mean scores of this group with the mean scores of the Low Ability group it should be remembered that this group's scores were also included in calculation of the Low Ability group's mean scores.

4.352 Socio-Economic Status

The mean SES score (percentile ranking) of this group was 61.6. This was not significantly different from that of the rest of the sample but was considerably higher than that of the Low Ability group (29.6) and only slightly lower than that of the High ability group (63.9).

4.353 Self-Correction Rates

There were no significant differences between this group and the rest of the sample in Self-Correction Rate at either Independent or Frustration level.

## 4.354 Error Type Frequencies

At Independent Level Omission Scores for this group (6.8) were midway between the Low Ability group (6.3) and the High Ability group (7.4). The score did not differ significantly from that of the combined scores of rest of the sample. Insertion scores (2.0) were considerably lower than either the Low Ability (3.0) or High Ability (10.9) groups and were significantly lower (.001) than the Insertion scores of the rest of the sample. Conversely Substitution scores (91.2) were higher than either the High Ability (78.67) or Low Ability (91.13) groups and were significantly higher than the rest of the Samples. (.032). At Frustration level Omissions, Scores (7.2) were lower than either the Low Ability (7.5) or High Ability (9.6) groups and were significantly lower (.009) than the scores of the rest of the sample. Insertion scores (3.7) were midway between the Low Ability group (1.7) and the High Ability group (5.0). The Insertion score did not differ significantly from that of the rest of the sample. The Substitution score (86.4) was closer to the Low Ability group's score (88) than the High Ability group's (82) and was significantly higher than the rest of the sample's (.013). The lower Insertion score at Independent level would appear to indicate that the members of the group are not as actively involved in the search for meaning when Reading as are the other members of this sample.

## 4.355 Utilisation of the Three Cueing Systems

At Independent Level Grapho-Phonic Acceptability scores for this group (58.2) were lower than either the Low Ability (67.63) or High Ability groups (78.33). The groups score was also significantly lower than the rest of the sample (.011). Syntactic Acceptability scores (71.2) were also lower than either the Low (77.97) or High (89.5) Ability groups and significantly lower (.029) than the rest of the sample. Semantic Acceptability scores for this group (58.6) were slightly higher than the High Ability group's (56.7) but considerably lower than the Low Ability group's (69.3). The groups score did not differ significantly from that of the rest of the Sample. At Frustration Level Grapho-Phonic Acceptability scores (60.8) were again lower than either the Low Ability (66.53) or High Ability groups (85.57) and were significantly lower than the rest of the sample's (.015). Syntactic

Acceptability scores for this group (55.6) were also lower than either the Low (62.77) or High (83.93) Ability group and very close to being significantly lower than the rest of the sample's (.071). Semantic Acceptability scores (40.2) were again midway between Low (45.2) and High Ability (37.16) groups scores and did not differ significantly from the rest of the sample. In their utilising of both the Grapho-Phonic cueing system and the Syntactic cueing system then, this group works with considerably less efficiency than either the rest of the sample or either Ability group.

#### 4.356 Summary

The SES Scores of this group were considerably higher than the mean of the total sample and much closer to the scores of the High Ability group than they were to the scores of the Low Ability group. No differences were found between this group and the rest of the sample in Self-Correction Rate at either level. The members of this group had lower scores on the Grapho-Phonic Acceptability and Syntactic Acceptability measures than either ability group or the rest of the sample at both levels. In addition they had significantly lower Insertions scores and higher Substitution scores at the Independent Level. It would appear that the members of this sub-group have a significantly lower ability to utilise the cueing systems available. This is reflected in a more restricted interaction with the printed word. To reiterate however, the results of this section should be interpreted with caution because of the small size of the sub-group, the way it was selected, and the statistical procedures used. The results do, however, suggest directions toward which future research may be profitably oriented.

### 4.4 The Value of the RMI for Reading Practitioners

#### 4.41 Introduction

The results of this study demonstrate that a subject's miscue patterns while Reading orally reveal considerable information about the way he is interacting with text. The RMI represents a major attempt to provide an analytical tool which allows its user to interpret miscue patterns in terms of the relative use the subject is making of



the cueing systems available to him. However, the RMI is a complex instrument, the administration of which involves considerable use of the tester's time. In this study, the time spent on administering, scoring and interpreting each passage averaged about one hour. Considering that most of the passages were only about 200 words in length and that the administration of more than one passage was necessary before any meaningful results emerged, to administer the RMI to any one subject takes much more than one hour! The question arises, therefore, as to whether, given firstly the potential ORE patterns have as evaluative and diagnostic tools and secondly the needs of Reading teachers and diagnosticians, the RMI results provide the tester with the optimal amount of information for the time spent.

#### 4.42 The Measurement Needs of Reading Teachers and Diagnosticians

The value of any measuring instrument is determined by the extent to which it fulfills the purposes for which it is used. To evaluate the RMI, therefore, we have first to consider the purposes for which a Reading practitioner may use the test.

There would appear to be three main purposes for which measuring devices are used by Reading Practitioners. The first of these is the matching of pupils with instructional material of appropriate difficulty level. Tests used for this purpose usually result in an instructional age or level being assigned to the subject which signifies the difficulty level of Reading material which would be appropriate for him. The second main purpose for which measuring instruments are used in Reading is to provide a profile of an individual subject's relative strengths and weaknesses in various skills which are posited as being integral and essential parts of the Reading process. Such testing is carried out mainly with low ability Readers for the purposes of designing appropriate 'remedial' instructional programmes. The third purpose, that of Reading practitioner education, is acknowledged publicly to a much lesser extent but still provides the purpose for a substantial amount of Reading test administrations. This usually involves tests which exist for another purpose being used by Reading practitioners for the purpose of sensitizing themselves to certain aspects of the Reading process. Such test administrations usually form part of training courses.

#### 4.43 The Value of the RMI as a Diagnostic Tool

Of the three common purposes of measurement in Reading the constructors of the RMI seem to have been primarily oriented toward the latter two. No direct attention is paid to the matching of pupils and instructional materials but considerable attention is given to both Teacher education and to the drawing up of individual profiles showing relative strengths and weaknesses.

In the field of Teacher education the main purpose of the test is to draw the attention of Reading practitioners to the nature of the cueing systems utilized in the Reading process and the way in which they interact to produce meaning. There is no doubt that widespread use of the RMI in Teacher Training and inservice education courses has resulted in significant progress being made toward fulfilling this aim, but it is difficult to measure results in this area objectively.

The other major purpose of the RMI is to enable the construction of individual skill profiles. These profiles are designed to show how efficiently the subject has utilised the respective cueing systems with an aim of assisting the Reading practitioner in planning "language experiences through which the student can expand his Reading effectiveness" (RMI Manual p15) However the statistical procedures used in measuring a Reader's effectiveness are relatively primitive. Not only are no norms provided to compare an individual's score with, but the nature of the distribution of the scores and the variables the test attempts to measure have yet to be adequately researched. The test constructors assume that a 100% score on each cueing system is the optimum and that when all the cueing systems are utilised at the 100% level miscues won't occur. Any score of less than 100% is regarded as imperfect and capable of improvement. Such a view rests on the assumption that all three cueing systems have equal rather than sequential, preferential roles. The results of this study would suggest that there are such sequential priorities in the usage of these cueing systems. A low score in Semantic Acceptability at Independent Level, for instance, may be an indication not of a need for more training in using the Semantic cueing system but rather an indication of how well the subject is using the Syntactic and Grapho-Phonic cueing systems! The RMI would appear, then, to fall seriously short of its aim in this area.

Despite this, the fact that a measuring device is not adequately fulfilling some of the purposes of its constructors, does not mean that the test is of no value to Reading practitioners. The RMI has many aspects which could be utilised profitably by Reading practitioners and a more detailed review of these various aspects, rather than of the test en toto, would appear to be profitable.

#### 4.44 Strengths and Weaknesses of Specific Aspects of the RMI

##### 4.441 Introduction

Aspects of the RMI will be considered in three sections. These are: (1) the administrative procedures associated with the test; (2) categories used in the analysis of miscues and (3) procedures used in the treatment of data and scoring.

##### 4.442 Administration Procedures

###### 4.3421 Tape-Recoding Subjects Reading

This is a practice which is recommended by the RMI developers and which has really only become widespread since the introduction of the RMI. Using this method scoring is carried out later rather than during the subjects Reading. At the junior level of the school, the pupils slower rate of Reading, the large role Oral Reading plays in their normal instructional programme and their familiarity with having their Oral Reading tested either to gauge suitability for promotion amongst the little books or developing for profiles of skill development, makes on-the-spot processing at least possible. However at the age level of the subjects used in this study the greater speed at which the subject reads and his relative unfamiliarity with the Oral Reading testing situation make such on-the-spot processing both contaminatory and physically very difficult for the tester. The practice of recording and later processing suggested by the RMI constructors is therefore to be highly commended especially for this and older age groups.

## 4.443 The Categorisation of Oral Reading Errors

## 4.4431 Categories Utilised in the RMI

## (1) Dialect and (2) Intonation

Reasons for not considering these categories appropriate were given in Chapter Two. The Dialect category does not seem relevant in the New Zealand situation and Intonation does not seem to have any value as a separate category because Responses which would be classified as being in this category are also classified in more appropriate categories

## (3) Graphic Similarity and (4) Sound Similarity

In most cases scores in these two categories are very highly correlated. Whilst it is true that scoring these variables separately will separate Readers who give precedence to the auditory perceptual mode rather than the visual mode, such cases are relatively rare. None, in fact, were found in this study. Attempts to measure such modal preferences, would not therefore appear to have a legitimate role in initial testing of a subject's Oral Reading. Where such modal preferences are suspected the use of tests specifically designed for this purpose would appear to be more appropriate. There does not, then, seem to be any good reason for using two separate categories in this area and the calculation of a single Grapho-phonetic score would appear to be more efficient.

## (5) Grammatical Function

The duplication with other categories mentioned in Chapter Two makes use of this category as a separate entity of minimal value.

## (6) Correction

The results of this study have shown scores on this measure to be of considerable value in establishing Reader's Independent and Frustration levels.

## (7) Grammatical Acceptability and

## (8) Semantic Acceptability

These measures provide valuable evidence as to the subject's ability to utilise the Syntactic and Semantic cueing system respectively.

## (9) Meaning Change

This is a valuable aid in assessing the level of meaning the subject is extracting in his Reading and consequently his correct Independent and Frustration Levels.

## (10) Grammatical Relationships and

## (11) Comprehension

As observed in Chapter Two, scores on these measures appear to aim at measuring the same variables as do Syntactic and Semantic Acceptability categories. The purpose of the statistical analysis the results of which are summarized in Chapter 3, section 6, was to see if these scores contribute anything additional to the Syntactic and Semantic Acceptability scores and therefore justify their separate existence. The results obtained suggest that they do not. Firstly, scores on all four measures showed significant decreases at Frustration level. Secondly correlation scores for Syntactic Acceptability and Semantic Acceptability scores between the two levels were very similar to the correlation scores for Grammatical Relationships and Comprehension scores between the two levels. Thirdly, both Grammatical Relationships and Comprehension scores were significantly lower than the Syntactic Acceptability and Semantic Acceptability scores at both levels, but the same relative trends amongst the scores of subgroups were present. Lastly there were significant Correlation scores between Grammatical Relationships and Syntactic Acceptability scores at both Independent (.45) and Frustration levels (.44), and between Comprehension and Semantic Acceptability scores (.53 and .26). The lower correlation between Comprehension and Semantic Acceptability scores at Frustration Level may be a reflection of the relatively low scores obtained on both measures. In any case, testing at this level has little value for the Reading practitioner so this lower score would not appear to be important. It would appear, then, that the Grammatical Relationships and Comprehension scores do not add sufficient additional information to the Syntactic and Semantic Acceptability scores to justify their independent existence.

## (12) Retelling

Requiring the subject to Retell what he has Read is a sound practice for the testing of Comprehension. While the varying degrees of Teacher intervention necessary to elicit appropriate Response makes standardized scoring inappropriate, Retelling scores have considerable value as an additional, if subjective, aid to the tester in evaluating the level of meaning the subject is obtaining from the text.

## 4.4432 Categories not Included in the RMI

## 1. Error Types

The results of this investigation show that the Insertions score can provide a useful guide to the Independent Reading level of the subject. This category should be included in any analysis of Oral Reading Errors. Uncorrected Omissions would seem to have a similar role but as they are also scored in Self-Correction rates their inclusion would not appear to be appropriate.

## 2. Punctuation

Errors in utilizing Punctuation cues accounted for a large percentage of the miscues observed in all Readers at Frustration Level. Although such miscues are classified when using the RMI (using Intonation and Meaning Change Categories) their treatment as a separate category would appear to be justified. It can be predicted that scores on this variable will reflect Independent and Frustration levels in a similar way to Self-Correction scores, but such an hypothesis would need further investigation.

## 4.444 Treatment of Data and Scoring in Categorizing Miscues

In all ORE measures arbitrary decisions have to be made in the assigning of specific scores to specific measures. Some of the decisions made by the RMI constructors may need a little amending. Firstly, despite Goodman's general orientation toward units of language larger than words, undue emphasis seems to be given to single words as the unit to be scored. Another difficulty arises in the scoring of the Graphic and Phonic Similarity categories. The RMI criteria assume that each segment of the word has an equal role in decoding. If the printed word is 'brown' for example then the miscues 'brush' and 'clown' would be given the same Graphic and Phonic Similarity scores. Most research findings would suggest that it is the initial segment of the word that is the most widely used cue in the process of decoding and that this represents the most efficient way of proceeding. The treatment of missed lines also appears inappropriate. When using RMI scoring procedures this is treated as an error which is scored for its Syntactic and Semantic Acceptability. When no loss of meaning is involved this type of error would appear to have little significance. Most commonly, however, it does result in meaning loss and is uncorrected.

Such a miscue's main value is in showing that the subject is Reading at an inappropriate level and further treatment of it seems unnecessary.

A number of problems also arise in the calculation of percentage scores for various categories. Firstly one error on a vital word (e.g. 'mumps' in passage I,8 in the Appendix) can lead to a serious loss of meaning right throughout the passage. Secondly a repeated error (e.g. 'a' for 'the') can seriously affect percentage scores on a particular measure especially if a relatively small number of errors is involved. Thirdly, teacher intervention by providing words during the Reading of the passage seriously confuses any measure of how much meaning the Reader can attain from the passage independently.

As stated earlier many of these problems are not specific to the RMI. However, to the extent to which they disrupt efficient measurement, efforts must be made to overcome them.

#### 4.445 Conclusion

Although the RMI has a valuable role in orienting Reading practitioners toward the nature of the Reading Process its use as a measuring tool, en toto, would not appear to be appropriate to the other main needs of Reading testers and/or teachers. However, some of the practices and categories of the RMI have a vital role to play in the Reading assessor's measuring vocabulary.

#### 4.45 Reccomended Procedures in ORE Testing

##### 4.451 The Purposes for which ORE Tests May Be Used

The two main purposes for which Reading practitioners use measuring tools are the matching of students with appropriate instructional material and the identifying of the strengths and weaknesses in skill development of individual Readers. ORE analysis can be used for both these purposes. For the age group with which this study was concerned, testing to match subject with material seems to be relatively neglected. In contrast with the constant checking that

characterizes Infant Instructional Reading programmes in New Zealand schools this task at middle school level is often left to the PAT Comprehension test scores which, as demonstrated in this study (see Chapter 2) are simply not accurate enough to be used in isolation. It must also be borne in mind that the difficulty level of the instructional material which is appropriate for an individual varies with the nature of the Reading task. For example, the difficulty level of material the Reader will be able to efficiently interact with in an Instructional program based on individual, independent Reading (e.g. Holdaway's Core Library) is lower than the difficulty level he can efficiently handle in the teacher-centred small group instructional programme which is customarily associated with basal instructional programs. There would, then, appear to be a large potential role for ORE analysis in meeting these needs. The other main purpose of evaluation in Reading, that of assessing individual Reader's relative strengths and weaknesses, can also be carried out by using ORE analysis. In this case measures of subjects relative strength in using the three cueing systems can be calculated.

Whether a Reading practitioner is using ORE analysis for either or both of these purposes it is recommended that more flexible use be made of the categories available for classifying miscues. Some of these categories are appropriate only to the purpose of matching Reader and material, others to measuring subject's strength in cue system utilization and others are relevant to both purposes. There is no point in classifying miscues according to categories which are not relevant to the purposes of the tester.

#### 4.452      Selecting the Difficulty Level of Passages to be Used in Testing

The results obtained in this study suggest that it is more appropriate to test subjects on the most difficult material they can read Independently than on material which is at their Frustration Level. At Frustration Level the Reader is no longer actively engaged in the active search for meaning which is Reading and scores obtained at this level are likely to be misleading. The optimal Independent Level of a subject is one of the main pieces of information which will emerge



from the test results, but a previous decision has to be made as to the difficulty level at which to begin testing. PAT Comprehension Level scores may be used to indicate the most appropriate initial difficulty level but as the period of year in which the needs for Reading testing are greatest is at the beginning, when such scores are not available, internal school records of the difficulty level of the subject's last Instructional Reading material may be the most appropriate guide as to what level at which to begin. Wherever the tester obtains such indications from, he will probably save himself considerable time and effort, in practice, if he begins his testing at a level at least one year below the one indicated! Where the subject starts, however, is not particularly important as long as the tester sensitively reacts to the subject's Reading behaviour and changes the difficulty level of the material until the correct level is found.

4.453 Categories and Scoring Procedures for the Analysis of Oral Reading Errors in 8-10-year-olds.

4.4531 Introduction

There are a number of categories which may be used in the analysis of Oral Reading Errors. Which particular categories are appropriate in any specific instance depends upon the purposes of the tester in carrying out the analysis.

4.4532 Categories and Scoring Procedures Which May Be Used for Matching Subjects and Instructional Material.

The categories of Retelling, Self-Corrections, Insertions, Punctuation, and Meaning Change are appropriate for this purpose. High scores on Retelling, Self-Corrections and Insertions and a low meaning change (uncorrected) score all indicate that the subject is Reading material which is at his Independent Level. It is also probable that a low score on Punctuation errors provides a similar indication. All these categories can be scored relatively easily while the subject is Reading and it is recommended that this practice be followed. This is an area in which the subjective impressions of the tester are

sufficient for most purposes but it is recommended that the score obtained on the Meaning Change (uncorrected) category should be converted to a percentage of the total number of words in the passage to provide a single score indicative of the level of meaning the Reader is obtaining. The tester may also decide that he does not need to calculate scores upon all these measures. For instance the meaning change (uncorrected) category alone will often provide sufficient evidence for the tester's purposes. When scoring on the measures selected has been completed, a decision can be made as to the appropriateness of material of that difficulty level for the subject.

4.4533 Categories and Scoring Procedures Which May Be Used to Draw up Profiles of Relative subject strength in Utilising the Cueing Systems.

Once the highest level of difficulty at which a subject can read Independently has been established it is recommended that a more formal approach to the testing be adopted and that Tape Recording of the Oral Reading be introduced. It is recommended that three categories be used in the analysis of the miscues gathered; Grapho-Phonic Acceptability, Syntactic Acceptability and Semantic Acceptability. In scoring each miscue the procedures and Y, P, N values outlined in Chapter Two should be used but score modifications are necessary. In scoring the Grapho-Phonic Acceptability of a miscue it would seem to be appropriate to include words within the immediate surroundings of the stimulus word. If, for instance, the word 'dog' is misread as 'beside' and the word 'between' is immediately above the word 'dog' the miscue should be scored 'p' on the Grapho-Phonic Acceptability measure. Such a miscue would, of course, score N on Syntactic and Semantic Acceptability. Reversals such as 'was' instead of 'saw' should also be granted a 'p' score on the Grapho-Phonic Acceptability measure. Miscues which would normally be scored as 'p' on the Grapho-Phonic Acceptability measure when using RMI procedures, but whose common element with the stimulus word is at the beginning of the word, should be assigned a new status of p+. To calculate Acceptability scores each miscue which has been analyzed for this purpose should be given a score of 100(Y), 75(p+), 50(p) or 0(N). The total of the Acceptability scores so obtained should be calculated

and divided by the total number of miscues analyzed and multiplied by 100 to provide an Acceptability percentage score. For such scores to be of optimal value, however, it will be necessary to compile national norms with which individual scores can be compared.

It is recommended that when a subject fails to correctly decode a word which has a key role in the passage, or where the Reader insists on the Tester telling him a word that he cannot decode, testing on that portion of text be abandoned and that the subject be retested on another section of equivalent difficulty level.

#### 4.4534 Summary

From the total list of categories available for analyzing Oral Reading Errors sets of categories can be selected for different purposes. For the purpose of finding a Reader's Independent Level a relatively informal method utilising the Insertion, Punctuation, Self-Correction, Retelling and Loss of Meaning (uncorrected) scores is recommended. For the purpose of measuring a subject's ability to utilize the cueing systems available to him, a more formal method of calculating Grapho-Phonic, Syntactic and Semantic Acceptability scores is recommended. This is based on the equivalent RMI categories but contains some changes in scoring procedure.

#### 4.5 Conclusions and Suggestions for Further Research

Miscue patterns at Independent and Frustration levels were found to be significantly different. This difference must be borne in mind when interpreting the large amount of miscue research which has accumulated. Miscue patterns obtained at Frustration Level are not a reflection of the subjects 'normal' Reading behaviour so it would appear that Researchers need to discontinue the practice of gathering miscue data on passages which the subject finds unduly difficult.

High ability Readers differ from low ability Readers both in the extent to which they utilise the three cueing systems and in the relative priority they grant to each of the cueing systems. High ability readers make more use of Grapho-phonetic and Syntactic cueing systems and less use of the Semantic cueing system, at both levels, than do low ability

Readers. At Independent Level the high ability Reader makes most use of the Syntactic cueing system but at Frustration Level the Grapho-Phonic cueing system marginally replaces the Syntactic cueing system as the one upon which he places most reliance. For low ability Readers this increased dependence on the Grapho-Phonic cueing system at Frustration Level is not evident. Relationships amongst cueing system utilization scores at the two levels suggest that high ability Readers use the three cueing systems in an integrated, preferential manner whereas low ability Readers utilise the cueing systems in an unstructured almost random, manner. High ability Readers were also found to score significantly higher on measures of socio-economic status. Girls appear to use the Semantic cueing system more than do boys and developmental trends over the age groups used in this study illustrate the Readers developing ability to utilise the cueing systems in an integrated manner. Subjects of low Reading ability who had scored highly on the PAT Listening Comprehension Test utilised all three cueing systems less efficiently than did the other low ability Readers. These findings stress the key role syntactical 'sense' has in Reading and illustrate the necessity for any instructional Reading program to include training in using the pupils sense of language in addition to training in Grapho-Phonic decoding skills.

Incidence of Error Types were also found to be significantly different at the two levels. Substitutions constitute a significantly greater, and Insertions a significantly smaller, proportion of Errors at Frustration level than they do at Independent Level. Self-Correction rates were found to be related solely to the difficulty level of the material a subject was required to Read rather than reflections of greater or lesser quantities of a trainable skill.

The Reading Miscue Inventory has considerable value in teacher education but its value, en toto, for the Reading teacher and diagnostician is limited in its published form. The analysis of Oral Reading errors has, however, a vital role to play in assessment of pupils Reading and a procedure for analysing Oral Reading errors utilizing some aspects of the RMI has been outlined.

The field of Oral Reading Error Analysis is pregnant with need for further research. Firstly, much of the present miscue research has to be critically re-examined in view of the differences found between miscue patterns at Independent and Frustration levels. This particularly applies to comparative studies where care has not been taken to ensure that miscues were gathered at the same relative difficulty level for all subjects. Secondly, research needs to be carried out to assess the nature of the distribution of scores on measures of cueing system utilization. From such investigation it may be possible to construct norms with which the scores of any particular individual may be compared. Thirdly the low cueing system utilization scores of the low ability group who had scored highly on the PAT Listening Comprehension test give an indication of areas in which profitable research into the instructional needs of this group may be carried out. Fourthly, almost all the miscue research, including this study, have treated all miscues as being of equal status. Treating miscues which result in meaning change and those that do not result in meaning change as separate classes may reveal further valuable information about miscue patterns. Finally this study used a relatively small sample and the subjects which made up the sample were not randomly selected. This study needs to be replicated with a larger and more representative selection of subjects.

I McIlroy Graded Passages1. Reading Age : 6-6½

TEACHER! This story tells how Tom's dog found something and took it to school, to give to the children.

Then Flip saw something.  
He saw something on the walk.  
He saw a red mitten.

Flip ran down the walk.  
He ran for the mitten.  
Then on he ran to school.  
Flip ran fast.

Tom saw Flip at school.  
He saw the red mitten.  
He ran to get the mitten.

"Flip! Flip!" said Tom.  
"You have my red mitten.  
You are a good dog.  
Thank you, Flip! Thank you!"

"Bow-wow" said Flip.  
"Bow-wow, bow-wow!"

The children saw Flip.  
"Come in, Flip" said the children

"My dog cannot come in here,"  
said Tom.  
"Go home, Flip! Go home!"

But Flip did not go.  
He did not want to go home.

Then Mrs Hill saw Flip.  
"Come in, Flip," said Mrs Hill.  
"The children like you.  
I like you too.  
You are a good dog, Flip."

2. Reading Age : 6-6½

TEACHER: Jack teaches his dog a trick and his small sister loses something.

TIP PLAYS BALL

Jack said, "Here Tip.  
Come and play ball.  
You get the ball.  
Put the ball in the box.  
Show me you can do it."

Jack said "Good dog, Tip!  
You did it."

"Penny, come here.  
Come and see what Tip can do.  
She is a good dog."

"Look, Penny.  
One of your mittens is gone.  
What did you do with it?"

WHERE IS THE MITTEN?

"Did you see a mitten?" asked Penny.  
"One of mine is gone".

"No, Penny," said Janet  
"Go and see Mother.  
She may have your mitten."

"Look, Mother.  
One of my mittens is gone  
Do you have it?" asked Penny

Mother said, "No Penny.  
I do not have it  
You will have to look for it."

(118 words)

3. Reading Age : 6½-7

TEACHER: The children look at some books at school which the teacher has put on a table for them to look at.

NEW BOOKS

Miss White said, "Boys and girls!  
I have put new books out here.  
Come and look at them.  
They are for you to read at home.  
Come and find a book you like."

All the boys and girls went to look  
at the new books.

Soon Pete saw a book he wanted  
to take home with him.  
He said, "Miss White I like this yellow book.  
Look at all the funny hats in here.  
The book shows how to make them.  
I want to find out how to do that!"

Tom had a book about a train.  
"This looks like a good book" he said.  
"I guess I will take it home."

Dick said, "This book is about dogs.  
I like to read about dogs  
So I will take this blue book."

(132 words)

pages 15-17  
More Fun with our Friends  
published by Scott Foresman & Co.



4. Reading Age : 6½-7

TEACHER: Two brothers are going to camp out one night.

THE TENT

Johnny and Billy put up the tent.

"I think these blankets will make good beds," said Johnny.

"I think so, too," said Billy.

"It will not be as hot here as it is in the house," said Johnny.

"I could not sleep one teeny wink in that hot house. Could you Billy?"

"No",said Billy.

"Put this blanket around you and sleep on that blanket."

"It is dark here," said Johnny.

"We should have a light in this dark tent," said Billy.

"We will soon be sleeping," said Johnny. "Then we won't have to have a light, will we, Billy?"

"No, we won't," said Billy.

"Now we should go to sleep."

"Billy," said Johnny.

"What?" said Billy.

"When are we going to eat?" asked Johnny.

"We are not going to eat now," said Billy.

(136 words)

5. Reading Age : 7-7½

TEACHER: This story is about a Chinese boy whose hair needs cutting

LEE WING GETS HIS HAIR CUT

"Please get in this chair, Lee,"  
said Mrs Wing. "I want to give you  
a haircut."

Lee got into the chair, but he was  
not happy. He wanted to get down  
right away.

Just then Tim Wing ran into the yard.  
His dog, Red, came running after him.  
Tim saw Lee in the chair and said,  
"I see you are going to get a haircut."

Lee said, "No, no! I want down!"

Tim said, "Don't get down, Lee.  
You will look fine with a new haircut."

But Lee did not want a haircut.  
"No, no!" he said. "I want down!"

Mrs Wing said, "You have to get  
a haircut, dear. After that you  
may play with Red and Tim."

(125 words)

pages 12-14  
Friends Old and New  
published by Scott Foresman & Co.

6. Reading Age : 7-7½

TEACHER: This is a story about a boy who says things that are not true.

THE STORY THAT WAS TOO BIG

Tommy Ball liked to tell big stories. Many of his stories were about things he had seen when he was all alone. He just made them up.

Sometimes Tommy made his story so big that no one could believe it. His mother could not believe it. That was very bad. She said so.

Tommy's daddy laughed about the stories. He said, "Some day Tommy will find out it is better not to make a story too big".

One day Tommy and his Uncle Jack were out walking. They were talking about dogs.

"I wish dogs could talk," said Uncle Jack.

"I saw one that could talk," said Tommy. "It could talk and laugh. I heard it talking and laughing."

Tommy was telling another big story.

Uncle Jack never believed Tommy's stories but he never said so.

(143 words)

pages 24-25  
Come Along (Revised Edition)  
 published by Houghton Mifflin Co., U.S

7. Reading Age : 7½-8

TEACHER: This story is about a family getting ready for visitors.

NO NOISE, PLEASE!

"How pretty everything looks!" cried Jill. "Who is coming to dinner?"

"Your Aunt Jane and your Uncle Bob," answered Jill's mother.

"I'm glad they are coming," said Jill. "May I help you get dinner ready?"

"I won't need any help in the kitchen for a while," said Mrs Street, "But I do need some things from the store. I wrote them down for you, Jill".

Mrs. Street got some money from the kitchen and gave it to Jill. Then she said, "I've been very busy all day, so I'm a little tired. I think I'll rest while you are gone. I want to get some rest before your brothers get home. They will be coming from school before long, too."

Mrs Street went into her bedroom.

(131 words)

pages 19-20  
More Friends Old and New  
 published by Scott Foresman & Co.

## 8. Reading Age : 7½-8

TEACHER: A little girl comes home in the afternoon  
and she is not well.

HOME WITH THE MUMPS

Betty Long liked to go to school.  
Whatever she learned she learned well.  
Almost every day she would bring home  
something to show her twin brothers.  
They were only four years old.

One day Betty came home from school  
with a big surprise. She had the mumps.

"Well!" said Mr Long when he saw Betty.  
"I know you like to learn everything,  
but why did you learn the mumps?  
I didn't learn the mumps at school".

"I didn't learn the mumps," said Betty.  
"I caught them from Ann".

"Caught them!" said Mr Long smiling.  
"If I were going to catch something,  
I'd try to catch something I wanted."

The twins, Bob and Bill laughed.  
They thought the mumps looked funny.

"Are mumps hard to catch?" Bob asked.

"Just wait," cried Betty. "You'll have  
twin mumps and you'll not laugh."

(143 words)

pages 23-24  
On We Go (4th Edition)  
published by Houghton Mifflin, U.S.A.

9. Reading Age : 8-8½

TEACHER: A father and his son travel to watch two teams play a match. The father's name is Mr Van Vliet.

"Move back, please! Move to the back of the bus!" called the bus driver loudly.

The people moved as much as they could.

Hans and his father found a place to stand where Hans could hold on to the back of a seat. Then Mr Van Vliet saw that his son was carrying a paper bag. "What's in that bag, Hans?" asked Mr Van Vliet.

"Just something I wanted to take to the baseball game," Hans answered.

The bus stopped at the next corner to let some people off. At the corner after that, it stopped to let people on. It stopped at corner after corner and moved across town so slowly that Hans wanted to get out and walk.

"We'll never get to the ball game in this stop-and-go way," said Hans to his father. "I was hoping to get to the baseball game early. I wanted to see Joe Hunter and the other Lake City Lions warm up. But we'll be lucky if we get to the ball park in time to see the start of the game."

Mr Van Vliet said, "Take it easy, Hans. The game starts at two o'clock, and it isn't one o'clock yet."

Before long, the people on the bus began pushing toward the doors.

Mr Van Vliet said, "Grab hold of me Son. The next stop is the ball park. This whole crowd must be going to the game."

(241 words)

10. Reading Age : 8-8½

TEACHER: A man who works at night and goes to bed early in the morning notices his neighbours are not about and wonders if anything is wrong.

Mr Jefferson was just ready to get to bed when he remembered he had not seen or heard the Parker family. He began to worry. Something must be the matter. It was already after the time Mr Parker left each day in his trolley car.

He looked out the window. He listened. He didn't see or hear any of the Parkers.

"Something is the matter," said Mr Jefferson. He hurried out of his house and over to the Parker house. He pushed the doorbell and listened.

Sally Parker came to the door.

"Hello", said Mr Jefferson. "I didn't see or hear anybody. I came over to see if anything is the matter".

"How do," said Mrs Parker, who had followed Sally to the door. "I know why you thought something was wrong. We are not often as quiet as we are today."

(144 words)

pages 20-21  
Looking Ahead (3rd Edition)  
 published by Houghton Mifflin, U.S.A.

11. Reading Age : 8½-9

TEACHER: This story is about a Chinese master whose valuable ring was stolen by one of his servants. The master makes a plan to discover who took it.

THE STUPID THIEF

That night he had a servant bring to him a large number of chopsticks, all exactly the same length. Then from under his coat he drew out one that was an inch longer than the rest and put it with them.

He let the servant watch while he tied the chopsticks into a bundle. Then he wrapped a cloth around the bundle so that only one end of the sticks could be seen. He knew that the servant would immediately tell the other servants what he had seen.

The next morning he sent for all his servants, but before they arrived he took the long chopstick out of the bundle.

When the servants came in, the master had them stand in a half-circle in front of him. Then he took up the bundle of sticks and told the servants that each of them was to come up and draw out a stick.

(153 words)

page 48 of 'Climbing Higher'  
(3rd edition) published by  
Houghton Mifflin, U.S.A.



12. Reading Age : 8½-9

TEACHER: A Danish girl named Kirsten goes to the United States to live. At her school they are going to have a gala day. Kirsten and another girl are put in charge of a stall and they have to decide what their stall will be.

THE SCHOOL SALE

But at the end of the week the girls had no plan. "It's harder than I thought," Amy said to Kirsten as they walked home from school. "The difficulty is that every time we get an idea, we find out another group had the idea first."

"There is still time for you to join some other group," Kirsten said.

Amy shook her head. "You and I will manage to think of something. We'll just have to put on our thinking caps."

Kirsten frowned. "You have such strange words. Thinking cap - what is that?"

Amy laughed. "Oh Kirsten, how hard a new language must be! A thinking cap isn't a real cap. It means we'll have to think extra hard."

When the girls reached the corner where they usually parted, Kirsten said shyly, "My mother said I should ask you to come home with me for milk and cookies. But if it is not convenient, we will understand."

"Of course, it's convenient!" Amy said happily. "I'd love to. And tomorrow you must come to my house."

(177 words)

13. Reading Age : 9-10

TEACHER: The fire department is going to sell an old fire engine. But first they take it to the town fair to give children rides on it.

EDDIE AND THE FIRE ENGINE

"O.K!" he said. "Let her go!"

The fireman started the engine, and they were off.

"What are you going to do with this fire engine?" Eddie shouted, loud enough to be heard above the noise of the bell and the yelling boys and girls.

"Going to sell it to a second-hand car dealer," the fireman shouted back.

"Say! I wish my father was a secondhand car dealer," said Eddie. "That would be great! I'd like to have this fire engine."

The fireman drove the fire engine all around the neighborhood, up one street and down another. The boys and girls loved it. They had never had such a ride before. Eddie kept thinking how much he would like to own the old fire engine. If only he had the money to buy it right away! Probably somebody would grab it as soon as the dealer put it up for sale, and he would never have a chance at it.

But evidently no one else prized the old fire engine as highly as Eddie did, for it stood on a used-car lot for a whole year and no one made an offer to buy it.

(193 words)

14. Reading Age : 9-10

TEACHER: In a Japanese village school a quiet boy from the mountains whose name is Chibi comes every day to school. He sits alone in class and does not seem to learn anything.

CHIBI MAKES FRIENDS WITH HIS TEACHER

Even when it rained  
or stormed, he still came  
trudging along, wrapped  
in a raincoat made from  
dried zebra grass. And so,  
day by day, five years went  
by, and we were in the sixth  
grade, the last class in school.

Our new teacher was Mr. Isobe. He was a friendly man with a kind smile. Mr. Isobe often took his class to the hilltop behind the school. He was pleased to learn that Chibi knew all the places where the wild grapes and wild potatoes grew. He was amazed to find how much Chibi knew about all the flowers in our class garden.

He liked Chibi's black-and-white drawings and tacked them up on the wall to be admired. He liked Chibi's handwriting, which no one but Chibi could read, and he tacked that up on the wall. And he often spent time talking with Chibi when no one was around.

But when Chibi appeared on the stage at the talent show of that year, no one could believe his eyes. "Who is that?" "What can that stupid do up there?"

(183 words)

p.31 of 'Ventures' published  
by Scott Forewman & Co. U.S.A.

II Holdaways Internal Reading Inventory

**A** Reading Age : 5-6

## A Ride in the Car

"Come on Sally.

Come on Bill.

Get in the car," said Father.

"We will go to see Grandma."

"Is Mother going too?" asked Sally.

"No," said Father.

"Mother will stay at home."

"My dolly can come," said Sally.

She went to get her doll.

"I'll take my bat and ball," said Bill.

"Grandpa likes to play ball with me."

He ran to get his things.

"Grandma and Dolly and I

can have a tea party," said Sally.

"Come on you two. Come on!" called

Father.

**B** Reading Age : 6-7

## A Birthday Surprise

One day a little boy said to his father,

"Soon my birthday will come.

Will you give me a big present?"

"Yes," said his father.

"Do you want something fast  
or something slow?"

"I want something fast," said the boy.

"A car is fast.

A boat is fast.

But what is slow?"

At last the birthday came.

"Here," said the father.

"Happy Birthday!

Here is your surprise present."

"A puppy," the boy laughed.

"He is fast when he is running  
and he is slow when he is sleep

Thank you for a good surprise."

C Reading Age : 7-8

## Fun with Paper Bags

Making a mask can be fun. Do it this way. Get a large paper bag and hold it in front of your face. Mark the places for your eyes, nose, and mouth. Lay the bag on a table, and cut holes the right shape. When it is finished the mask will fit right over your head.

What kind of mask will you make? Good ones are Indians, animals, flowers, and clowns. For Indians you will need feathers. For animals you will need fur or hair. Wool makes fine hair and whiskers. For flowers and clowns you will need bright colours. Use crayons or paint. A better way may be to paste on coloured paper or cloth.

## Money and Machines

Coins have been used as money for thousands of years but a new way of using coins is becoming popular today. Many things can be bought simply by dropping a coin into a slot in a machine. We often pay for parking our cars or for using a public telephone in this way.

Machines which work when money is fed into them are called vending machines. There are vending machines which play music, take photos, wash clothes, or even shine shoes.

Vending machines do the job of a shopkeeper. Many things can be bought from machines when shops are closed. The time may come when machines take the place of many shops.

Vending machines could not be used if coins were not perfectly made. Each coin must be exactly the right size to pass through the slot. Some machines even weigh each coin to make sure that the right price has been paid. It is not easy to cheat a vending machine.

## A Jumbo Slide

Sliding to safety is one of the latest ideas for getting people off an aeroplane rapidly. Accidents to aircraft are more likely to happen on the ground, especially during take-off and landing, than in the air. It is not easy to provide for the safety of all passengers on the giant jumbo jets of today. The Boeing 747 holds up to five hundred people and towers above the tarmac like a mobile hotel. The passenger deck is higher than a two-storey building. A passenger who leaped from the plane while it was stationary on the ground would very likely be killed.

How could so many passengers get out quickly in case of emergency? A folded slide, up to 38 feet long, is carried near each plane door. When needed, it will automatically flip out of the plane and inflate. It takes just ninety seconds for a plane-load of people to start to slide to safety.

What fun it would be to practise for an emergency in this plane.

## Experiment in Living

On the first day of September two men went down into a cave in France. They finally came out five months later. They had volunteered to live in the cave as part of an experiment. Scientists wanted to see how men would behave without clocks, calendars or the sun to tell them what time or what day it was.

Plastic tents were put 100 feet apart in the cave. Each man had lights, hundreds of books, furniture and food — but no clocks or calendars. They each read about five hundred books.

How did the men react? Very soon they lost track of time. They began living on a forty-eight hour schedule. They stayed awake for thirty six hours and slept for twelve. When they came out of the cave at the end of January, they thought it was November.

"The certainty that the experiment will be useful to man helped me to go through with it," said one of the volunteers. Information about men's natural habits may help scientists prepare astronauts for space travel.



**G** Reading Age : 11-12

### Bent Sunlight

We see rainbows in many places: in the sky after showers, in a droplet of water bathed in sunshine, or in the angle at the edge of a mirror. In each case rays of sunlight have been refracted, or bent, as they passed through a transparent object. When the objects have a polished surface, refraction causes the colourless rays of sunlight to be broken up into seven visible colours — red, orange, yellow, green, blue, indigo, and violet. A rainbow is formed in the sky when tiny droplets of rain bend the sunshine as it passes through them.

The brightness of our sky during daylight is also caused by refraction. Particles of air in the atmosphere bend sunlight in every possible direction. We are surrounded by daylight coming from all angles, whether or not we are in direct sunshine. This is why it is quite light well before sunrise and well after sunset. If sunlight were not refracted by our atmosphere, the sky would be deep black and star-filled even during the day — as it is from any point in space.

**H** Reading Age : 12-13

### Underwater Habitat

"It was a nice place to visit, but I wouldn't want to live there," reported John Van Derwalker, one of four marine scientists who "splashed-up" after a record-breaking sixty days of living under the sea.

Of the four men taking part in Project Tektite I, two were oceanographers, one was a geologist, the other a fishery biologist. Their habitat, which was based about forty seven feet underwater off St. John, Virgin Islands, was made up of two vertical cylinders, each eighteen feet tall and twelve and a half feet in diameter.

As the scientists ventured outside of their habitat each day to map the ocean floor and study marine life, they were objects of study to Project Tektite sponsors: the U.S. Navy, the National Aeronautics and Space Administration (NASA), and the General Electric Company.

NASA was especially interested in learning what physical and mental problems might crop up while scientists work in isolated conditions. The men could not easily return to the surface. Underwater they breathed pressurized nitrogen and oxygen to counter-balance sea pressure on the bottom. They had to spend 20 hours in a special decompression chamber to help them rid their systems of the nitrogen before they could re-enter sea-level atmosphere.

At the end of World War II in 1945, the nations of Europe — both victors and vanquished — found themselves near economic collapse. To rescue these nations and revive their economies, the United States devised its first large-scale foreign aid plan, called the Marshall Plan. By establishing this programme, the U.S. not only hoped to rebuild these war-torn nations but also to stem the spread of communism in Western Europe.

The war had left in its wake a heavy toll of destruction. After the last bomb had fallen and the final bullet had been fired, many nations lay in ruins. These conditions of unprecedented destruction threatened the political stability of many nations, and America feared that traditional forms of democracy may give way to communism. This fear was heightened by the emergence of Russia as a world power second only to the United States, and as the dominating influence in restructuring the patterns of government in Eastern European nations.

With U.S. aid supporting the tremendous energy and determination of the people, the factories and the farms of Western Europe began producing again. By 1951, industrial production was forty per cent higher than before the war.

The newly reconstructed nations were soon operating as strong parliamentary democracies, resistant to communist influences, and a powerful counter-balance to the Russian satellite countries of Eastern Europe. The Marshall Plan proved an extraordinary success in this post-war European context.

The fact that it placed more emphasis on economic recovery than on military aid may account in some measure for this phenomenal success, especially when compared with foreign aid programmes applied later in other parts of the world. However, the long history of vigorous civilization and representational government among the people of Europe was undoubtedly the most important contributing factor in the success of the Marshall Plan.

III Passages from "Economics" by P.A. Samuelson

## A

Beginners used to want a short definition of economics; and in response to this demand, there was no shortage of supply. Here are a few such definitions:

1. Economics is the study of those activities which, with or without money, involve exchange transactions among people.

2. Economics is the study of how men choose to use scarce or limited productive resources (land, labor, capital goods such as machinery, and technical knowledge) to produce various commodities (such as wheat, beef, and overcoats; concerts, roads, bombers, and yachts) and to distribute them to various members of society for their consumption.

3. Economics is the study of men in their ordinary business of life, earning and enjoying a living.

4. Economics is the study of how mankind goes about the business of organizing its consumption and production activities.

5. Economics is the study of wealth.

The list is a good one. Yet a scholar can extend it many times over. It is always hard to compress into a few lines an exact description of a subject, one that will differentiate its boundaries from those of other disciplines and convey to the beginner all the things it is. Economics certainly does involve all the elements stressed in these various definitions - and all those implied in the larger list that could be compiled.

## B

By a positive fiscal policy, we mean the process of shaping public *taxation* and public *expenditure* in order (1) to help dampen down the swings of the business cycle and (2) to contribute toward the maintenance of a growing, high-employment economy free from excessive inflation or deflation.

The war years have shown fiscal policy to be a powerful weapon. Indeed, some would argue that it is like the nuclear bomb, too powerful a weapon to let men and governments play with; that it would be better if fiscal policy were never used. However, it is absolutely certain that, just as no nation will sit idly by and let smallpox decimate the population, so too, in every country, fiscal policy is brought into play whenever depressions gain headway.

There is no choice, then, but to attempt to lead fiscal policy along economically, whether it realizes it or not. The real issue is whether this shall be a constructive one or an unconscious, stumbling one.

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