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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.

A thesis presented in partial
fulfilment of the requirements for the degree
of Master of Arts
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Massey University

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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 Ortons 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

Table 1.1

READING MISCEUE INVENTORY CODING SHEET

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					No Loss	Partial Loss	Loss	Strength	Partial Strength	Weakness	Overcorrection
01-1	know	know			✓			✓			✓			N	Y	Y	P		✓		✓			
03-2	the	a					✓	✓			✓			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	ever	Y		✓			✓			✓			Y	Y	N	N	✓						✓
06-7	.	—		Y										N	P	P	P		✓				✓	
08-8	—	Claribel												N	N	N	Y		✓				✓	
10-9	music	musical			✓			✓			✓			N	Y	Y	P		✓		✓			
14-10	heard	had			✓			✓			✓			N	Y	P	Y			✓		✓		
15-11	Clardo	Claribel			✓			✓	✓		✓			P	Y	P	Y		✓			✓		
16-12	—	small												N	P	P	P		✓				✓	
16-13	care	canary				✓			✓			✓		P	P	N	Y			✓			✓	
18-14	and	at					✓			✓			✓	P	P	P	Y		✓				✓	
19-15	have stayed	stay												N	Y	Y	Y	✓			✓			
21-16	had	—												N	Y	P	Y	✓				✓		
01-17	canot	canary				✓		✓	✓		✓			N	Y	P	Y	✓				✓		
04-18	canary	canary			✓			✓			✓			N	Y	P	Y	✓				✓		
05-19	it don	done it												Y	Y	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	N	✓			✓			✓
06-24	rules	rule			✓			✓			✓			N	Y	Y	N	✓			✓			
07-25	put	but			✓				✓				✓	Y	N	N	N	✓			✓			✓
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 MISCUEN 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	INFORMATIONAL MATERIAL
	Maximum Points
Character Analysis:	
Recall	15
Development	15
Events	30
Plot	20
Theme	20
	Maximum Points
Specifics	40
Generalizations	30
Major Concepts	30

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		

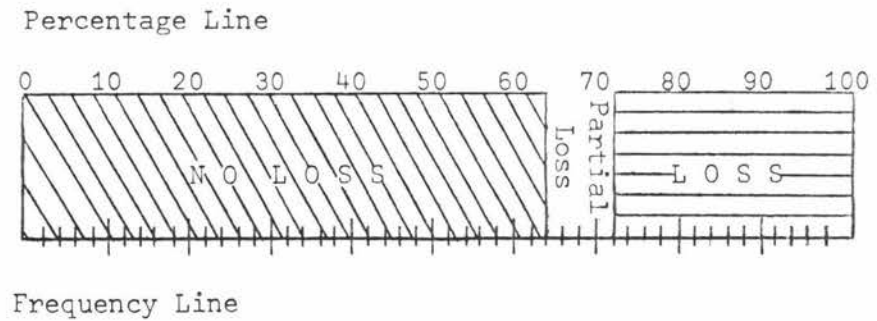


Table 1.7 SOUND/GRAPHIC RELATIONSHIPS AND GRAMMATICAL RELATIONSHIPS

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