THE EFFECT OF UNKNOWN WORDS AND THE SEMANTIC STRUCTURE OF TEXTS ON READING COMPREHENSION

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A thesis submitted to
The University of Sydney
in partial fulfilment of the requirements
for the honours degree of
Master of Education
1986

ACKNOWLEDGEMENTS

I would like to acknowledge the co-operation of the Principals, teachers and children of Ambarvale, Leppington, Woodland Road and Prestons Public Schools and St. Gertrude's, St. Luke's, St. Mary's and Christ The King Catholic Primary Schools.

I am especially indebted to my Supervisor, Professor Spearritt, for his assistance in the statistical analysis of the data, and for his advice and encouragement in the preparation of this manuscript.

I am also grateful to my wife and children for the support they have given in their own special ways.

TABLE OF CONTENTS

Page

List of tables v

List of figures viii

Abstract x

CHAPTER I Introduction 1-5

CHAPTER II Review of Literature 6-65

1. The Problem 6-8
2. Theoretical Orientations
   - (a) Instrumentalist/"Outside In" Theories 8-10
   - (b) Verbal Aptitude/Interactive Theories 10-14
   - (c) "Knowledge"/"Inside Out" Theories 14-16
3. Empirical Studies: The Major Variables 16-36
   - (a) Comprehension Measures 16-22
   - (b) Proportion of Unknown Words 22-25
   - (c) Redundancy and Unknown Words 25-27
   - (d) Contextual Processing and Comprehension - Individual Differences Related to Reading Proficiency 28-33
   - (e) The Relative Salience of Unknown Words, Processing Strategies and Comprehension 33-36
4. Semantic Organization of Text and Comprehension 36-44
   - (a) Systems of Text Analysis 36-38
   - (b) The Effect of Text Structure on Recall 38-40
   - (c) Differential Effects of Prose Structures on Recall of Good and Poor Readers 41-42
   - (d) Unknown Words, Text Structure and Recall 42-44
5. Integrating Word and Text Level Processing 44-52
6. Research Questions and Hypotheses 53-65

CHAPTER III Research Design: Methods and Procedures 66-116

1. Determination of Text Structure 67-80
   - (a) Story Grammars 70-73
   - (b) Propositional Analysis 73-80

2. Construction of Test Instruments 80-103
   - (a) Aural Comprehension Test 80-86
   - (b) Experimental Stories 86-93
   - (c) Multiple Choice Vocabulary Tests 93-98
   - (d) Microrecall Measures 99-100
   - (e) Macrorecall Measures 100-103

3. Selection of Sample 104-106

4. Testing Procedures 106-109

5. Analysis of Data 109-116

CHAPTER IV Results and Discussion 117-185

1. Aural Story Recall 117-121

2. Contextual Processing - The Construction of Meaning for Unknown Words 121-151

3. Macrorecall - Following the Gist of the Story 152-171

4. Microrecall - The Total Amount Recalled 172-185

CHAPTER V Conclusions and Implications 186-205

1. Story Structure and Recall
   - (a) Implications for Remediation 187-189

2. Contextual Processing
   - (a) Implications for Teaching Context Clues 189-192

3. Influences of Text Organization on the Effects of Unknown Words on Story Recall
   - (a) Implications for Miscue Analysis Procedures 192-202

4. In Summary 202-205

APPENDICES

- Appendix 1 206-240
  - Aural Comprehension Test Story 207-208
  - "Willy" - Base Version 209-211
  - "Willy" - Experimental Versions
    - Salient, Redundant 212-214
    - Salient, Not Redundant 215-218
    - Peripheral, Redundant 219-221
    - Peripheral, Not Redundant 222-224
  - "Friends" - Base Version 225-226
  - "Friends" - Experimental Versions
    - Salient, Redundant 227-229
    - Salient, Not Redundant 230-232
    - Peripheral, Redundant 233-235
    - Peripheral, Not Redundant 236-238
  - Placement Test Story - "The Brothers" 239-240
- Appendix 2 241-252
  - Micropropositional Analysis of Test Stories
    - "The Secret Trip" 242-245
    - "Willy" 246-249
    - "Friends" 250-252
- Appendix 3 253-269
  - Macropropositional Analysis of Test Stories
    - "The Secret Trip" 254-258
    - "Willy" 259-264
    - "Friends" 265-269
- Appendix 4
  - Manual for Scoring Story Recalls 270-290
- Appendix 5 291-308
  - Multiple Choice Tests of the Meanings of Target Words
    - "Willy" - Salient 292-295
    - "Willy" - Peripheral 296-299
    - "Friends" - Salient 300-303
    - "Friends" - Peripheral 304-308
- Appendix 6 309-313
  - Pupils' Scores on all Experimental Measures

BIBLIOGRAPHY 314-325

LIST OF TABLES

TABLE		Page
1	Words in aural comprehension test story not in Thorndike's ranks 1 and 2	81
2	Statements of the gist of "The Secret Trip" story	82
3	Recall frequency of statements in key episodic categories of "The Secret Trip" story	84
4	t test on aural comprehension scores of good and poor readers in pilot study	86
5	Number of words in experimental story versions	90
6	Number of nontarget words not in Thorndike's rank one	91
7	Frequency distribution of target words	92
8	Propositional location of peripheral, low frequency words	93
9	Administration of tests in pilot study	95
10	Reliability of multiple choice tests in pilot study	95
11	Percentage recall for macropropositions from the "Willy" story	102
12	Percentage recall for macropropositions from the "Friends" story	103
13	Counterbalanced story presentation sequence	109
14	Planned comparisons for macrorecall	113
15	Planned comparisons for microrecall	116
16	Aural comprehension scores	119
17	Pupils per cell in ANOVA: Multiple choice tests of the meanings of salient, target words in the "Friends" story	124
18	Analysis of variance - "Friends" salient words questions	124
19	Mean scores on "Friends" salient questions	125

20 Pupils per cell in ANOVA: Multiple choice tests of the meanings of peripheral, target words in the "Friends" story 127

21 Analysis of variance - "Friends" peripheral words questions 127

22 Mean scores "Friends" peripheral questions 128

23 Pupils per cell in ANOVA: Multiple choice tests of the meanings of salient, target words in the "Willy" story 130

24 Mean scores on "Willy" salient questions 130

25 ANOVA: Multiple choice questions testing the meaning of salient, target words in the "Willy" story 130

26 Pupils per cell in ANOVA: Multiple choice tests of the meanings of peripheral, target words in the "Willy" story 132

27 Mean scores on "Willy" peripheral questions 132

28 ANOVA: Multiple choice questions testing the meaning of peripheral, target words in the "Willy" story 132

29 Cell sizes for ANOVA: Ability X redundancy X salience on tests for salient and peripheral, target words for the "Friends" story 144

30 ANOVA: Ability X redundancy X salience on salient and peripheral questions for the "Friends" story 145

31 Cell sizes for ANOVA: Ability X redundancy X salience on tests for salient and peripheral, target words for the "Willy" story 147

32 ANOVA: Ability X redundancy X salience on salient and peripheral questions for the "Willy" story 147

33 Mean scores on tests of the meanings of salient and peripheral, unknown words for the "Friends" story 151

34 Macrorecall scores - interjudge reliability 152

35 Cell sizes for ANOVA: Ability X redundancy X salience on macrorecall for the "Friends" story 154

36 ANOVA: Ability X redundancy X salience on macrorecall for the "Friends" story 155

37 Cell sizes for ANOVA: Ability X redundancy X salience on macrorecall for the "Willy" story 161

38 Mean scores on macrorecall for the "Willy" story 162

39 ANOVA: Ability X redundancy X salience on macrorecall for the "Willy" story 162

40 Results of planned comparisons on macrorecall for the "Willy" story 164

41 Means and standard deviations for macrorecall on the "Friends" story 170

42 Macrorecall scores for poor readers on "Friends" peripheral, redundant story version 170

43 Microrecall scores - interjudge reliability 172

44 ANOVA: Ability X redundancy X salience on microrecall for the "Friends" story 174

45 ANOVA: Ability X redundancy X salience on microrecall for the "Willy" story 181

46 Results of planned comparisons on microrecall for the "Willy" story 182

LIST OF FIGURES

FIGURE Page

1 Predicted pattern of mean scores for tests of the meanings of salient and peripheral target words 57

2 Predicted effects of salience and redundancy of unknown words on macrorecall of good and poor readers 61

3 Predicted effects of salience and redundancy of unknown words on microrecall of good and poor readers 65

4 Procedure for constructing experimental stories 88

5 Ability X redundancy interaction for questions on salient, unknown words in the "Friends" story 126

6 Ability X redundancy interaction for questions on peripheral, unknown words in the "Friends" story 129

7 Ability X redundancy interaction for questions on salient, unknown words in the "Willy" story 131

8 Ability X redundancy interaction for questions on peripheral, unknown words in the "Willy" story 133

9 Effects of relative salience and redundancy of unknown words in the "Friends" story on the ability of good and poor readers to construct meanings for these target words 146

10 Effects of relative salience and redundancy of unknown words in the "Willy" story on the ability of good and poor readers to construct meanings for these target words 148

11 Planned comparisons for macrorecall 156

12 Ability X redundancy X salience interaction on macrorecall for the "Friends" story 157

13 Further planned comparisons for macrorecall 160

14 Planned comparisons for microrecall 175

15 Pattern of effects of salience and redundancy of unknown words on microrecall for the "Friends" story 176

16 Further planned comparisons for microrecall 179

17 Idea statements corresponding to macropropositions in key story categories 273

18 Example of a pupil's aural story recall protocol 274

19 Pilot study example of an aural story recall protocol scored for story structure recall 275

20 Criterion list for determining story structure recall score 276

21 Example of story structure recall scoring 277

22 Second example of a pupil's aural story recall protocol 278

23 Second example of story structure recall scoring 278

24 Example of a pupil's story recall protocol after oral reading 282

25 Example of microrecall scoring procedure 283

26 Example of adult story recall protocol 285

27 Example of an adult recall protocol scored for macrorecall 286

28 Criterion list of macropropositions for recall of the "Friends" story 287

29 Criterion list of macropropositions for recall of the "Willy" story 288

30 Second example of a pupil's story recall protocol after oral reading 289

31 Example of a pupil's recall protocol scored for macrorecall 290

ABSTRACT

The correlation between word knowledge and reading comprehension is well established but the nature of the relationship remains unclear. It involves complex interactions among factors such as the proportion of unfamiliar words in the passage, the extent of redundancy associated with these words, their relative salience to the semantic organization of the text and the readers' proficiency in responding to these text characteristics. This study is one of the few which have investigated these interrelationships. It sought to determine whether good readers differed from poor readers in utilizing redundancy in text to construct meanings for unknown words and whether good readers and poor readers were more likely to so use redundancy when unknown words were salient to the story line rather than peripheral. The study further investigated how the degree of salience and redundancy of unknown words affected recall of the gist of a story and the total story information recalled by good and poor readers.

An initial test of fifth grade pupils' recall of the gist of an aural story was used to eliminate from the study those pupils whose scores indicated an inadequately developed schema for simple stories. This test revealed a significant difference between good and poor readers (categorized according to standardized reading test scores) and wide variation among the scores of poor readers, indicating support for previous research which suggested that certain subgroups of poor readers had inadequately developed story schemata. Data from pupils whose aural recall scores did not reach criterion were not included in the subsequent analyses.

The good and poor readers later read experimental versions of two stories containing six percent unknown words of varying redundancy and salience. Tests of the meanings of these words revealed redundancy effects for only one story. In this story good readers and poor readers used redundancy to construct meanings for unknown words but good readers scored higher and poor readers did not utilize redundancy when the unknown words were salient. This was attributed to the increased processing demands of salient compared with peripheral unknown words and the greater flexibility of good readers in coordinating multiple processing goals in reading. Implications for the teaching of context clues were discussed.

Recall scores for one story only were relevant since, in the other story, good readers proved to be familiar with target words which were assumed to be unknown. For the story which did contain unknown words, good readers' gist and total recall were impeded only when unknown words were salient and not redundant. Although poor readers recalled less of the gist and total story information, their pattern of gist recall was somewhat similar to that of good readers but, by contrast, the relative salience and redundancy of unknown words had no differential effects on poor readers' total recall scores. Implications for assessment of reading based on miscue analysis procedures were discussed.

CHAPTER I

INTRODUCTION

The strong relationship between knowledge of word meanings and reading comprehension has been well established in correlational studies (Davis, 1944; 1968; Thurstone, 1946; Clark, 1972; Thorndike, 1973; Spearritt, 1977) but the nature of the strong relationship remains unclear. At least three different theoretical accounts have been distinguished (Freebody and Anderson, 1981). The "instrumentalist" position maintains a simple, direct causal relationship ie. knowing the words results in text comprehension. The "aptitude" view suggests that vocabulary knowledge is an index of more general superior verbal ability and that it is this that is responsible for increased comprehension. Finally, the "knowledge" position proposes that vocabulary test scores reflect a deeper and broader knowledge of the culture and that this is crucial for text understanding. Although these differing theoretical perspectives may have been represented as somewhat artificially discrete and uncomplicated, they have given rise to influential and conflicting recommendations for pedagogical practice (Freebody and Anderson, 1981, p.85).

The three theoretical positions are associated with opposing accounts of the nature of the reading process. The instrumentalist view is consistent with "outside in" models of reading based on purely data driven processing (Gough,1972; Laberge and Samuels, 1974). The knowledge position with its emphasis on conceptual frameworks and schemata is aligned with "inside out" models of reading with a corresponding emphasis on conceptually driven processing (Goodman, 1967; 1973; 1975; Smith, 1971; 1973; 1975). The aptitude position is closely related to "outside in" theories of reading because of the importance placed on speed and efficiency in elemental processing. Aptitude theorists have investigated the role of context in speed of word recognition and hence can be associated with "interactive" theories of reading which combine aspects of both "outside in" and "inside out" models.

The contradictions within the empirical literature concerning the relationship between word knowledge and reading comprehension cannot be accounted for within the existing parameters of any of the current theoretical accounts . Instrumentalist/Outside In theories cannot explain, for example, the results of instructional studies where systematic teaching of different words significantly increased knowledge of word meanings but not comprehension of passages containing the words (Tuinman and Brady, 1974; Jenkins,Pany and Schreck, 1978). Yet, other studies (Marks, Doctorow and Wittrock, 1974; Marks and Doctorow, 1975) have shown that the substitution of 15 percent of the words in a passage with low frequency synonyms resulted in a significant decrement in comprehension, which seems to support the instrumentalist view. The verbal aptitude theorists have shown how good and poor readers use context in word recognition (West and Stanovich, 1978; Stanovich and West, 1979; Perfetti, Goldman and Hogaboam, 1979). But these studies all dealt with words that were ultimately identified by both good and poor readers. They did not confront the issue of word meaning and its relationship to text comprehension. Knowledge/Inside Out theorists are concerned with the construction of meaning, primarily through conceptually driven, contextual processing, and therein have the potential to explain at least some of the apparently contradictory results of research dealing with the relationship between word meaning and text comprehension. But even these researchers seem equivocal as to whether the construction of focal meaning at the word level is prerequisite to the comprehension of the text as a whole (Y. Goodman and Burke, 1972, pp. 115-116).

A review of the literature suggests that discrepancies among the results of empirical studies may have arisen because the research designs have focussed on different and limited sets of variables relevant to the relationship between word knowledge and text comprehension. The discrepant results may have been due to factors such as the following - as well as complex interactions among them:

(i) variations in comprehension demanded by the variety of comprehension measures used,
(ii) the varying proportions of unknown words in the experimental texts,
(iii) whether or not redundancy associated with unknown words was taken into account,
(iv) the relative ability of readers to use redundancy in constructing meaning for unknown words,
(v) the influence of the semantic structure of texts on reading comprehension,
(vi) the relative importance of unknown words to the semantic structure of the text.

Clearly there is a need to attempt to account for the influence of these factors as far as possible under common conditions within the constraints of a single unified study. This study was therefore designed to make an original contribution to the integration of previously somewhat separate aspects of research in this area. It has contributed empirical data concerning the ability of readers at different levels of proficiency to use contextual processing to provide access to the concepts represented by unknown words of varying redundancy and salience within texts. These findings have been related to additional findings concerning the effects of such words on readers' recall of the texts' content and organizational structure.

If the results prove robust, their greatest direct, practical importance rests with the contribution they may make to the refinement of informal assessment procedures, such as miscue analysis, which are now commonly used in diagnosing reading behaviour. An extension of this line of research may well strengthen implications for the elaboration of theories of the reading process toward a "fully interactive model" where "comprehension processes are meshed with recognition processes in such a way that the former can accommodate to changes in the latter" (Stanovich, 1980, p.59). But, as Stanovich (1980,p.59) points out, "the issues are sufficiently complex and the current empirical data sufficiently sparse" that the elucidation of such possibilities must remain for future research.

CHAPTER II

REVIEW OF LITERATURE

1. The Problem

A strong relationship between word knowledge and reading comprehension has been a consistent finding of correlational studies over many years (Davis, 1944, 1968; Thurstone, 1946; Clark, 1972; Thorndike, 1973; Spearritt, 1977). The nature of this strong relationship is not however, well understood. Theoretical accounts of it in well known process models of reading are fundamentally opposed and apparently conflicting evidence from empirical studies leaves the connection rather poorly established in that respect. Pedagogical implications remain correspondingly inadequate or contradictory.

2. Theoretical Orientations

Freebody and Anderson (1981) have distinguished three distinct views on why word knowledge is such a strong correlate of reading comprehension:

(i) The instrumentalist position - individuals who score high on a vocabulary test are likely to know more of the words in most texts they encounter than low scoring individuals. ie. knowing the words causes text comprehension.

(ii) The aptitude position - persons who score well on vocabulary tests are better comprehenders because this vocabulary score reflects more general superior verbal ability and this is what determines text comprehension. (iii) The knowledge position - high vocabulary test scores reflect a deeper and broader knowledge of the culture and it is this that is crucial for text understanding. This view emphasises the importance of conceptual frameworks or schemata while the instrumentalist position stresses individual word meanings.

The various explanations of the relationship between word knowledge and reading comprehension are associated, to a greater or lesser extent, with one or the other of two diametrically opposed theoretical accounts of the reading process which Cambourne (1979) described as "outside in" theories and "inside out" theories. "Outside in" theories

> see reading as a process which begins with the inward flow of graphic information from the page. This information proceeds to the inside of the reader's head in a strictly linear fashion where it is analysed, bit by bit, until some meaningful interpretation occurs in the brain.

In contrast in "inside out" theories

> the direction of the flow of information is reversed, coming essentially from inside the head, out to where the graphic display is very selectively perceived. (Cambourne, 1979, p.79)

"Outside in" theories and related views on the connection between word knowledge and reading comprehension do not offer a parsimonious explanation of relevant empirical findings. The views associated with "inside out" theories are more consistent with empirical data but fail to take adequate account of factors such as the redundancy of unknown words, the influence of text organization and individual differences in the processing strategies of readers of varying levels of proficiency. The basis of this evaluation will be seen in the following discussion of the three categories into which compatible combinations of these theories may be grouped.

a. Instrumentalist/"Outside in" Theories

The instrumentalist position is consistent with "outside in" theories of reading based on purely data driven processing (Gough, 1972; Laberge and Samuels, 1974). These theories assert that all of the print is processed in a series of hierarchical decisions: letters or letter clusters are discriminated then synthesized into words by matching with phonologically appropriate sounds. This allows the word to be pronounced either aloud or subvocally and hence identified. Efficient processing of the words in this manner results in text comprehension. These models insist that accurate word identification must precede comprehension.

The distinctive pedagogical implication of the instrumentalist view is an emphasis on direct vocabulary building exercises. Becker (1977) argued strongly for this position. He claimed that specific teaching of vocabulary items was essential to increase word knowledge and recommended this be effected through highly structured direct instruction.

Theorists who adhere to models of reading based purely on data driven processing and hold an instrumentalist view of the relationship between word knowledge and comprehension would find it difficult to explain findings which indicate that readers were able to demonstrate comprehension despite being unable to accurately decode a proportion of words in the text. Tuinman and Brady (1974) and Jenkins, Pany and Schreck (1978) showed that pupils who had been taught difficult words performed no better in comprehending texts containing these words than control groups who did not know the words. In these instructional studies instrumentalist theorists might criticize logistical aspects of the studies such as sample size, variability between subjects and, of course, the effectiveness of vocabulary instruction. But they would have difficulty explaining the redundancy effects found by Kameenui, Carnine and Freschi, (1982) who compared readers' comprehension of passages containing unknown words which were redundant with comprehension of passages containing unknown words which were not redundant. Readers in the redundant condition scored significantly higher than those in the not redundant condition. The "outside in"/instrumentalist position also fails to explain the reports of Goodman (1976) and Goodman and Gollasch (1980) showing that readers who were unsuccessful at decoding particular words during oral reading nevertheless provided an appropriate meaning for such words during probed recall of the text. Indeed there is a great deal of evidence which defies explanation from the strictly "outside in" perspective and ...

> it is now reasonably well established that such models are inadequate because they fail to account for many important empirical results in the reading literature (Stanovich, 1980, p.34)

b. Verbal Aptitude/Interactive Theories

The aptitude view is characterized by the importance it assigns to speed and efficiency of elemental processing operations. This emphasis recommends that the reading curriculum for beginning and poor readers should include very extensive drill and practice in word vocalization, speeded word recognition and memory for the literal content of text (Perfetti and Lesgold, 1979).

While the verbal aptitude position attributed by Freebody and Anderson to Perfetti and Lesgold (1979) certainly appears to reflect the "outside in" theories of reading proposed by Laberge and Samuels (1974), recent work by Lesgold and Perfetti (1978, 1980) and their colleagues Perfetti and Roth (1980) as well as Stanovich (1980) has promoted a view of interactive processing in reading based on the interactive model proposed by Rumelhart (1977). Interactive accounts posit neither strictly "bottom up" (outside in) nor strictly "top down" (inside out) processing, but rather assume that a pattern is synthesized based on information provided simultaneously from both information sources. Lesgold and Perfetti (1978) have drawn on work by Kahneman (1973) to suggest that there are two basic types of interactions to consider: specific structural interactions and nonspecific interactions related to capacity limitations. Rumelhart (1977) addresses structural interactions. In his model words are recognized according to a process that makes use of conditional probabilities that what is seen is a particular word given a particular processing context and particular sets of subword features.

> Thus, if the reader expects the name of a vehicle and knows that the word is short and begins with 'c', 'car' may be recognized very quickly. When context is less constraining, lower level conditional probabilities, eg. bigram frequencies, become more important to the recognition process (Lesgold and Perfetti, 1978, p.325).

Nonspecific interactions in reading refer to the strategic allocation of processing resources based on a limited capacity processing system. Lesgold and Perfetti (1978, p.325) suggest this involves the alternation of attention "between recognizing words and integrating sentence ideas into memory." Schwartz and Stanovich (1980, p.12) have reported that "the use of contextual information to make word recognition versus thematic decisions requires competing processes (Schwartz,1980; 1980a; Stanovich, 1980)" and that "further research is needed to investigate the flexibility of children in co-ordinating these goals."

Studies associated with the verbal aptitude position have not however, addressed this issue. They have attempted to support the validity of the aptitude view by citing evidence which appears to disprove a major premise of the 'knowledge/inside out' or conceptually driven processing view ie. that experiential, conceptual and linguistic contexts are of major importance in constructing meaning for new vocabulary encountered in texts and that efficiency in using this strategy differentiates between good and poor readers. But the verbal aptitude theorists have only been concerned with limited capacity models with interactive processing at the word level. Indeed they have shown that readers engage in top down processing in using contextual information to facilitate word recognition (West and Stanovich, 1978; Stanovich and West, 1979) and that poorer readers make more use of context for this purpose than do skilled readers (Perfetti, Goldman and Hogaboam, 1979; West and Stanovich, 1978). But these studies only show that this kind of processing occurs when facility in accurate word identification is the outcome of interest. Stanovich (1980) has argued that this "compensatory" use of context remains a liability for poorer readers. The argument is based on the two process theory of expectancy developed by Posner and Snyder (1975a, 1975b) and succinctly summarized by Stanovich (1980).

> ...Posner and Snyder (1975a, 1975b) proposed that semantic context affects recognition via two processes that act independently and have different properties..... The automatic activation process occurs because, when stimulus information activates a memory location, some of the activation automatically spreads to semantically related memory locations that are nearby in the network. The automatic spreading activation process is fast acting, does not use attentional capacity, and does not affect the retrieval of information from memory locations unrelated to those activated by the context. Thus, the automatic activation process quickly results in a contextual facilitation effect, but does not cause an inhibitory effect when a word is incongruous with its preceding context. In contrast, the conscious attention mechanism responds to a preceding context by directing the limited capacity processor to the memory location of the expected stimulus. The conscious attention mechanism is slow acting, utilizes attentional capacity and inhibits the retrieval of information from unexpected locations because the limited capacity processor must be 'shifted' to a location some distance away in the network so that information can be read out. (Stanovich, 1980, p.53)

Stanovich (1980) suggests that this theory accounts for the results of several studies showing greater contextual facilitation in the word recognition of poorer readers than skilled readers (West and Stanovich, 1978; Perfetti, Goldman and Hogaboam, 1979; Roth, Perfetti and Lesgold 1979; Stanovich, 1981). He proposes that word recognition in skilled readers is so fast that target words can be named before the slow acting conscious attention mechanism can have an inhibitory effect. Only the automatic spreading activation component of contextual processing has time to operate before the word is recognized, thus resulting in contextual facilitation. The word recognition processes of poorer readers, however, may be slow enough to allow the conscious attention mechanism to have an effect. This facilitates word recognition but uses processing capacity and depletes resources available for integrating meaning across larger text units. Thus, consistent with the verbal aptitude position, Stanovich claims that rapid, context free word recognition is highly significant in differentiating good readers from poor readers. This view however, is based on studies dealing with words that are all ultimately identified by both good and poor readers and does not address the problem of deriving meaning when confronting unfamiliar words in text.

c. "Knowledge"/"Inside Out" Theories

The "knowledge" position as described by Freebody and Anderson (1981) is clearly concerned with the way readers deal with unknown words in text processing. This position maintains that new vocabulary is best learned in the context of acquiring knowledge (Goodman, 1976). It emphasises the importance of utilizing experiential, conceptual and linguistic contexts in constructing meanings for new vocabulary.

This is consistent with "inside out" models of the reading process with their emphasis on conceptually driven processing (Goodman, 1967, 1973, 1975; Smith, 1971, 1973, 1975). These models propose that accurate word identification is not necessary for comprehension of text and that it may well be a "by-product of comprehension" - following, rather than preceding, the construction of meaning from the written page. "Inside out" models describe the reading process as one in which only a small proportion of the graphic display is perceived. On the basis of this selective perception the reader anticipates upcoming meanings and their associated language forms. These predictions are derived from the reader's experiential and/or conceptual knowledge relevant to the topic of the text as well as the reader's intuitive knowledge of possible linguistic constructions. As long as the reader's expectations are confirmed and continue to be syntactically and semantically acceptable, s/he continues to sample salient features of the print to confirm his/her predictions. If the print is not consistent with the reader's expectations s/he regresses, reprocesses, possibly correcting earlier interpretations if this is necessary to maintain the construction of meaning from the text. Oral reading reveals that what is "read" by a subject is sometimes different from what actually appears in print but the rendition given by good readers preserves the meaning if not the form of the original.

It will be seen that this theoretical orientation is capable of explaining at least some aspects of the apparently contradictory results of empirical studies dealing with the relationship between unknown words and comprehension. However careful consideration of the research evidence also suggests that with refinement of certain parameters of the model and its elaboration to include relevant variables a more parsimonious account is possible. What is needed is a more encompassing view of interactive processing in reading.

> Perhaps, as Wilkinson et al. (1981) have suggested, recognition and comprehension processes are so completely interactive that they maintain an equilibrium whereby comprehension processes are meshed with recognition processes in such a way that the former can accommodate to changes in the latter. The issues are sufficiently complex, and the current empirical data sufficiently sparse, that the only reasonable conclusion at this point is that it remains for future research to elucidate whether a fully interactive model is to be preferred over a limited capacity model with interactive processing at the word level (Stanovich, 1980, p.59).

In view of this, rather than a chronological or box score review of relevant studies, significant issues in the empirical literature will be discussed in order to explain discrepant results and progressively develop a view of the manner in which relevant factors might be integrated in a "fully interactive model" of reading.

3. Empirical Studies: The Major Variables

a. Comprehension Measures

The occurrence of unknown words in text appears to have differential effects on a range of comprehension measures. Nicholson (1979) distinguished between "atomistic" and "global" measures of comprehension. His terms might describe a continuum which begins with literal understanding of explicitly text dependent information, becoming less "atomistic" with inferential understanding of textually implicit information, and then moving toward "global" or "scriptal" comprehension which, although activated by the text, is only plausibly demonstrated by invoking the readers' prior experience. Sentence recognition tests relate to atomistic comprehension while free and summary recall are more global. Such a categorization of comprehension questions is more problematic. Research indicating that comprehension questions are overwhelmingly concerned with literal detail (Ruddell and Williams, 1972) would suggest atomistic comprehension but research also demonstrates that many questions are not text dependent and can be answered correctly without reading the text at all (Tuinman, 1973-74; Kemp, 1981). Such questions clearly deal with scriptal comprehension. Nicholson (1979) however, carefully constructed questions for a number of texts according to this framework. His study lends support to the view that reported differences in the effects of unknown words on comprehension are partially explained by the different types of comprehension measures used.

Nicholson presented above-average nine year old readers with texts containing six different types of embedded anomalies (simulates) corresponding to the types of errors likely to be made in oral reading. Explicitly dependent comprehension questions required readers to respond to a series of cloze sentences following reading. Inferential questions were in the multiple choice format in which both question and answer were derivable from the original text but the relationship between them was not well cued by the syntax of the text. Scriptal comprehension was tested by open-ended questions which were derivable from the text but the only plausible answer had to come from the readers' prior experience. These questions enabled assessment of comprehension at an atomistic as well as at a global level of understanding. Significant main effects for simulate type were found for explicit questions but not inferential or scriptal. Nicholson concluded that for precise atomistic comprehension, accurate decoding was a requisite behaviour. Alternatively, for global interpretation, accurate decoding seemed relatively unimportant.

The studies by Marks and her colleagues (Marks, Doctorow and Wittrock, 1974; Marks and Doctorow, 1975) which showed a clear decrement in comprehension for passages containing unknown words compared with the same passages containing high frequency synonyms, utilized multiple choice comprehension questions testing recall of incidents from the text and the derivation of inferences from the content. This may be seen as a bias toward more atomistic comprehension, especially when contrasted with the measures used by Jenkins, Pany and Schreck (1978). While experimental subjects in their instructional study significantly improved in vocabulary knowledge they performed no better than a control group (who definitely did not know the target words) in comprehending a text containing those words. The comprehension measures however, were a cloze test and free recall. It is possible then, that the control group performed as well as the experimental group because the unknown words had little impact on these more global comprehension measures.

In several other studies where the comprehension measures were atomistic, depending directly on explicit understanding of unknown words, a clear effect for unknown words has been demonstrated but on more global measures the effect of unknown words is not as straight forward. In two experiments conducted by Kameenui, Carnine and Freschi (1982) elementary school children read an easy vocabulary and difficult vocabulary version of two short stories. Comprehension was tested by multiple choice questions and recall, but recall was scored for the presence of information segments containing the difficult vocabulary, making recall an atomistic measure in this case. The authors found significant effects for vocabulary on both measures on both stories. In each case those who read the easy vocabulary versions performed better. Freebody and Anderson (1981) had sixth grade pupils read high and low frequency vocabulary versions of seven stories and measured comprehension through sentence recognition, free recall and summary recall. The main effect for vocabulary had a statistically significant effect on sentence recognition only, where those who read the high frequency vocabulary versions scored higher. A further study with year four children (McKeown, Beck, Omanson and Perfetti, 1983) compared the results on a multiple choice comprehension test, of pupils who had been instructed on difficult vocabulary contained in the test stories and pupils who had not received instruction. The fact that instructed pupils scored significantly higher indicated the effect of difficult vocabulary on the atomistic comprehension measure used.

Two studies which demonstrated significant effects for vocabulary on global measures of text recall also took into account the importance of such vocabulary to overall text comprehension. Freebody and Anderson (1981) determined the relative importance of their text propositions empirically. They had a separate group of sixth grade pupils rate propositions for importance on a three point scale. They then determined the mean score for each proposition and on this basis selected the most important twenty five percent of propositions and the least important twenty five percent. Two text versions were then created, one containing the difficult vocabulary in important propositions and one with difficult vocabulary in unimportant positions. The only clear effects for difficult vocabulary in important versus unimportant positions was on summary recall. McKeown et al. (1983) found that fourth grade pupils, who had been taught difficult vocabulary items, were superior in the amount and quality of their recall of texts containing the target vocabulary, compared with pupils who had not received vocabulary instruction. However, in this study half of the difficult vocabulary items were located in important or "central" propositions of the text according to a text analysis system developed by Omanson (1982).

The variation in the effect of difficult vocabulary from atomistic to more global measures of comprehension appears to be partly explained by the relative importance of the location of such vocabulary in the overall text organization. Freebody and Anderson (1981) also suggested that the extent of redundancy of difficult vocabulary items would influence their effects on comprehension and that this redundancy factor might combine with the importance factor.

> This contextual assistance may have been differentially available in different passages and at different points in a passage... (Freebody and Anderson, 1981, p.15)

The authors go on to suggest that important information therefore may have been obscured in some cases and not in others. The "contextual assistance" proposal assumes that readers do utilize context in constructing meaning for text segments containing unknown words. But the authors also speculate about another processing characteristic of readers - "the minimum effort principle". According to this the reader will avoid deep processing of difficult or unfamiliar words as much as possible without loss of the main themes of the passage being read. This might explain why difficult words in unimportant positions do not significantly affect summary recall. These speculations imply sophisticated strategic behaviour by readers: difficult words are 'skipped' (avoiding additional processing load) unless they are important to the gist of the text, in which case, if contextual constraints are present, these are used to construct meaning through contextual processing. It is plausible that efficient readers might operate this way while poor readers may be less capable of the strategic co-ordination required. In accounting for the effects of difficult words on comprehension, one must consider not only the differential demands of various comprehension measures but also text characteristics such as the degree of redundancy of such words and their relative importance in the text as well as differing processing characteristics of readers.

b. Proportion of Unknown Words

Apparently conflicting evidence about the effect on comprehension of the varying rates at which readers encounter unknown words can be resolved in terms of the need to consider rate in conjunction with the redundancy and importance of the words and individual differences in readers' processing strategies. The Wittrock et al. studies (1974, 1975) indicated that replacement of words comprising 15% of the text with low frequency synonyms produced a dramatic decrement in comprehension performance. Nicholson (1979) however, in addition to showing that embedded anomalies had differential effects on various comprehension measures, also compared simulate substitution rates of 6% and 15% and found no difference between these rates. Hence for more atomistic tasks, a rate of 6% was just as disruptive as 15%. In a naturalistic follow-up of the oral reading errors of twenty unskilled readers it was found that error rate affected the comprehension of explicitly dependent probes with low error rate eliciting better comprehension than high error rate. In contrast, error rate did not affect scriptal comprehension.

Freebody and Anderson (1981) also found that insertion of one difficult word in every six "substance" words (approx. 8% substitution rate) produced a significant effect on sentence recognition measures only. The effect of this substitution rate on recall of the nine experimental passages was erratic and a substitution rate of one in three "substance" words (approx. 16% substitution rate) was necessary to produce a more consistent decrement in recall scores. Their rationale was that the lower substitution rate produced in the reader "a strain so slight that any contextual assistance available could overcome it". Hence considerations about rate must also take redundancy into account. Kameenui et al. (1982) controlled for redundancy and, in its absence, found that a substitution rate of 5.8% produced significant differences on multiple choice and recall measures. But, of course, their recall measures were in fact atomistic, relating directly to the difficult words. More interesting is the second experiment conducted by Freebody and Anderson (1981). Here the authors created two versions of the texts, one with difficult words in important propositions and one with difficult words in unimportant propositions. The substitution rates were 1 in 7.9, 1 in 9 and 1 in 9.5 (substance words) for the three passages (6.6%, 5.8% and 5.2%). The authors also stated that in order to obtain this substitution rate it was often necessary to change more than one word in each proposition in the difficult version. This is likely to decrease the possibility of redundancy effects. In this study difficult words in important propositions had significant effects on summary recall. It would therefore seem that, somewhat inadvertantly, Freebody and Anderson have shown that very low substitution rates of about 6% can significantly affect gist recall if both importance and redundancy are controlled. McKeown et al. (1983) took importance but not redundancy into account and found significant effects for difficult vocabulary on multiple choice questions and recall with a substitution rate of 11%.

Over a number of studies then, the substitution rate of difficult words has ranged from about 5% to about 16% with variable effects depending on the nature of the comprehension measure, the degree of importance of the difficult vocabulary items and their redundancy within the text and presumably also, individual differences in the extent to which readers' processing strategies are sensitive to these factors.

c. Redundancy and Unknown Words

Freebody and Anderson (1981) put forward a redundancy explanation for the inconsistent effects of difficult word substitutions on recall measures in their first experiment. They argued that a low substitution rate (8%) imposed so little strain on readers that they would be able to take advantage of 'contextual assistance' and that this might be differentially available within and between the experimental texts. Kameenui et al. (1982) suggested that redundancy might account for the failure of the vocabulary instruction by Jenkins, Pany and Schreck (1978) to produce an advantage over the control group in comprehension of passages containing the target words. Kameenui et al. prepared texts containing difficult words and corresponding versions in which these difficult words were made highly redundant. Comprehension was measured by questions and a recall score for the difficult text segments. For the second passage both measures showed a significant advantage for the redundant texts but on the first passage the advantage was not apparent in the recall measure. It is possible that the "importance" factor may account for this discrepancy. It could be that in passage one the redundant information was not perceived by readers as important to the gist of the story and therefore was not processed as deeply as the redundant information in story two which may have been perceived as more relevant to the overall text meaning. Kameenui et al. did note the disadvantage of their using short, contrived texts. Passage one was only 66 words long and passage two was 104 words in length. While, in this case the "importance" explanation is highly speculative, it indicates the need to take this into account with more conventional texts.

The other study which specifically addressed the issue of redundancy was Nicholson's (1979) work using embedded anomalies. In an experiment dealing with "set strength" Nicholson tried to simulate the situation where a reader could not initially decode an unfamiliar word but was subsequently successful. He did this by including in a subsequent text segment the correct form corresponding to the embedded simulated error. This was the "low set" condition. In the "high set" condition the correct word appeared in the title also. Questions were scored according to a strict criterion, which demanded precisely the correct form of the intended word, or a broad criterion, which allowed a response semantically appropriate to the intended word. For the strict criterion scoring Nicholson found a significant main effect for set strength. High set was superior to low set and there was no difference between low set and no set. For broad criterion scoring however, there was no main effect for set strength. According to Nicholson this indicated that pupils were remarkably capable of getting the semantic sense of the story even when there was no textual evidence to contradict the embedded anomaly. It seems likely therefore that there were other sources of redundancy which provided sufficient contextual constraint to permit construction of appropriate meaning but not the precise word required. If unknown words are sufficiently contextually constrained and readers processing strategies respond to such redundancy, appropriate meaning might well be constructed for text segments regardless of the occurrence of unknown words in them. It is necessary therefore, to establish not only that contextual processing occurs but also whether the extent to which it occurs constitutes a significant parameter of individual differences among readers. In addition to differences in the amount of use made of this processing it is also possible that efficient readers apply such a strategy differentially according to the relative importance of the segment to overall text comprehension.

d. Contextual Processing and Comprehension - Individual Differences Related to Reading Proficiency

The Kameenui et al (1982) study showing increased comprehension for the group with the texts containing redundant unknown words over the group who read texts without the redundancy demonstrates that readers do use redundancy in meaning construction. Further support for this is found in the miscue studies (Clay, 1968, 1969; Goodman and Burke, 1973; Weber, 1973; Au, 1977; Cambourne and Rousch, 1979; Leslie, 1980) which indicate that in oral reading there are frequent discrepancies between what appears in print and the oral rendition. These errors or "miscues" are common and usually (especially in the case of good readers) do not constitute any semantic or syntactic disruption to the text. Various research paradigms have been used to investigate the relative sensitivity of readers of varying degrees of proficiency to contextual constraint. Pearson and Studt (1975) and Willows and Ryan (1981) used cloze tasks while Isakson and Miller (1978) used embedded semantic disruption in texts. The present study however, is not concerned simply with sensitivity to contextual constraint but rather with the extent to which readers actually use contextual constraint when they encounter unknown words. An indication of this may be seen in the occurrence of miscues which are as semantically and syntactically appropriate in the passage as the unknown words, or in the frequency with which inappropriate miscues are subsequently corrected.

On these criteria there is a fair amount of evidence to suggest that in constructing meaning, good readers utilize context more efficiently than poor readers (Goodman and Burke, 1973; Cambourne and Rousch, 1979). These studies show that good readers exhibit miscue patterns which have higher proportions of meaningful miscues while poor readers produce miscue patterns which have higher proportions of meaning loss miscues. In these studies however, the categorization of subjects according to reading ability was done on the basis of teacher judgment or standardized tests before the miscue data were collected. There was no attempt to relate miscue patterns to subjects' comprehension of the passage actually read. Hence, while these studies might well establish an association between miscue patterns and proficiency in reading, they do not provide direct evidence about the relationship between miscue patterns produced during oral reading and comprehension of the passage read.

The few studies which have addressed this issue have produced contradictory or inconclusive results. Beebe (1980) using fourth grade good readers found that the percentage of acceptable miscues and the percentage of corrected miscues successfully predicted comprehension as measured by a retelling of the passage read. In an informal study with poor elementary school readers Englert and Semmel (1981) found that four miscue categories (meaning similar, meaning different/syntactically correct, meaning different/syntactically incorrect, and self correction) failed to correlate with or predict comprehension. Only 'nonsense' miscues had a significant effect in predicting comprehension. The authors concluded that, in their population, "better comprehenders did not produce a higher percentage of meaningful or a lower percentage of non meaningful miscues" (p.279). Nevertheless there was some predictive value in the "nonsense miscues" element of the miscue pattern. Pflaum (1980) also found that phonic cue use and proportion of meaning change errors predicted the comprehension scores of poor readers of about 10-11 years of age. However, in contrast to the Beebe study, Pflaum found that for a group of average to proficient readers...

> the type and extent of their errors had no impact on their comprehension; less than 1 percent of the variance was accounted for by oral reading. (Pflaum, 1980, p.235)

A similar conclusion might be drawn from a study conducted by Kendall and Hood (1978). They established two groups of disabled readers. One group scored low on word knowledge and high on comprehension on standardized tests (HiCLoWR) and the other group scored low on comprehension and high on word knowledge (LoCHiWR). The researchers compared the oral reading behaviour and comprehension (as measured by post questions) of the two groups on grade three and grade five stories. Contrary to expectation the high comprehenders made many more contextually inappropriate errors than the low comprehenders. Despite this, the percentage of correctly answered questions was very similar for both groups and indeed on the grade three story, comprehension was very high. The relationship between the quality of errors made during oral reading and comprehension of the passage read remains unclear.

This lack of clarity has been acknowledged by Goodman and his colleagues.

> Further, it is noted in the manual of the Reading Miscue Inventory (Y. Goodman and Burke, 1972) that there are times when the reader's understanding of the material as determined by the Retelling Score does not complement the Comprehension Pattern profile. Specifically, there are readers who demonstrate good understanding of the selection, but whose miscue patterns indicate a large percentage of comprehension loss. By contrast, there are also readers who demonstrate minimal understanding of the passage, but whose miscues indicate a minimal loss in comprehension. (Wixon, 1979, p.171)

But does this mean that readers may encounter unknown words for which they cannot construct meaning and yet demonstrate adequate understanding on measures of whole text comprehension? Goodman and his colleagues apparently believe not.

> ....there are at least three types of readers who can produce a Comprehension Pattern which shows a minimum of 70 percent loss but whose retelling score is more than 40 points. For one type of reader this phenomenon suggests that the subject matter of the material is so well known by the reader that he is able to depend on background knowledge even when his miscues are disruptive of meaning.... A second type of reader has become very effective at reading picture clues and is able to supply the needed information from that source ..... A third type of reader is one who is

not concerned that oral reading sound like language. He, therefore, does not correct his miscues orally, and this results in many unacceptable sentences. However, this reader must be doing a good bit of silent correcting... (Y. Goodman and Burke, 1972, pp.115-116 - emphasis added)

According to Goodman (1976) it is not necessary to "know" words or identify them efficiently in order to comprehend texts but he does imply that adequate overall comprehension involves the construction of appropriate focal meaning for text segments containing previously unknown words.

> In some cases, of course, the reader may form a fairly accurate definition of the word, even if he never recognizes it (that is matches it with a known oral equivalent) or pronounces it correctly. The reader achieved that with the word "typical" which occurred several times in the story. Throughout his reading he said "topical". When he finished reading, a check of his comprehension indicated that he knew quite well the meaning of the word. This phenomenon is familiar to any adult reader. Each of us has many well defined words in our reading vocabulary which we either mispronounce or do not use orally. (Goodman, 1976, p.501)

Goodman and Gollasch (1980) have shown that unknown words deliberately omitted by some readers during oral reading were nevertheless semantically coded and their underlying concepts were represented in retellings of the passage. This can only occur, of course, if there is sufficient redundancy within the text to permit it and if the reader is able to make use of such redundancy. Apart from such examples drawn from a small number of test protocols, however, there seems to be no evidence based on substantial research data to support Goodman's "silent correcting" hypothesis, nor is it known whether this is more characteristic of good readers than poor readers. One aim of the present study is to obtain empirical data relevant to a systematic investigation of this issue.

e. The Relative Salience of Unknown Words, Processing Strategies and Comprehension

As noted earlier, Freebody and Anderson (1981) contrasted the effects of unknown words in important locations in the text with those of unknown words in unimportant locations and found clear effects on summary recall. Those who received the "unimportant" version produced more adult like summary recalls. It has also been noted that the researchers' substitution procedures greatly reduced the possibility of redundancy effects, especially in the important version. Freebody and Anderson explained the results by speculating that difficult words are highly visible to the reader and s/he will avoid trying to process these deeply without losing the main themes of the text - the minimal effort principle. Readers then, usually skip difficult words. But if they do this with important words they fail to maintain coherent meaningful connections in the text and comprehension suffers. If readers skip unimportant words however, the gist of the story is not affected and there is little impact on global comprehension. Such a hypothesis seems plausible and there is some support for the view that good readers are more likely to skip unknown words (Leslie, 1981). Goodman and Burke (1972) looked at readers of low, average and high proficiency in grades 2, 4, 6, 8 and 10. They found that low proficiency readers showed a developmentally increasing willingness to settle for producing a nonword rather than omitting but this pattern was not evident among average and high proficiency readers.

Although McKeown et al. (1983) did not specifically contrast unknown words in important locations with unknown words in unimportant locations, they did construct passages such that half the difficult words were in central propositions and half in noncentral propositions within the one text. An experimental group of year four pupils had been systematically and thoroughly taught the meanings of the "unknown" words. The experimental group was superior to the control groups in story recall, but the magnitude of the difference between experimental and control groups varied across centrality. Experimental groups' superiority was relatively greater in recall of central rather than non central information. This supports the hypothesis of Freebody and Anderson only in part. The unknown words in central propositions were highly disruptive for the control group and skipping them produced a significant decrement in comprehension. However for noncentral propositions the comparison between the control group and experimental groups is like comparing unknown words in unimportant locations with easy or known words in unimportant locations. If the "skipping" hypothesis was valid, one would expect the control group to recall this non central information considerably less well than the experimental group due to the disruptive effects of skipping unknown words. However this was not the case. Why didn't the unknown words have greater impact on recall of this noncentral information? Research dealing with the effects of text organization on memory suggests that it is because these low level propositions are not deeply processed and due to their relative unimportance have a low probability of recall anyway, hence the presence of difficult words has little disruptive impact. An investigation of the effects of unknown words on comprehension then, must include consideration of the effects of the semantic organization of text on comprehension and recall.

4. Semantic Organization of Text and Comprehension

a. Systems of Text Analysis

The semantic organizational structure of text specifies both the logical connections among ideas in text and the subordination of some ideas to others. Various methods of text analysis have been developed which provide a semi-algorithmic method of determining the precise form of this structure in particular texts. For this purpose story grammars have been devised which are an approximate representation of the internal story structure which influences processing when reading or listening to single protagonist narratives. (Mandler and Johnson, 1977; Rumelhart, 1975; Thorndyke, 1977; Stein and Glenn, 1979)

> This internalized story structure involves invariant categories which foster reader instantiations. Generally, these categories are hierarchical and include the equivalents of setting, event structure, episodes, initiating event for episode, a reaction to the initiating event, internal and external response components to the reaction, attempt and consequent components and a final resolution. (Tierney and Mosenthal, 1980, p.31)

More recently Omanson (1982) developed a system that classifies the content of narratives as central, supportive or distracting. Central content describes the gist or skeletal plot of a narrative. Supportive content adds detail that elaborates on this skeletal plot and distracting content adds detail which disrupts it.

Expository prose can be analysed according to Meyer's (1975) system based on relationships she defines as predicates. While lexical predicates dominate the arguments of a sentence, rhetorical predicates define the general organization of a text. They relate ideas that typically extend across sentence boundaries. Rhetorical predicates can dominate a paragraph, and in turn be dominated by the rhetorical predicate of a chapter which is, in turn, dominated by the rhetorical predicate which dominates the whole book. Some of the most frequently mentioned rhetorical predicates are: response, which relates a problem and its solution; adversative, which often compares or contrasts; covariance, which relates cause and effect; and attribution, which lists characteristics. A series of rules hierarchically arranges content into tree structures showing how some ideas in text are subordinate to others.

A system devised by Kintsch (1974) has been applied to narrative and expository material. Basic terms of Kintsch's system are the proposition, or idea unit, and the text base, or list of connected propositions constituting the text. The propositions are related to each other by two rules. Firstly, one proposition is connected to another if the two propositions share an argument,which is the concept represented by one or more words in the text. Secondly, propositions are ordered according to their relative importance in the text. Thematic propositions which tend to correspond to what has been termed main ideas, are Level 1 propositions and as such are high in the content hierarchy of propositions. Propositions which share an argument with a Level 1 proposition are directly subordinated to it and are termed Level 2 propositions and so on. Lower level propositions correspond to details in the text.

b. The Effect of Text Structure on Recall

The systems of text analysis can also be applied to the recall protocol provided by a reader allowing for comparison between the semantic organizational structure of a text and that used by a reader in retelling the text content. There is now substantial evidence that the hierarchical structure of the text influences the extent and type of information recalled and, further that it enables one to predict where distortions, omissions and additions in recall will occur.

Despite the differences between the techniques of analysis used by researchers who have focussed on simple stories (Rumelhart, 1975; Thorndyke,1977; Mandler and Johnson, 1977; Stein and Glenn, 1979) and those who have given attention to expository texts (Meyer and McConkie, 1973; Meyer,1975; Clements, 1975; Marshall and Glock, 1978-79; Bartlett, 1978, 1980; Taylor, 1980) it can be argued that there is a significant area of commonality in the results which have emerged. It has been demonstrated that propositions high in the propositional hierarchy are recalled better than low level propositions. Meyer (1975) constructed two passages with the identical target paragraph embedded in each. The paragraph was placed high in the content structure of one passage and low in the other, but its serial position was the same. She found that the two passages as a whole were recalled equally well but the recall of the target paragraph differed as a function of height. The differences in recall between the two paragraphs increased with a weeks' delay. Similar results were found by Clements (1975) who examined the effects of "staging" on prose recall.

Rumelhart (1975) predicted that information high in his tree structures for stories would be recalled more often than information (details) in lower branches. Reder (1980) reported that Rumelhart considered the data of Thorndyke (1977) and Meyer (1975) as support for his basic idea. She added that Rumelhart also collected data of his own which looked at recall of stories after subjects had summarized them. He found that recall was highly correlated with level in the representation hierarchy. His results were similar to Meyer's: information high in his tree structure was recalled as was information high in her content structure. Rumelhart also found evidence of the same sort of clustering as Meyer reported in her earlier studies. Subjects tended to recall from a passage groups of units that were related to one another in the hierarchical structure. Meyer found that, if a particular unit was recalled, then nearly 70 percent of the time the unit directly above it in the structure was also recalled. Reder (1980) reported higher conditional probabilities in the Rumelhart study. Waters (1978) also found that the level of a proposition in the hierarchy similarly affected children's recall of prose and that a proposition was more likely to be recalled when the superordinate proposition to which it was connected was also recalled. The top level structures or patterns of superordinate ideas appear to provide readers with a systematic organized strategy for encoding information from text and retrieving it from memory.

Meyer, Brandt and Bluth (1980) showed that ninth grade readers whose recall protocols employed the same top level structures as the authors of the texts they read, remembered more from reading than readers who did not use the same organization as the text. Taylor (1980) showed that superior recall on the part of sixth grade good readers appeared to be related, in part, to their greater use of text structure in organizing recalls as opposed to sixth grade poor readers and fourth grade good readers.

c. Differential Effects of Prose Structures on Recall of Good and Poor Readers

The degree of sensitivity a reader has to the various organization patterns of superordinate ideas occurring in prose passages influences the extent to which (s)he will be able to recall information contained therein. A number of studies based on a variety of text analysis systems have differentiated among good and poor readers in these terms.

Smiley et al. (1977) investigated the difference in adolescent good and poor readers' recalls of four levels of idea units after they had listened to one passage and read another passage of the same type and difficulty level. Good readers were more sensitive to the degrees of importance of idea units than were poor readers. Eamon (1978-79) obtained similar results with college students. Tierney, Bridge and Cera (1978-79) working with third grade children found that poor readers differed from good readers:
(i) in the extent to which they recalled complete propositions,the propositional structure, and the interpropositional structure,and
(ii) in their ability to generate interpropositional structure.
Taylor's (1980) study cited above, demonstrated superior recall on the part of sixth grade good readers

and indicated this was partly due to their greater use of text structure in organizing recalls.

d. Unknown Words, Text Structure and Recall

A common feature of these studies has been to eliminate consideration of possible relationships between decoding difficulty and ability to utilize the top level organization in texts. The Tierney, Bridge and Cera (1978-79) study specifically excluded poor readers "with 16 percent or more miscues which were judged by the researchers as interfering with meaning" (p.544). In the Taylor (1980) study two passages were used which were identical except that one contained more difficult words which were synonyms of the words in the easier passage. " The easier version of the passage was created to avoid handicapping the less skilled readers with an inequitably difficult passage which may have caused decoding problems." (Taylor, 1980, p.403)

A study by Vipond (1980) did consider the possible interaction between difficulty in decoding unfamiliar words and text organization on comprehension and that there might be a differential effect for good and poor readers. College students were presented with stories containing either easy or unfamiliar words and with paragraph order either normal or rearranged. It was hypothesized that if word coding and global comprehension (macrocomprehension) competed for the same cognitive resources a word difficulty by macrostructure interaction should be observed. No such interaction was found. There were main effects for word difficulty and paragraph order.

There appear however to be several weaknesses in the study, some of which were acknowledged by Vipond who warned that "the conclusion of 'non-interactiveness' should be treated cautiously". Students were divided at the median into groups of skilled and less skilled readers on the basis of their twelfth grade English marks - "a coarse but effective measure of verbal ability". It was expected that, since earlier experiments suggested micro variables were more effective predictors of the comprehension of poor readers than good readers, poor readers would be more harmed by dificult words. This was not the case. Both groups were affected equally. Furthermore, even low ability college students have coherent schemas for stories and are able to take advantage of good macrostructure when it is present. The structural location of the difficult words was not controlled and no account was taken of the extent of their redundancy within the text. In considering "interactiveness" in the sense referred to by Stanovich (1980), where "comprehension processes are meshed with recognition processes in such a way that the former can accommodate to changes in the latter", it is important to define difficulty in terms of access to word meaning, to distinguish this as being accomplished through direct lexical access or through contextual processing, and to take account of the structural location and frequency of such difficulty in determining its relationship to text comprehension measures.

There remains then a dearth of information regarding the possible interactive effects among unknown words or meaning disruptive miscues, contextual processing and the use of text structure characteristics on reading comprehension and the relevance of these effects in distinguishing among levels of proficiency in reading.

> Unfortunately few studies have sought to disentangle problems in the organization of text from problems in the access of individual word meanings. (Gollinkoff, 1975-76, p.638)

5. Integrating Word and Text Level Processing

In the absence of specific task demands the processing of good readers is directed toward determining the gist of the text and efficiency in doing this is greatly influenced by their sensitivity to the conventions of various modes of text organization which indicate the relative importance of text elements. Efficient readers have an overriding concern for the establishment of overall meaning at this global, macro or thematic level and they subordinate lower level processing goals to this. Stanovich (1980) suggested that "it may be that good readers use context more efficiently to monitor comprehension, whereas poor readers use it to aid word recognition" (p.59). Schwartz and Stanovich (1980) further suggested that the use of contextual information to make word recognition versus thematic decisions required competing processes and Schwartz (1980) proposed that an important difference between skilled and less skilled readers might rest in the flexibility with which they can co-ordinate those processing goals. He asked second grade and fifth grade pupils and adults to read short passages with the intention of recalling them. However he forced the subjects' attention to different levels of analysis while reading by incorporating three secondary orienting tasks differing in the amount of semantic processing required. One task involved choosing the more appropriate from two words at various points in the text; the second involved reading selected words in which the letters were printed in reverse order while the third required readers to match letters in word and nonword pairs at various points in the text. The recall of the younger readers was significantly affected only by the third task which focussed attention on orthographic information. This indicates that less efficient readers may focus semantic processing strategies at the focal level. Adults' recall was disrupted by all three secondary orienting tasks suggesting that normal processing centered on criterion decisions at a thematic level. "That is, processing of letters, words and phrases are subordinate to decisions related to the idea structure in the passage" (Schwartz, 1980, p.447).

It would seem then, that if good readers encounter unknown words the amount of processing capacity allocated to the establishment of this focal meaning will be largely influenced by the utility of this word in maintaining access to the gist of the passage. If it is located in an insignificant section then it may be "skipped" without any attempt at deep processing and hence conservation of processing capacity directed toward maintenance of thematic coherence. If such words were highly redundant, contextual processing may allow a meaning to be constructed . This would also not consume processing capacity since good readers are responsive to contextual constraint in meaning construction. Such text segments are less likely to appear in recall due to their low salience and hence disruption at this level would not affect macro or gist recall. The segment may be more likely to appear in measures of total recall if contextual meaning for the unfamiliar word is constructed.

On the other hand if good readers encounter unfamiliar words which are central to the maintenance of the global meaning of the passage they are much more likely to construct appropriate focal meaning if the degree of contextual constraint allows it. This would not use extra processing capacity and the gist of the passage would be maintained. If the context does not allow the construction of focal meaning for unfamiliar words then the reader will be forced to attempt some form of inferential processing to maintain coherence. This is more likely to direct processing capacity away from maintaining the gist of the passage and result in a decrement in macrorecall. In this case the failure to recall superordinate propositions as a processing framework may also result in lower scores on measures of total recall.

Poor readers are not as sensitive to the semantic organization structure of texts and their recalls are not as well organized in terms of a clear representation of the gist of the passage. They are more likely to focus attention on lower level processing goals (Schwartz, 1980, p.435) and are less likely to use contextual processing in establishing even focal meaning. Paris and Meyers (1981) in a study on metacognitive orientation in reading concluded that poor readers adopted decoding rather than comprehension goals during reading and were less accurate in applying monitoring skills toward resolving comprehension failures. Leslie (1980) clearly illustrates the difference between good readers and poor readers in this respect.

> ... several below average readers who were unsuccessful at decoding the word "giraffe" in the first sentence continued throughout the story to attempt to decode it, each time producing a graphically similar response and sounding as though they were unable to use semantic information from the first sentence which described a giraffe. Specifically it is inferred they did not use "has a small head on top of a very long neck"..... Whether this semantic information was insufficient to aid them in decoding or whether they didn't attempt to use the information cannot be determined. However this

> behaviour is contrasted to the responses of the average readers who were also unable to recognize "giraffe" in the first sentence (they skipped it) but read it correctly in subsequent sentences. (Leslie, 1980, p.147)

Poor readers then, are unlikely to use contextual processing to construct meaning for unknown words regardless of whether such words are central to the gist of the passage or quite peripheral to it. Determining the relative influence of these unknown words on comprehension is more problematic. It might be assumed that if poor readers encountered unknown words at locations central to the gist of the passage then there would be a clear decrement in comprehension. However this may not be apparent in comprehension scores since poor readers are less likely to process such information to sufficient depth that it is available for response to comprehension measures even when it does not contain unknown words. It is essential then, to control for the effects of text organization on comprehension.

It is well established that sensitivity to text structure significantly influences recall and, at least in the case of expository prose, differentiates between good readers and poor readers. (Eamon, 1978-79; Tierney, Bridge and Cera, 1978-79; Taylor, 1980; Bartlett, 1980; Meyer, Brandt and Bluth, 1980; McGee, 1982) A closer examination of the data cautions against the asssumption that reading ability and use of text structure are so highly correlated as to make separate consideration of these factors redundant in the present study. Taylor (1980) found that only 59 percent of sixth grade good readers followed the organization of the test passage and 18 percent of the poor readers also demonstrated this ability. Very few studies have examined differences between good and poor readers in the ability to use story organization in processing and recalling narrative text. Studies which have been concerned with developmental differences in sensitivity to story structure (Mandler, 1978; Mandler, Scribner, Cole and Deforest, 1980; Stein, 1979; Whaley, 1981) have found consistent patterns of responses from very young children through to adults, indicating that they all appeared to use the same schema.

Very few studies have specifically examined the relationship between reading ability and story recall, as defined by a story grammar (Weaver and Dickinson, 1979; 1982; Dreher and Singer, 1980; Summers, 1980; Graybeal, 1981; Wilkinson, 1982). All of the studies compared good readers and poor readers in terms of the total amount recalled, however results showed no clear agreement. Weaver and Dickinson (1979,1982) and Summers (1980) found no difference in the total amounts of information recalled while Dreher and Singer (1980), Graybeal (1981) and Wilkinson (1982) did find significant differences.

Only three studies related reading ability to organization of recall within story grammar categories (Weaver and Dickinson, 1979; 1982; Graybeal, 1981; Wilkinson, 1982). The results of these studies dealing with story organization in recall are also equivocal. Graybeal (1981) found no difference between groups of language impaired and normal pupils, in the components of story grammar recalled or in the order in which they were recalled. Weaver and Dickinson (1979, 1982) found that a sub group of poor readers, whose verbal IQ scores were less than their performance IQ scores (V<P) on the Wechsler Intelligence Scale for Children, recalled significantly less in three story grammar categories (Major Setting, Direct Consequence and Minor Setting) than poor readers whose verbal IQ was greater than their performance IQ (V>P). In both cases the order of story category recall was similar to that of good readers. Weaver and Dickinson concluded that:

> ...for some disabled readers (V<P) but not for others (V>P), differential sensitivity to elements of stories may not be sufficiently developed and, therefore, inadequate story schemata may indeed be one source of the overall poorer recall among the V<P disabled readers. (Weaver and Dickinson, 1979, p. 168)

Wilkinson (1982) classified poor readers into four subgroups on the basis of their results on a number of standardized and informal reading tests. The pupils subsequently heard and recalled three simple stories. Wilkinson's poor readers in subgroup one showed poorer recall on all categories relative to the good readers with all differences being significant except for <u>minor setting</u>. Subgroup four showed significant category differences for <u>major setting</u>, <u>reaction</u>, <u>minor setting</u> and <u>internal</u>

response. The order of category recall salience was not consistent with the order of recall for good readers.

In the three studies discussed above, the test stories were read to the children and their oral recalls were tape recorded and later transcribed, so the children's difficulties were not related to problems in dealing with written language. Nor were the difficulties confined to a particular age group. Graybeal (1981) found no differences in recall organization with seven to nine year old children yet Wilkinson (1982), using subjects of about the same age (third grade children), noted significant differences. Weaver and Dickinson (1979,1982) found differences in the recall organization of subgroups of poor readers at grade five level and grade seven level. These authors claimed (Weaver and Dickinson, 1979,p.162) that their research corroborated earlier results by Smiley, Oakley, Worthen, Campione and Brown (1977) whose recall measures did not make use of story grammar categories. Smiley et al. (1977) used empirical methods to distinguish four levels of importance among idea units in simple stories. Their research compared good and poor readers at year seven level and found that poor readers recalled significantly less information from important story levels than did good readers. These differences between good readers and poor readers were found when pupils listened to the stories as well as when they read the stories. The consistency of the findings of this research with the results of the Weaver and Dickinson study are of further interest because Smiley et al. (1977) required pupils to write out their recalls while in the former study recalls were obtained orally. This indicates that the mode of pupil recall did not seem to affect the pattern of results. The latter study and the scant story grammar research in this area suggests that some poor readers have difficulty in following the organization of simple stories. However, the evidence suggesting a significant difference between good readers and poor readers in ability to use a conventional story schema is neither extensive nor conclusive and may well relate to only some subgroups of poor readers.

Since most readers, even at early ages and at different levels of proficiency, utilize a well developed story schema, the use of well organized stories (according to conventional story grammars) would maximize the likelihood that variation among subjects' performances in utilizing text structure would be due to experimental treatments. Initial differences among readers with respect to sensitivity to text structure would be minimized by the use of well organized stories. The effect of remaining differences with respect to this factor could be controlled statistically by including in the analysis as a covariate, pupils' ability to follow story structure as measured by recall after an aurally processed story.

6. Research Questions and Hypotheses

In order to establish empirical evidence to support an account of the interrelationships among the effects of unknown words, redundancy in text, use of contextual processing and ability to follow story organization, on the reading comprehension of good and poor readers, the following research questions need to be addressed:

1. Do good readers differ from poor readers in utilizing redundancy in text to construct meanings for unknown words?
2. Are good readers and poor readers more likely to use redundancy in text to construct meanings for unknown words which are salient in text compared with unknown words which are peripheral?
3. How does the degree of redundancy and salience of unknown words in stories affect the ability of good and poor readers to follow story organization?
4. How does the degree of salience and redundancy of unknown words in stories affect the total amount recalled by good and poor readers?

These have been elaborated and translated into research hypotheses as detailed below:

Research Question 1

Do good readers differ from poor readers in utilizing redundancy in text to construct meanings for unknown words?

1.1 Do good readers make use of redundancy within text to access meanings of unknown words which are not part of their receptive or productive vocabularies?

1.2 Do poor readers make use of redundancy within text to access meanings of unknown words which are not part of their receptive or productive vocabularies?

1.3 Do good readers make more use of redundancy within text than poor readers to access the meanings of unknown words which are not part of their receptive or productive vocabularies?

Research Hypotheses:

1.1 Good readers who answer questions testing the meaning of unknown words which are redundant in a story score higher than good readers who answer questions testing the meaning of unknown words which are not redundant in a story.

1.2 There is no significant difference in the number of correct responses given by poor readers to questions testing the meaning of unknown words which are redundant within a story, and the number of correct responses given by poor readers to such questions on unknown words which are not redundant in a story.

1.3 Good readers score higher than poor readers in answering questions designed to test the meanings of unknown words which are redundant within a story.

Research Question 2

Are good readers and poor readers more likely to use redundancy in text to construct meanings for unknown words which are salient in text compared with such words which are peripheral?

2.1 Are good readers more likely to use redundancy to access the meanings of words which are not part of their receptive or productive vocabularies when these words are salient to the gist or macro structure of the story than when they are peripheral?

2.2 Are poor readers more likely to use redundancy to access the meanings of words which are not part of their receptive or productive vocabularies when these words are salient to the gist of the story than when they are peripheral?

Research Hypotheses:

2.1 Good readers who answer questions testing the meaning of unknown words which are redundant and salient to the gist of a story (SR) score higher than good readers who answer such questions on words which are redundant and peripheral to the story (PR).

2.2 There is no significant difference between the scores of poor readers who answer questions testing the meaning of unknown words which are redundant and salient to the gist of the story (SR) and the scores of poor readers who answer such questions on words which are redundant but peripheral to the story (PR).

The hypotheses relating to research questions one and two deal with the effects of redundancy and salience of unknown words on the ability of good and poor readers to construct meanings for these unknown target words. The expected overall pattern of effects of the relative salience and redundacy of unknown words on the ability of good and poor readers to construct meanings for these target words is summarized in Figure 1.

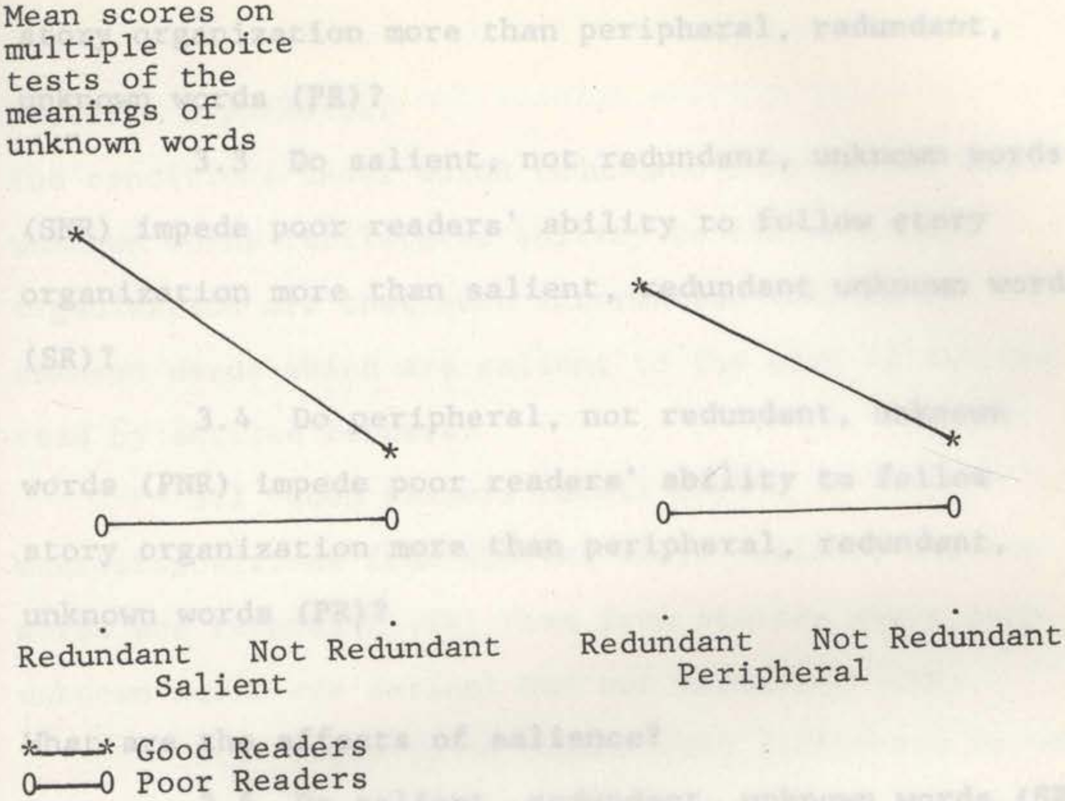

Figure 1. Predicted pattern of mean scores for tests of the meanings of salient and peripheral target words.

Research Question 3

How does the degree of redundancy and salience of unknown words affect the ability of good and poor readers to follow story organization?

What are the effects of redundancy?

3.1 Do salient, not redundant, unknown words (SNR) impede good readers' ability to follow story organization more than salient, redundant, unknown words (SR)?

3.2 Do peripheral, not redundant, unknown words (PNR) impede good readers' ability to follow story organization more than peripheral, redundant, unknown words (PR)?

3.3 Do salient, not redundant, unknown words (SNR) impede poor readers' ability to follow story organization more than salient, redundant unknown words (SR)?

3.4 Do peripheral, not redundant, unknown words (PNR) impede poor readers' ability to follow story organization more than peripheral, redundant, unknown words (PR)?

What are the effects of salience?

3.5 Do salient, redundant, unknown words (SR) impede good readers' ability to follow story organization more than peripheral, redundant, unknown words (PR)?

3.6 Do salient, not redundant, unknown words (SNR) impede good readers' ability to follow story organization more than peripheral, not redundant, unknown words (PNR)?

3.7 Do salient, redundant, unknown words (SR) impede poor readers' ability to follow story organization more than do peripheral, redundant, unknown words (PR)?

3.8 Do salient, not redundant, unknown words (SNR) impede poor readers' ability to follow story organization more than peripheral, not redundant, unknown words (PNR)?

Research Hypotheses:

The conditions under which redundant information about unknown words facilitates ability to follow story organization are that such information relates to unknown words which are salient to the gist of stories read by skilled readers.

3.1 Good readers recall more macropropositions from stories where salient, unknown words are redundant (SR) than from stories where such unknown words are salient but not redundant (SNR).

3.2 There is no significant difference in the number of macropropositions recalled by good readers from stories where unknown words are redundant and peripheral (PR) compared with stories where unknown words are not redundant and peripheral (PNR).

3.3 There is no significant difference in the number of macropropositions recalled by poor readers from stories where salient words are unknown and redundant (SR) compared with stories where salient, unknown words are not redundant (SNR).

3.4 There is no significant difference in the number of macropropositions recalled by poor readers from stories where peripheral, unknown words are redundant (PR) compared with stories where peripheral, unknown words are not redundant (PNR).

Additional research hypotheses relating to research question three deal with the effects of the relative salience of unknown words and the combined effects of salience, redundancy and reading ability on recall of gist information. Unknown words which are salient to story organization are expected to impede the ability to follow the story more than unknown words which are peripheral to the story. When these unknown words are redundant however, it is thought that their relative salience has no effect on the ability of good readers to follow the story. Four specific hyotheses were formulated:

3.5 There is no significant difference in the number of macropropositions recalled by good readers from stories where unknown words are salient and redundant (SR) compared with stories where unknown words are peripheral and redundant (PR).

3.6 Good readers recall more macropropositions from stories where unknown words are peripheral and are not redundant (PNR) compared with stories where unknown words are salient and not redundant (SNR).

3.7 Poor readers recall more macropropositions from stories where unknown words are redundant and peripheral (PR) compared with stories where unknown words are redundant and salient (SR).

3.8 Poor readers recall more macropropositions from stories where unknown words are peripheral and not redundant (PNR) compared with stories where unknown words are salient and not redundant (SNR).

The predicted overall pattern of effects of the relative salience and redundancy of unknown words on the macrorecall of good and poor readers is summarized in Figure 2.

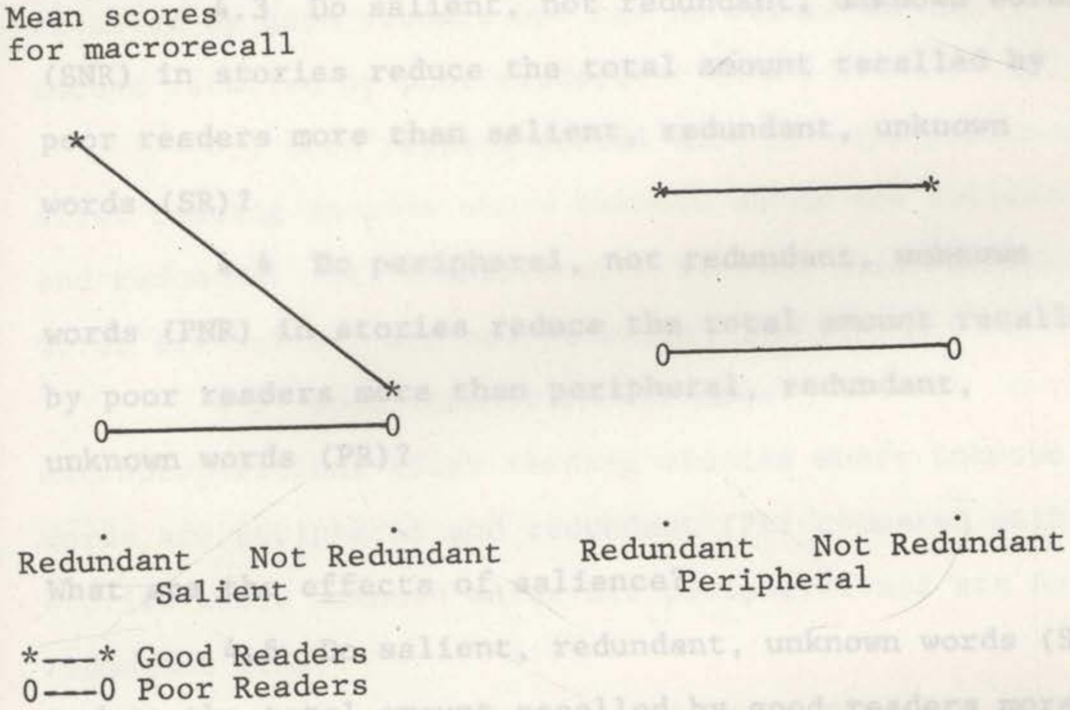

Figure 2. Predicted effects of salience and redundancy of unknown words on macrorecall of good and poor readers.

Research Question 4

How does the degree of redundancy and salience of unknown words in stories affect the total amount recalled by good and poor readers?

What are the effects of redundancy?

4.1 Do salient, not redundant, unknown words (SNR) in stories reduce the total amount recalled by good readers more than salient, redundant, unknown words (SR)?

4.2 Do peripheral, not redundant, unknown words (PNR) in stories reduce the total amount recalled by good readers more than peripheral, redundant, unknown words (PR)?

4.3 Do salient, not redundant, unknown words (SNR) in stories reduce the total amount recalled by poor readers more than salient, redundant, unknown words (SR)?

4.4 Do peripheral, not redundant, unknown words (PNR) in stories reduce the total amount recalled by poor readers more than peripheral, redundant, unknown words (PR)?

What are the effects of salience?

4.5 Do salient, redundant, unknown words (SR) reduce the total amount recalled by good readers more than peripheral, redundant, unknown words (PR)?

4.6 Do salient, not redundant unknown words (SNR) in stories reduce the total amount recalled by good readers more than peripheral, not redundant, unknown words (PNR)?

4.7 Do salient, redundant, unknown words (SR) reduce the total amount recalled by poor readers more than peripheral, redundant unknown words (PR)?

4.8 Do salient, not redundant, unknown words (SNR) reduce the total amount recalled by poor readers more than peripheral, not redundant, unknown words (PNR)?

Research Hypotheses:

The presence of redundant information relating to unknown words in text increases the total amount recalled by good readers but has no effect on the amount recalled by poor readers.

4.1 Good readers recall more micropropositions after reading stories where unknown words are salient and redundant (SR) compared with stories where unknown words are salient and not redundant (SNR).

4.2 Good readers recall more micropropositions after reading stories where unknown words are peripheral and redundant (PR) compared with stories where unknown words are peripheral and are not redundant (PNR).

4.3 There is no significant difference in the number of micropropositions recalled by poor readers after reading stories where unknown words are salient and redundant (SR) compared with stories where unknown words are salient and not redundant (SNR).

4.4 There is no significant difference in the number of micropropositions recalled by poor readers after reading stories where unknown words are peripheral and are redundant (PR) compared with stories where unknown words are peripheral and are not redundant (PNR).

The remaining research hypotheses deal with the effects of the relative salience of unknown words and the combined effects of salience, redundancy and ability on the total amount of information recalled. Unknown words which are salient to story organization are expected to reduce the total amount of information recalled from the story more than unknown words which are peripheral to the story. When these unknown words are redundant however, it is thought that their relative salience has no effect on the amount recalled by good readers. Four specific hypotheses were formulated:

4.5 There is no significant difference in the number of micropropositions recalled by good readers after reading stories where unknown words are salient and redundant (SR) and stories where unknown words are peripheral and redundant (PR).

4.6 Good readers recall more micropropositions after reading stories where unknown words are peripheral and are not redundant (PNR) compared with stories where unknown words are salient and are not redundant (SNR).

4.7 Poor readers recall more micropropositions after reading stories in which unknown words are peripheral and are redundant (PR) compared with stories where unknown words are salient and are redundant (SR).

4.8 Poor readers recall more micropropositions after reading stories in which unknown words are peripheral and are not redundant (PNR) compared with stories where unknown words are salient and are not redundant (SNR).

The predicted overall pattern of effects of the relative salience and redundancy of unknown words on the microrecall of good and poor readers is summarized in Figure 3.

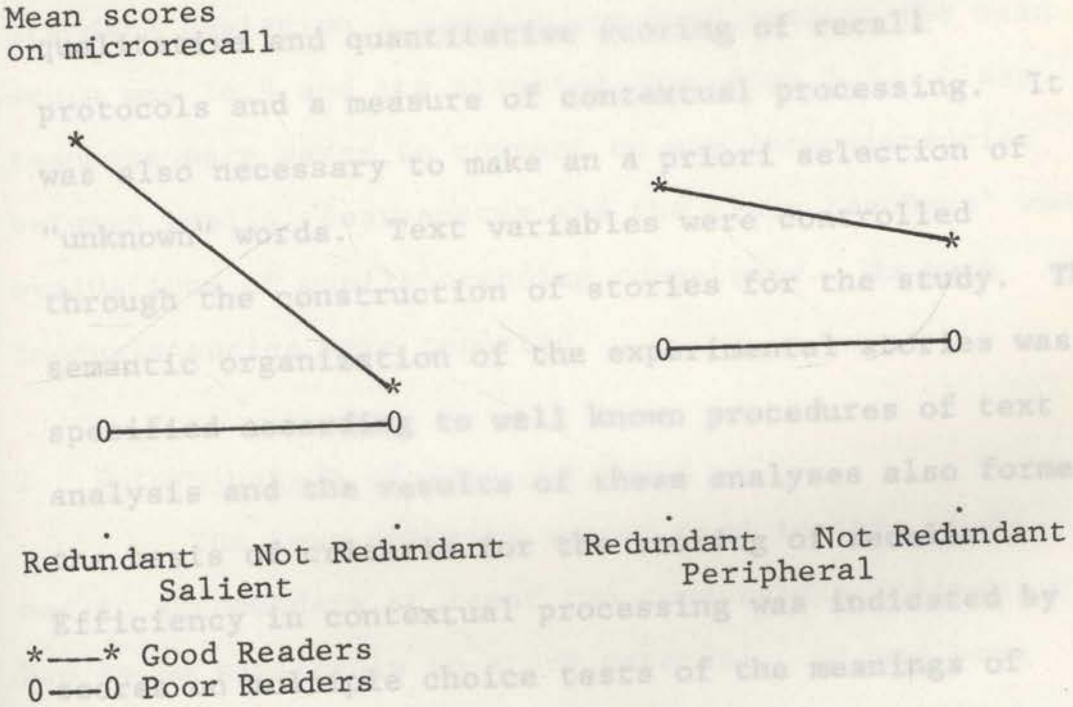

Figure 3. Predicted effects of salience and redundancy of unknown words on microrecall of good and poor readers.

CHAPTER III

RESEARCH DESIGN: METHODS AND PROCEDURES

The present study was designed in order to test hypotheses relating the effects of semantic organizational characteristics of text and individual differences in contextual processing to the quality and quantity of primary school children's oral recall after reading aloud stories containing unknown words. The hypotheses therefore required a method of specifying the semantic organization of texts, criteria for qualitative and quantitative scoring of recall protocols and a measure of contextual processing. It was also necessary to make an a priori selection of "unknown" words. Text variables were controlled through the construction of stories for the study. The semantic organization of the experimental stories was specified according to well known procedures of text analysis and the results of these analyses also formed the basis of criteria for the scoring of recalls. Efficiency in contextual processing was indicated by scores on multiple choice tests of the meanings of unknown words administered after pupils' oral recall of the story. Consistent with the practice of earlier studies in this area, an intuitive selection was made of words thought to be unknown to the subjects. The difficulty of these words was further established by ensuring they were of low frequency of occurrence according to published word frequency lists. This process was facilitated by the selection of year five pupils for the study. Pupils at this stage were likely to have a reasonably wide reading vocabulary but as yet remain unfamiliar with low frequency words. The hypotheses further required a comparison of good and poor readers with respect to the effects of the variables being tested. Good and poor readers were therefore designated according to their scores on the Gap Reading Comprehension Test Form B (McLeod, 1977). For good readers the mean score was 37.3 and the standard deviation 1.7 while for poor readers the mean score was 16.3 and the standard deviation 2.7. Class teachers were asked to comment on any inconsistencies between pupils' test scores and the class teachers' own evaluations of pupils' reading competence. No such inconsistencies were reported.

1. Determination of Text Structure

The text analysis system used in this study had to accommodate at least two constraints. First, it had to be applicable to story material. It has been argued (Ch. II, part 5.) that the variability among readers in the use of a story schema to process and recall narrative texts is much less than the variability in using expository prose structures. The use of story material therefore offers the best prospect of controlling for the effect of the semantic organization of text on recall measures. The second constraint on the choice of a system of text analysis was that it had to specify the relative importance of idea units to the overall gist of the story in such a way that the degree of importance corresponded to the probability of recall. As previously noted (Ch. II, part 4b), there is substantial evidence that the hierarchical structure of the text influences the extent and type of information recalled (Meyer, 1975; Clements, 1975; Rumelhart, 1975; Kintsch et al., 1975). Six different means of examining text were reviewed by Tierney and Mosenthal (1980). Most of the systems reviewed failed to satisfy one or both of the criteria noted above. Either they were not applicable to story material or they did not specify the relative importance of idea units in a manner which corresponded to their probability of recall. The application of rhetorical prose structures (Meyer, 1975) and "mapped patterns" (Anderson, 1978) were limited to expository prose. Cohesion (Halliday and Hasan, 1976) and "event chain formulations" do not deal with the relative importance of text segments. Frederiksen's (1975, 1977) semantic and logical networks have been criticized by Reder (1980) who pointed out that his decomposition of words to semantic primitives focussed on complexity "at the wrong 'level' of understanding of a passage" and that a system established on this basis "does not seem viable as a representation for prose".

> ... a representation of an entire text should focus on the many higher order, complex relations that express the message of the passage, not the lower level complexities. Frederiksen's system seems devised for representing the relations within a sentence, not among sentences. The network has capacities for connecting propositions referentially and temporally, but apart from these, there is little in his system that seems concerned with the text level as opposed to the sentence level. (Reder, 1980, p.20)

The systems of text analysis which warranted further investigation with respect to the needs of the present study were Kintsch's (1974) propositional analysis and story grammars (Rumelhart, 1975; Mandler and Johnson, 1977; Thorndyke, 1977; Stein and Glenn, 1979). Omanson (1982) has also developed a system of analysing narrative material which specifies central, supportive and distracting content. Analysis of Omanson's procedure and story grammar suggests that these approaches do not define the idea units in text to a sufficient level of detail to ensure that the location of unknown words in their "important" idea units will be highly disruptive to the gist of the story. Kintsch's system does this and in its more developed form (Kintsch and Van Dijk, 1978) proposes a process model of comprehension indicating the manner in which the sequence of idea units (micropropositions) of varying levels of importance are processed by the reader and transformed into the gist (macropropositions) of the story.

a. Story Grammars

Both Omanson's (1982) scheme and the story grammars initially divide the text into content units consisting of one or more clauses, each containing a grammatical subject and predicate. It has been shown that certain story grammar categories (ie. major setting, initiating event and direct consequence) are more salient in recall than other categories (minor setting, internal response and reaction). (Mandler and Johnson, 1977; Stein and Glenn, 1979). This means that a relatively larger proportion of statements or content units from these categories appears in recall protocols. There is no attempt to specify in an a priori manner which particular statements from these categories are most likely to appear in recalls, much less which elements within the content units have high or low salience in recall. Some elements in "important" categories are not prominent in recall at all. Stein and Glenn (1979) illustrated this when they divided all of the content units in their stories into thirds according to how well they were recalled, from the third best remembered items to the third least remembered items. The proportion of each category recalled in each third was then determined. The proportions indicated that in "important" categories, such as the Initiating Event and the Attempt, nearly 40% and 50% respectively of the statements contained in those categories were not prominent in recall.

For the purpose of the present study it is essential to establish clearer guidelines to reduce the possibility that unknown words in supposedly important text segments are not actually located in important categories but in text segments which have low salience in recall. Even within the content units some text elements are relatively unimportant to the gist of the story.

The following content unit is central to the "Fox" story in terms of Omanson's (1982) system:

19. Central. "The fox saw two poachers coming down the road."

Central information is not a function of a story grammar category but is part of "a sequence of causally or purposefully connected events or states that carry the reader through the story" .... and ..."corresponds to the gist or plot of a story." Actually the essential information in content unit 19 above, is that the fox saw the poachers. The fact that there are two poachers and that they were "coming down the road" is much less significant. Indeed if unknown words occurred in these sections of this "central" content there is likely to be little impact on the gist of the story:

"The fox saw two poachers ambling down the byway."

The Kintsch system has greater potential for specifying this relativity of importance in the hierarchical levels of the microproposition list:

Proposition Level	Proposition level			
	1	2	3	4
1	SEE FOX POACHERS			
2		NUMBER OF POACHERS, TWO		
3		COME POACHERS		
4			LOCATION 3, DOWN THE ROAD	

Although story grammar category membership may be predictive of item saliency in recall, it has also been shown that the semantic content of text segments influences how well they will be recalled. Nezworski, Stein and Trabasso (1979) showed that the probability of recall of a specific structural part of a story (eg. internal response) varies with its semantic content and its relation to the plot. They found that the most frequently recalled statements were located in several different story grammar categories and that what distinguished better recalled statements from those poorly recalled was "goal relatedness". Omanson (1982) analysed the Nezworski et al. data according to his system and found all of the 120 best recalled statements were classified as central while only 18 percent of the poorly recalled statements were classified as central. Story grammar categories alone then, are not a sufficient basis for deciding on the importance of text segments to the gist of the story. Omanson (1982) provided further evidence that centrality largely accounted for the story category effect but even when centrality was statistically partialled out of his analysis, "there remained a highly reliable (p<.01) story category effect for each measure" (p.221). It would appear then, that story structure as well as semantic content determines the relative importance of text segments in comprehending stories. Kintsch and Van Dijk's (1978) development of the propositional analysis system toward a model of text comprehension suggests that the formation of the gist of a story is influenced by the "top down" application of a story schema in deriving essential information from the sequence of micropropositions hierarchically arranged on the basis of their semantic relations. Reder (1980) suggested that this account may be the only adequate process model which has been offered to explain how story grammars are involved in comprehension. Hence the Kintsch and Van Dijk (1978) model offers a theoretically defensible approach which meets the practical constraints of the present study.

b. Propositional Analysis

Kintsch and Van Dijk (1978) proposed that during comprehension, two representations are successively formed. The first is the microstructure derived from the sequential processing of the text and corresponding very closely to the surface level semantic relations in the text. At the level of microstructure, an ordered list of propositions represents every individual idea unit in the text in the form of detailed micropropositions. The second representation is a macrostructure. Under the control of story schemata, certain macrorules operate to reduce the detailed sequences of micropropositions to a more economical representation of the text. The resulting macropropositions represent the essential gist of the story.

Kintsch and Van Dijk and their colleagues (Kintsch and Van Dijk, 1978; Kintsch and Vipond, 1979; Miller and Kintsch, 1980; Vipond, 1980) have produced considerable evidence to support an elaborate processing model, emphasising short term memory limitations and the interaction of schemata with incoming information to create a semantic representation of text content. While the details of this model are beyond the scope of the present study, it should be noted that the validity of the text analysis components has been clearly demonstrated in a number of empirical studies. The psychological reality of propositions as semantic processing units was supported in studies by Kintsch and Keenan (1973) and Ratcliffe and McKoon (1978;1980). Several studies have demonstrated the relationship between the propositional hierarchy in texts and recall of text content (Kintsch and Keenan, 1973; Kintsch, Kozminsky, Streby, McKoon, and Keenan, 1975; Waters, 1978). The system of propositional analysis then "represents a powerful tool for research in reading comprehension" (Tierney and Mosenthal, 1980, p.11). Its application in this study is based on codifications by Turner and Greene (1977) and Furniss (1979).

Microstructure

Basic units of the microstructure are the proposition, or idea unit, and the text base, or list of connected propositions constituting a text. Propositions are groups of word concepts, one serving as a relation and the others as arguments of the proposition. There are three classes of propositions corresponding to the types of relations they contain: predicate, modifier, or connective.

(i) Predicate propositions.

The relation of a predicate proposition is usually a verb and the propositions express actions or states.eg.

Action: Anna created a disturbance.
(CREATE ANNA(agent)DISTURBANCE(goal))

State: Maria felt unhappy.
(FEEL MARIA(agent)UNHAPPY(experience))

The arguments are classified, using Fillmore's (1969) case grammar, according to the relationship they have to the relation of the proposition:

Agent - the initiator of the action or state
Experience - experience of a psychological event
Instrument - the inanimate stimulus of an experience, a force or object causally involved in the state or action signified by the verb.
Object - the object of an action which undergoes change.
Source - the source of the state or action identified by the verb.

Goal - the result or goal of the state or action identified by the verb.

This subpropositional analysis however, is not relevant to the purposes of the present study and the roles of separate arguments are therefore not labelled within the propositional notation.

Predicate propositions also include nominal propositions that express set membership. eg.

Heinrich is a student.
(ISA, HEINRICH, STUDENT)

and referential propositions which state that the referent of one argument is the same as that of a second argument. eg.

Clark Kent is Superman.
(REFERENCE, CLARK KENT, SUPERMAN)

(ii) Modifier propositions.

There are four kinds of modifier propositions: Qualifier propositions express a quality or attribute of a proposition.

Landolfo bought a large ship.
1.(BUY LANDOLFO SHIP)
2. (QUALITY OF SHIP, LARGE)

Quantifier propositions express either the extent of an entity, or a definite or indefinite quantity. eg.

Ten boys went home.
1.(GO BOYS HOME)
2. (NUMBER OF BOYS, TEN)

Partitive propositions indicate part of a collective whole. eg.

A neuron is part of a cell.
1. (EXIST CELL)
2. (PART OF 1, NEURON)

Negative propositions modify other propositions by negating them. eg.

The teachers did not go to the College.
1. (GO TEACHERS COLLEGE)
2. (NEGATE 1)

(iii) Connective propositions.

Connective propositions relate propositions in the text to each other. There are eight types of connective propositions:

1. Conjunctive expressing and, also, along with, in addition to.
2. Disjunction expressing or, and/or, either/or.
3. Causality expressing because, by, therefore, thus.
4. Purpose expressing in order to, to, for.
5. Concession expressing but, although, however.
6. Contrast expressing greater than, different from, equal to or same as, close to or similar to.
7. Condition expressing if...then.
8. Circumstance expressing
   a. Time: a temporal reference point
      : another event
   b. Location
   c. Manner

The form in which these propositions are expressed can be seen in the representation of the following sentence illustrating the purpose relation.

Tom went to Bathurst to race a motorcycle.

1. (GO TOM BATHURST)
2. (RACE TOM MOTORCYCLE)
3. (PURPOSE 1,2)

Construction of the text base involves converting the surface structure of the text to a list of underlying propositions in the manner indicated above. Propositions are sequenced in the text base according to the order in which they are expressed in the text itself. The propositions are related to one another by two rules. Firstly, one proposition is connected to another if the two propositions share an argument. Secondly, propositions are ranked according to their relative importance in the text. Thematic propositions which tend to correspond to what has previously been termed main ideas are Level 1 propositions and as such are high in the content hierarchy of propositions. The initial selection of a proposition for this level may be due to its direct relationship to the title of the passage (Kintsch and Van Dijk, 1978, p.379). However Kintsch and Van Dijk (1978, p.373) also point out that the assigning of degrees of relevance to propositions is under the control of the reader's goals which are formally represented by the relevant text schema - in this case a story schema. Story grammar categories therefore influence the selection of thematic or Level 1 propositions. Propositions which share an argument with a Level 1 proposition are directly subordinated to it, and are termed Level 2 propositions. Those which share an argument with Level 2 propositions and not Level 1 propositions are subordinated to the Level 2 propositions and are themselves labelled Level 3 propositions etc. The lower level propositions correspond to details in the text.

Macrostructure

The story schema guides the reader in establishing the relevance of micropropositions and hence which parts of the text will form its gist. This is done by the application of macro operators which are under the control of the schema. Macro operators transform the micropropositions into a set of macropropositions that represent the gist of the story. The following summary (Deakin University, 1979, p.127) indicates the three operations which may be involved in the derivation of a macrostructure:

1. Deletion

   Properties which the reader deems to be irrelevant or inessential are deleted. "The boy wore a red, wool hat." - "The boy wore a hat."

2. Generalization

   A sequence of propositions may be substituted by the general proposition denoting an immediate superset. "John planted roses, marigolds and petunias." - "John planted flowers."

3. Construction

   A sequence of propositions may be substituted by a proposition denoting a global fact of which the micropropositions are normal conditions, components or consequents. "Jennifer took some butter, sugar, flour, and milk, mixed it, poured it into a pan, and baked it." - "Jennifer baked a cake."

Some micropropositions may be deemed highly relevant and transferred directly to the macrostructure. This becomes an identity relationship where a microproposition is also a macroproposition.

Van Dijk (1980) has elaborated a theory of macrostructures and, whilst conceding that a strictly algorithmic application of the macro rules is unrealistic, he demonstrated that a "semi systematic" application of the rules produced quite acceptable summaries of several different types of text selections.

2. Construction of Test Instruments

a. Aural Comprehension Test

A simple story, "The Secret Trip" was adapted from Nezworski, Stein and Trabasso (1979) to test readers' sensitivity to the semantic organization structure of text when the possibility of decoding difficulties was eliminated. It was a well organized story, conforming to the Stein and Glenn (1979) conventional story grammar categories. The story consisted of simple, high frequency words, all of which were listed within the 2,000 most frequently occurring words in the Thorndike (1975) list. The nontarget words not within this frequency limit were neveretheless simple and well known as can be seen in Table 1.

Table 1

Words In Aural Comprehension Test Story Not In Thorndike's Ranks 1 and 2

Word	Thorndike rank by 1,000 most commonly occurring words
garage	6
didn't	3
couldn't	3
brand	3
skateboard	3
wouldn't	4

The text was pre recorded on cassette tape and subjects listened to the tape while following a printed copy of the text. Ten simple, single digit addition and subtraction tasks were then completed as a rote rehearsal buffer task before subjects were asked to write down in their own words or those of the passage, all they could remember of the story.

The criteria used to determine pupils' use of story structure in recalling an aurally received story were adapted from those used by Glenn (1978). She examined recall protocols in terms of whether or not they constituted complete episodes as defined in the Stein and Glenn (1979) grammar.

> In order to be considered a complete episode (the protocol) had to include a consequence statement(s) and statement(s) from two of the following three categories: Event, Internal Response, Attempt. (Glenn, 1978, p.236)

For the present study the test story was initially analysed according to Kintsch's (1974) propositional analysis in a manner similar to the codifications of Turner and Greene (1977) and Furniss (1979). Details of the procedures used for determining interjudge reliability for the microanalysis are given in section 2d of this chapter. This microanalysis (Appendix 2) was then subjected to a macroanalysis (Van Dijk, 1980) to reveal the macropropositions or gist of the text (Appendix 3). The macropropositions contained in the key episodic categories, as defined by Glenn (1978) above, were then expressed in the following statements:

Table 2

Statements of the Gist of "The Secret Trip" Story

Key Episodic Category	Statements
Event:	Peter's parents were busy. Peter had nothing to do. Peter got out his toys. Peter asked Mary to play.
Internal Response	Mary wanted to say she would play. She knew tomorrow was Peter's birthday. And now was her only chance to buy a present for him.
Attempt	Mary told Peter she was sick and couldn't play.
Consequence	Mary and her mother went shopping. Mary searched for a present for Peter. She bought a skateboard.

A system for scoring pupils' recalls was devised as part of a pilot study conducted with 72 year five children dichotomized into groups of 36 skilled readers and 36 poorer readers on the basis of scores on a standardized reading test (McLeod, 1977). In this pilot study pupils' recalls were initially scored for the presence of the statements listed in Table 2. In accordance with the scoring of macrorecall by Vipond (1980), both reproductive and reconstructive recall were allowed.

> Following Kintsch and Van Dijk (1978), a reconstruction was defined as a normal condition, component or consequence of a macroproposition. For example, if a macroproposition could be reproduced by the sentence "Howe opposed the plan", credit would be given also for the reconstruction, "Howe didn't want the plan to succeed", since not wanting something to succeed is a normal condition for opposing it (Vipond, 1980, p.285).

A sample of ten pupil recall protocols was scored by a graduate student as well as by the researcher. The Pearson product-moment correlation for the number of statements recalled from those in Table 1 was .96. The mean and standard deviation of the number of statements recalled as scored by the researcher were 7.8 and 1.6 respectively and 7.5 and 1.7 respectively as calculated on the scoring of the graduate student. These results were considered sufficient to suggest that the measure employed for scoring the recalls was suitably objective.

The frequency with which the statements corresponding to the macropropositions in Glenn's (1978) key episodic categories appeared in pupils' recalls is shown in Table 3.

Table 3

Recall Frequency of Statements in Key Episodic Categories

Key Episodic Category	Statements	Recall Frequency
Event:	Peter's parents were busy.	36%
	Peter had nothing to do.	53%
	Peter got out his toys.	64%
	Peter asked Mary to play.	89%
Internal Response	Mary wanted to say she would play.	40%
	She knew tomorrow was Peter's birthday.	89%
	And now was her only chance to buy a present for him.	50%
Attempt	Mary told Peter she was sick. and couldn't play.	85%
Consequence	Mary and her mother went shopping.	93%
	Mary searched for a present for Peter.	64%
	She bought a skateboard.	93%

A scoring system consistent with Glenn's (1978) criteria required that one consequence statement and one statement from at least two of the other categories be included. Two statements in the Consequence category were recalled by 93% of pupils and one statement in each of the other three categories was recalled by 85% or more of pupils. These "well recalled" statements were selected as the criterion statements. Recall protocols which did not include one of the two criterion statements from the consequence category were automatically given an overall score of zero. If either one or both of these statements were included a score of one point was awarded and then an additional point for the presence of each criterion statement from the other three categories. Thus a total of four points was possible and a total of at least three points was necessary in order to satisfy the conditions described by Glenn (1978) and to demonstrate responsiveness to the semantic organizational structure of a well formed story. Complete agreement on scoring occurred when ten pupil recalls were scored by the researcher and a graduate student using the four point scale.

Results of the pilot study indicated that the ability to follow the semantic organizational structure of a simple story when the possibility of decoding errors was eliminated, did not distinguish between skilled and poorer readers at a statistically significant level. A summary of the data analysis is shown in Table 4.

Table 4

t Test on Aural Comprehension Scores of Good and Poor Readers in Pilot Study

	No.	Mean	SD	df	t	Significance of t
Good Readers	36	3.7	.86	70	1.53	.13
Poor Readers	36	3.4	.99			

Only five pupils (seven percent of the sample) scored below three. This might indicate some difficulty experienced by these pupils in following the semantic organization of a simple story but the scores might also have been influenced by factors such as lack of attention to the tape recording and to the recall task. There remains the possibility of a trend indicating that some poorer readers may not be able to follow the structure of a simple story. In view of these results and the lack of clear evidence in the research literature, it was considered necessary to retain the aural comprehension score as a covariate in the main study.

b. Experimental Stories

Two experimental stories entitled "Willy" and "Friends" were written for the study. "Willy" was adapted from a story called "A Spider in the Night" written by twelve year old Valerie Robinson and collected by Geoffrey Summerfield (1978). "Friends" was constructed by the researcher. The stories were written in order to provide texts consisting of a very clear macrostructure or gist with some detailed information obviously peripherally related to it. These base versions of the stories were first analysed according to Kintsch's propositional analysis. This provided for each story, a list of micropropositions and the level of each in the propositional hierarchy. Four experimental versions of each story were then developed. The procedures which were followed are shown in Figure 4.

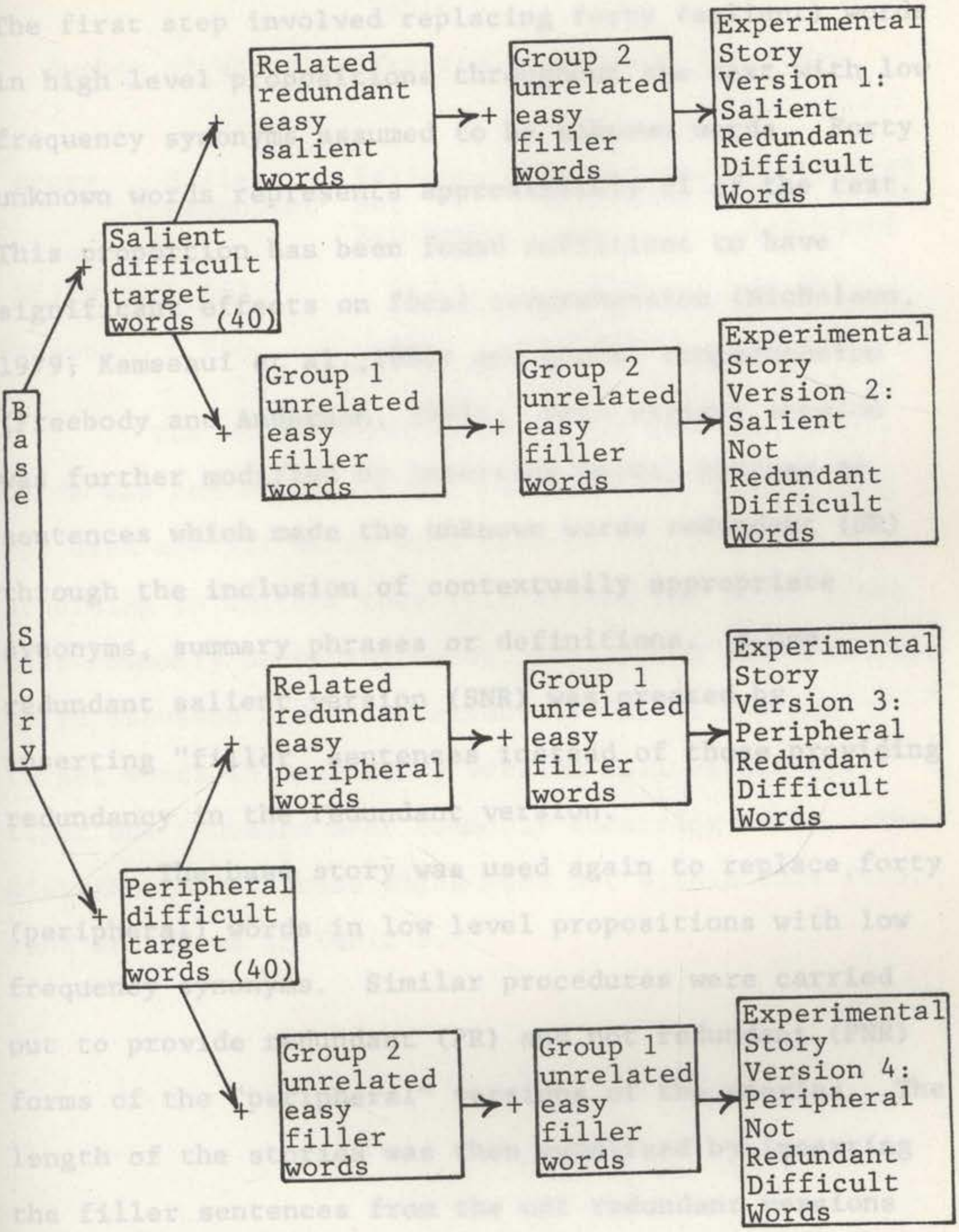
Base Story
+
Salient difficult target words (40)
+
Related redundant easy salient words
+
Group 2 unrelated easy filler words
Experimental Story Version 1: Salient Redundant Difficult Words
+
Group 1 unrelated easy filler words
+
Group 2 unrelated easy filler words
Experimental Story Version 2: Salient Not Redundant Difficult Words
+
Peripheral difficult target words (40)
+
Related redundant easy peripheral words
+
Group 1 unrelated easy filler words
Experimental Story Version 3: Peripheral Redundant Difficult Words
+
Group 2 unrelated easy filler words
+
Group 1 unrelated easy filler words
Experimental Story Version 4: Peripheral Not Redundant Difficult Words

Figure 4. Procedure for constructing experimental stories.

The first step involved replacing forty (salient) words in high level propositions throughout the text with low frequency synonyms assumed to be unknown words. Forty unknown words represents approximately 6% of the text. This proportion has been found sufficient to have significant effects on focal comprehension (Nicholson, 1979; Kameenui et al.,1982) and global comprehension (Freebody and Anderson, 1981). This salient version was further modified by inserting words, phrases or sentences which made the unknown words redundant (SR) through the inclusion of contextually appropriate synonyms, summary phrases or definitions. A non redundant salient version (SNR) was created by inserting "filler" sentences instead of those providing redundancy in the redundant version.

The base story was used again to replace forty (peripheral) words in low level propositions with low frequency synonyms. Similar procedures were carried out to provide redundant (PR) and not redundant (PNR) forms of the "peripheral" versions of the stories. The length of the stories was then equalized by inserting the filler sentences from the not redundant versions into those sections of the redundant versions - salient or peripheral - which had not been modified by replacement with low frequency synonyms. This resulted in four versions of each of two stories, all of which were approximately the same length, as indicated in Table 5.

Table 5

Number of Words in Experimental Story Versions

Story	Salient Redundant	Salient Not Redundant	Peripheral Redundant	Peripheral Not Redundant
Willy	661	662	658	663
Friends	666	666	658	659

The word frequency of target and non target words was controlled. The Thorndike (1975) word list was used and all words were indexed 1,2,3, etc according to whether they fell within the first 1,000 most commonly occurring words, the second thousand, the third thousand etc. Approximately 95% of the non target words in each story version fell within the first one thousand most commonly occurring words. The distribution of those which were not within this first rank are shown in Table 6.

Table 6

Number of Nontarget Words not in Thorndike Rank One

		Salient Redundant		Salient Not Redundant		Peripheral Redundant		Peripheral Not Redundant	
Story W - "Willy" F - "Friends"		W	F	W	F	W	F	W	F
Thorndike rank by 1,000 most common occurring words.	2	23	25	22	24	25	25	24	23
	3	9	9	6	10	10	10	8	8
	4	1	0	1	0	1	0	0	0
	5	2	1	2	1	2	1	0	0

The 160 low frequency target words were all above rank 4 on the Thorndike list. The frequency distribution of these target words can be seen in Table 7.

Table 7

Frequency Distribution of Target Words

Thorndike Rank	Peripheral Willy	Peripheral Friends	Salient Willy	Salient Friends
4	0	3	5	5
5	2	2	0	3
6	1	4	5	4
7	4	1	3	2
8	4	1	3	3
9	2	4	0	3
10	5	3	4	3
11	1	4	5	1
12	5	5	1	3
13	2	0	1	0
14	3	2	3	2
15	1	2	4	3
16	3	3	0	1
17	2	1	1	3
18	0	1	0	1
19	3	0	1	0
20	2	4	4	3

The microproposition lists for both base stories extended to eight levels of relative importance, level 1 propositions being the most important and level 8 the least important. The low frequency target words designated as salient were all located from levels 1 to 3 in the propositional hierarchy ie. they were all in propositions central to the gist of the story. In the "Willy" story three target words were at level 1, twenty eight at level 2, and nine at level 3. In the "Friends" story thirty four target words were located in level 2 propositions and six in level 3 propositions.

The low frequency target words designated as peripheral were all located at proposition level 4 or below ie. not very significant to the gist of the story. The distribution of these peripheral words can be seen in Table 8.

Table 8

Propositional Location of Peripheral, Low Frequency Words

Propositional Level	Number of Unfamiliar Words	
	Willy	Friends
4	10	5
5	11	14
6	8	8
7	7	6
8	2	5
9	2	2

c. Multiple Choice Vocabulary Tests

Two sets of 40 multiple choice questions were constructed for each story to test whether readers utilized redundancy in the text to code a meaning for unknown words. Set one of the questions tests target words in the salient, redundant and salient, not redundant versions while set two tests target words in the peripheral, redundant and peripheral, not redundant versions. The stem of each question contains the target word. The distractors were constructed to relate to the contextual meaning of the target word according to a scheme illustrated by Schlesinger and Weiser (1970). The relationship is one of agreement, contradiction or no relevant information. eg.

	It was a solitary craft because ....
(agreement)	a. it was the only one.
(contradicts)	b. it was one of many such craft.
(no relevant information)	c. it was very quiet.

A pilot study was conducted to obtain information on the reliability of the four multiple choice tests. One hundred and twenty eight year five pupils from two schools participated. The four experimental versions of each story (salient,redundant; salient,not redundant; peripheral,redundant; peripheral,not redundant) were used in the study. Each pupil read aloud one version of each story. Following the oral reading of each story version, pupils responded to the appropriate 40 item test. The item stems were read aloud by the pupils and the alternatives were read by the researcher. The order of presentation of stories was counterbalanced so that each story version occurred equally in first and second position. This meant that 64 pupils completed each of the four tests - 32 in the redundant story condition and 32 in the not redundant condition.

Reliability analyses were conducted separately on the responses of each of the eight groups of 32 pupils who completed the tests as shown in Table 9.

Table 9

Administration of Tests in Pilot Study

Story	Willy		Friends	
Condition	Peripheral	Salient	Peripheral	Salient
Redundant	32	32	32	32
Not Redundant	32	32	32	32
Test	Test One	Test Two	Test Three	Test Four

Cronbach's alpha reliability coefficient (α) and the number of test items which had a negative item-total correlation (i/t) are shown in Table 10.

Table 10

Reliability of Multiple Choice Tests in Pilot Study

Story	Willy				Friends			
Condition	Peripheral		Salient		Peripheral		Salient	
	a	i/t	a	i/t	a	i/t	a	i/t
Redundant	.68	7	.70	6	.60	11	.70	6
Not Redundant	.68	7	.69	6	.70	7	.65	10
Test	Test One		Test Two		Test Three		Test Four	

The items with negative item-total correlations were subjected to a further detailed analysis. Consideration of item means, distractor scores, the semantic relationship between the test items and the text of the story and pupils' oral response behaviour led to the identification of a number of possible weaknesses in test item construction. Items with negative item-total correlations and high item means suggested either that pupils had prior knowledge of the target words or that distractors were ineffective. Items with negative item-total correlations and low item means suggested a strong bias to certain distractors or that some of the distractors might be considered appropriate responses. The low item means might also indicate that the contextual meaning of the target words was inaccessible to pupils. If this had occurred among groups on the redundant conditions it might have been necessary to consider whether the extent of the redundancy relating to the target words was sufficient to permit contextual processing. The possibility of the latter situation did not appear to arise in the pilot data. The item analysis then, resulted in three main forms of modification of some of the original test questions.

The first category relates to six target words of which pupils apparently had prior knowledge. These were: "excursions, fashionable, extravagant, countless, expensively" and "dwelling-place". These six words were replaced with alternative low frequency words likely to be less familiar to the children. For example "expensively" was replaced with "extortionately" and "fashionable" was replaced with "voguish". Observation of the obvious difficulty pupils encountered with the other target words during oral reading of the text and question stems made it clear that most of the ineffective test items did not result from pupils' prior knowledge of target words but rather from the weaknesses in the question format and choice of distractors.

The second type of question modification resulted from items where pupils' oral reading clearly indicated they did not know the target word yet the correct response was chosen due to the ineffectiveness of the distractors. For example, no pupil was able to deal confidently with the target word in the following question:

18. If a game is intriguingly presented it looks ------
    (a) interesting
    (b) unbreakable
    (c) boring

It was clear that they did not recognize the word yet 28 of the 32 pupils in the redundant condition and 26 in the not redundant condition answered the item correctly. Pupils were apparently able to use the general context of the children's going shopping and visiting a toyshop, to eliminate the unlikely alternatives. Some pupils may also have been responding to visual similarities between the target word and the correct response. Distractors in items of this type were modified by taking such factors into account. For example, the revised version of question 18 took the following form:

18. If a game is intriguingly presented then most people would -------

(a) not want to bother with it.

(b) find it hard to open.

(c) want to look at it.

The third type of question modification arose from items which had a negative item-total correlation and low item means due to distractors which might be considered appropriate responses. In the following question for example, the third distractor received a very high score.

16. If you want to finance a purchase ---------

(a) you want to get the money for it

(b) you want to find a way of getting it free

(c) you want that purchase more than anything else.

A reader who was able to construct a relevant meaning for the word "finance" might understandably see the third distractor as appropriate. All test items of this type were revised to ensure they conformed to the scheme of Schlesinger and Weiser (1970) as previously described. The modified format for question 16 is shown below:

16. If you can finance something --------

(a) you know how to get something free.

(b) you can get the money to buy something.

(c) you can save a lot of money on something.

The revised versions of the four sets of multiple choice questions are included in Appendix 5.

d. Microrecall Measures

Micropropositional analyses of the base version of each experimental story were completed by the researcher. Two meetings were then held with a second rater whose doctoral study made extensive use of Kintsch's propositional analysis (Furniss, 1978). During the first meeting this second rater analysed a sample of the "Friends" story consisting of approximately fifty propositions and at the second meeting a similar sample from the "Willy" story was analysed. Interjudge ageeement for the "Friends" story was .902 and .92 for the "Willy" story. The procedures for determining the rate of agreement were those used in the Furniss (1978) study. They were developed by Arrington (1932) and were used by Feifel and Lorge (1950). Responses (in this case, propositions) which agreed with the researcher's original analysis (doubling the agreements) were divided by this total plus the disagreements.

ie. $\dfrac{2 \text{ x agreements}}{2 \text{ x agreements + disagreements}}$

In the case of the "Friends" story the eight disagreements were resolved by accepting the analysis provided by the second rater. In the case of the "Willy" story four of the eight disagreements were resolved by accepting the researcher's analysis and the remaining four by accepting the analysis of the second rater. In view of the high level of agreement on both the "Friends" and "Willy" stories, the researcher's analysis of "The Secret Trip" story was adopted.

The microproposition lists for the base versions of the "Friends" and "Willy" stories served as a template against which pupil's recalls were scored to obtain a measure of total recall. The recall protocols were scored for the presence of template propositions according to the "Manual for Scoring Story Recalls" (Appendix 4). Credit was given for the presence of propositions in statements which were semantically (not necessarily lexically) equivalent to propositions in the text. Scores were expressed as a percentage of the template propositions.

e. Macrorecall Measures

Macropropositions for the "Willy" and "Friends" stories were derived according to the macrorules described in section 2 b of this chapter. Due to the unavailability of text analysts with expertise in this approach to the specification of text macrostructures, the reliability of the researcher's analysis could not be established through procedures for determining interjudge reliability. Seven graduate students were therefore asked to read and recall the two stories. These recalls were scored for the presence of the macropropositions derived by the researcher. Both reproductive and reconstructive recall were allowed in accordance with the scoring of macrorecall by Vipond (1980) and Freebody and Anderson

(1983). The recalls were scored independently by the researcher and a graduate student as second judge. For the "Friends" story the product moment correlation between the two sets of scores was .86. The mean for both sets of scores was 21 and the standard deviations were 2.36 and 2 for the data scored by the researcher and the second judge respectively. For the "Willy" story the product moment correlation was .82; the means 29 and 28 and the standard deviations 3.3 and 2.3 calculated on the scoring of the researcher and the second judge respectively. These results were taken as sufficient to indicate that the scoring was suitably objective.

The percentage recall for each macroproposition for the "Willy" and "Friends" stories is shown in Tables 11 and 12 respectively. Twenty-nine of the forty-three macropropositions in the "Willy" story and twenty-one of the thirty macropropositions in the "Friends" story, were recalled by at least five (70%) of the graduate students. These macropropositions were selected as the criteria for scoring of pupils' macrorecall.

Table 11

Percentage Recall for Macropropositions from the "Willy" Story

No.	Macropropositions	Percentage Recall
1	ISA WILLY DELINQUENT	43
2	POSSESS SPEAKER SIBLING	86
3	REFERENCE 2, WILLY	86
4	OBSESS 5 WILLY	86
5	EXCAVATE WILLY INVERTEBRATES	86
6	RETRIEVE 1 WILLY	86
7	PURPOSE 6, 11	71
8	PROCURE WILLY SPECIMEN	43
9	QUALITY OF 8, REPULSIVE	29
10	CLEAN UP WILLY SPEAKER	86
11	GO WE SHOPPING	100
12	GIVE MUM CHILDREN ALLOWANCE	100
13	INSPECT WILLY MODEL ANIMALS	86
14	WANT WILLY 15	86
15	SAUNTER WILLY	86
16	LOCATION 15, OUTSIDE HOME	86
17	SAY SPEAKER 18	86
18	MEAN 14 ABLUTIONS	86
19	QUANTITY OF ABLUTIONS, FURTHER	86
20	PROTEST WILLY	29
21	CONFINE $ WILLY	14
22	LOCATION TO 21, 23	14
23	POSSESS WILLY ROOM	29
24	PREPARE MUM DINNER	71
25	EAT WE DINNER	57
26	GO I BED	100
27	WAKE SPEAKER	57
28	FRIGHTEN SILHOUETTE SPEAKER	86
29	DEDUCE SPEAKER 32	43
30	POSSESS WILLY REPLICAS	43
31	NUMBER OF 30, ONE	43
32	ISA SILHOUETTE 31	43
33	DISCERN SPEAKER PERAMBULATION	71
34	POSSESS SPEAKER ARM	71
35	LOCATION OVER 33,34	71
36	MAKE SPEAKER WAIL	86
37	CONJUNCTION AND MUM, DAD	86
38	BRING 36, 37	86
39	KILL SPEAKER ANIMAL	71
40	COMFORT MUM SPEAKER	29
41	HEAR SPEAKER 43	86
42	LAUGH WILLY	100
43	LOCATION TO 42, HIMSELF	86

Table 12

Percentage Recall of Macropropositions from "Friends" Story

No.	Macropropositions	Percentage Recall
1	CONJUNCTION AND TOM, MARY	100
2	ATTEND 1 SCHOOL	71
3	QUALIFY SCHOOL, SAME	86
4	ISA 1 ANTAGONISTS	86
5	LEAVE 1 SCHOOL	71
6	EMIGRATE TOM	71
7	TIME AFTER 5,6	71
8	POSSESS MARY 9	86
9	QUALITY OF BUNGALOW, MODERN	43
10	SATISFY 8 MARY	71
11	INCINERATE $ 8	86
12	FEEL MARY DISCONSOLATE	43
13	TAKE MARY HOLIDAY	100
14	LOCATION ON 13, ISLAND	86
15	FEEL MARY INCENSED	43
16	FIND MARY	86
17	REFERENCE TOM PROPRIETER	100
18	CAUSE 16,15	43
19	FEEL MARY APPREHENSIVE	14
20	(INF) CAUSE 2,19	0
21	MISS MARY 22	100
22	RETURN CRAFT MAINLAND	100
23	OFFER MARY 24	57
24	RECONCILE 1	71
25	GIVE MARY TOM GIFT	100
26	PURPOSE 25,23	86
27	WANT TOM 24	43
28	DISCUSS 1 RESORT	71
29	ISA 1 FRIENDS	86
30	FEEL MARY REJUVENATED	29

Pupils' recall of the gist of the stories was measured by scoring for the presence of the template macropropositions identified above as being recalled by at least five (70%) of the seven graduate students. Details of the scoring procedure is shown in the "Manual for Scoring Story Recalls" (Appendix 4).

3. Selection of Sample

Schools

(i) Two suburban Catholic Primary Schools. One of these schools had only girls in year five while the other school had boys and girls in the year five classes.

(ii) Two large suburban State Primary Schools which draw pupils from both The N.S.W. Housing Commission estates and private housing estates.

(iii) Two small semi-rural State Primary Schools on the outskirts of Sydney's south-western suburbs.

Subjects

From a total population of approximately 321 year five children in six schools in Sydney's south-western suburbs, 64 were selected for participation in the study. The main criterion for selection was performance on the The Gap Reading Comprehension Test Form B (McLeod, 1977). The results of this test were used as a basis for selecting 32 good readers and 32 poor readers. Prior to the administration of the test steps were taken to exclude those pupils with extremely severe reading difficulties. Such pupils might have included:

(i) Those for whom English was their second language and for whom this factor caused obvious impediments to learning. These pupils were assessed by the school as requiring instruction in English additional to that provided by the regular class teacher.

(ii) Pupils who experienced obvious learning disabilities such as hearing impairment, intellectual handicap etc.

(iii) Pupils who experienced extreme difficulty in reading.

In order to guide teachers in assessing pupils who might fit into the third category, an additional "Placement Test Story" was prepared. This 331 word story entitled "Brothers" (Appendix 1) was designed to sample the non target vocabulary used in the experimental stories. Class teachers were provided with a copy of this story and were asked to nominate any pupils whom they considered might have had significant difficulty with this story. No children were so designated by their teachers.

Three newly arrived migrant children were excluded. They had been in Australia for only six months prior to the date of testing and had very little English. Three other pupils with moderate hearing loss were also excluded.

The majority of previous studies have excluded specific comparisons of good and poor readers, sampling only average or above average readers (Nicholson et al., 1979; Beebe, 1980; Freebody and Anderson, 1981; Kameenui et al., 1982; McKeown et al., 1983). Two studies used only poor readers (Kendall and Hood, 1979; Englert and Semmel, 1980). Two studies used average and learning disabled readers (Jenkins et al., 1978; Pflaum, 1980) and Marks et al. (1974) distinguished high, medium and low ability readers. Criteria for distinguishing among readers of varying levels of proficiency remain somewhat arbitrary, however categories such as good readers and poor readers are given more fidelity if such labels are applied only to the very small proportion of readers at the extreme ends of the continuum. This can be seen in the sampling procedures of Cambourne and Rousch (1979) who designated "proficient" readers as the top five percent of the pupils tested, "average" readers as the middle five percent and "low ability" readers as the bottom five percent. Such extreme separation is not essential to this study although it is important that the good readers are the best in their group and that the poor readers are quite poor rather than average readers. A selection of approximately ten percent for each group was considered adequate to give clear definition to the categories of good readers and poor readers. Therefore, according to the scores on the Gap Reading Comprehension Test, the top 32 pupils (mean 37.3; standard deviation 1.7)were designated as good readers and the bottom 32 as poor readers (mean 16.3; standard deviation 2.7).

4. Testing Procedures

The Gap Reading Comprehension Test Form B (McLeod, 1977) was administered to all fifth grade pupils in the selected schools in their intact class groups in their own classrooms. On the same day all pupils completed the aural reading comprehension test constructed for the study: "The Secret Trip". In their regular class groups pupils listened to a tape recording of the story while following their individual printed copies of the text. At the end of the recording pupils turned over the text and completed a worksheet containing ten simple, single digit, addition and subtraction exercises as a rote rehearsal buffer task. Pupils were then asked to write out the whole story as they remembered it using either their own words or the words of the text. Pupils were informed of this task at the beginning of the session. When all pupils had finished, the written recall protocols were collected.

On the basis of the Gap Test scores and teacher evaluations 32 good readers and 32 poor readers were selected according to the procedures described above. The aural comprehension tests completed by these pupils were scored according to the criteria described in part 2a of this chapter.

One week later the researcher began testing each pupil individually. The first few minutes were spent building rapport with the pupil and explaining the tasks. Pupils were informed that they would be dealing with two stories. They would be asked to read each story aloud and then retell the whole story as they remembered it using the words of the text or their own words. Pupils were told that if they encountered any difficulties in reading they were to do the best they could without any help from the researcher. After oral reading pupils were required to complete a rote rehearsal buffer task consisting of ten simple, single digit, addition and subtraction exercises. Pupils then recalled the story orally.

When pupils stopped spontaneous recall, three probes were used:

"Did anything else happen in the story?"
"Can you tell me anything else about the people in the story?"
"Is there anything else about the story?"

In question two, characters names were mentioned only if children had already mentioned them by name. Both oral reading and retelling were tape recorded.

Following the retelling each pupil answered 40 multiple choice questions designed to test the meaning of the difficult target words in each story. The stem of each question which contained the target word was read aloud by the pupil and the alternatives were read aloud by the researcher. The pupils indicated their choices of the alternatives and these were marked on the prepared answer sheets. After a few minutes relaxation and discussion the second story was dealt with in the same manner. The order of presentation of stories was counterbalanced. Each of the sequences of story versions shown in Table 13 was read by two of the 32 good readers and two of the 32 poor readers to ensure that each story and each version occurred as often in first as it did in second position. The time required for individual testing varied from about 30 minutes to 50 minutes per pupil.

Table 13

Counterbalanced Story Presentation Sequence

Friends - F

Willy - W

Unknown Words in Salient Propositions - S
Unknown Words in Peripheral Propositions - P
Unknown Words which are highly redundant - R
Unknown Words which are not redundant - NR

1 WSR;FSNR
2 WPR;FPNR
3 WSNR;FSR
4 WPNR;FPR
5 WSR;FPNR
6 WPR;FSNR
7 WSNR;FPR
8 WPNR;FSR
9 FSNR;WSR
10 FPNR;WPR
11 FSR;WSNR
12 FPR;WPNR
13 FPNR;WSR
14 FSNR;WPR
15 FPR;WSNR
16 FSR;WPNR

This means that every version of both stories would have been read by eight good readers and eight poor readers. For each of the 32 good readers and 32 poor readers the following data would be available for analysis:
an aural comprehension score, a contextual processing score, a macro recall score and a micro recall score.

5. Analysis of Data

In order to reveal the nature of the relationships among the dependent variables the research data were analysed through a number of separate analyses of variance.

The first set of analyses related to research questions one and two - the dependent variables being pupil responses to questions testing the meaning of unknown words. Two separate two way ANOVAs were conducted for both of the test stories. The first ANOVA in each case dealt with the results of the test of the meanings of unknown salient words and the second ANOVA for each story dealt with the results of the test of the meanings of the unknown peripheral words. It was predicted that in each case there would be a Reading Ability x Redundancy interaction - follow up tests for which would test the following null hypotheses relating to research question one:

1.1 There is no difference in the mean number of correct responses given by good readers in the redundant and not redundant conditions.

1.2 There is no difference in the mean number of correct responses given by poor readers in the redundant and not redundant conditions.

1.3 There is no difference in the mean number of correct responses given by good and poor readers in the redundant conditions.

Steps were taken in the construction of the tests of the meanings of unknown salient and unknown peripheral words, to establish their equivalence. The frequency ratings for both sets of target words were similar (Table 7, Ch. III, part 2b.), the tests were constructed according to common specifications (Schlesinger and Weiser, 1970) and a pilot study (Ch.

III, part 2c.) indicated acceptable and comparable reliability coefficients for each test. It was therefore considered appropriate to conduct a three way ANOVA on the results of the tests of the meanings of unknown words for each story. A Reading Ability x Redundancy x Salience interaction was predicted for each story. Follow up tests would test the following null hypotheses relating to research question two:

2.1 There is no difference in the mean number of correct responses given by good readers in the salient, redundant condition and the peripheral, redundant condition.

2.2 There is no difference in the mean number of correct responses given by poor readers in the salient, redundant condition and the peripheral, redundant condition.

The second set of analyses related to research question three with the dependent variable being the number of macropropositions recalled and the following null hypotheses:

3.1 There is no difference in the mean number of macropropostions recalled by good readers in the salient, redundant (SR) and salient, not redundant conditions (SNR).

3.2 There is no difference in the mean number of macropropositions recalled by good readers in the peripheral, redundant (PR) and peripheral, not redundant conditions (PNR).

3.3 There is no difference in the mean number of macropropositions recalled by poor readers in the salient, redundant (SR) and salient, not redundant conditions (SNR).

3.4 There is no difference in the mean number of macropropositions recalled by poor readers in the peripheral, redundant (PR) and peripheral, not redundant conditions (PNR).

3.5 There is no difference in the mean number of macropropositions recalled by good readers in the salient, redundant (SR) and peripheral, redundant conditions (PR).

3.6 There is no difference in the mean number of macropropositions recalled by good readers in the peripheral, not redundant (PNR) and salient, not redundant conditions (SNR).

3.7 There is no difference in the mean number of macropropositions recalled by poor readers in the redundant, peripheral (PR) and redundant, salient conditions (SR).

3.8 There is no difference in the mean number of macropropositions recalled by poor readers in the peripheral, not redundant (PNR) and salient, not redundant conditions (SNR).

A three way ANOVA was carried out for the results on both test stories. A Reading Ability x Redundancy x Salience interaction was predicted in each case. Table 14 shows the pattern of planned comparisons designed to test the hypotheses listed above.

Table 14

Planned Comparisons for Macrorecall

Condition		Macrorecall
Redundant vs Not Redundant	in Salient conditions for Good Readers	s
	in Peripheral conditions for Good Readers	n
	in Salient conditions for Poor Readers	n
	in Peripheral conditions for Poor Readers	n
Salient vs Peripheral	in Redundant conditions for Good Readers	n
	in Not Redundant conditions for Good Readers	s
	in Redundant conditions for Poor Readers	s
	in Not Redundant conditions for Poor Readers	s

s - significant difference
n - not significant difference

The third set of analyses related to research question four with the dependent variable being the number of micropropositions recalled and the following null hypotheses:

4.1 There is no significant difference in the number of micropropositions recalled by good readers in the salient, redundant (SR) and salient, not redundant conditions (SNR).

4.2 There is no significant difference in the number of micropropositions recalled by good readers in the peripheral, redundant (PR) and peripheral, not redundant conditions (PNR).

4.3 There is no significant difference in the number of micropropositions recalled by poor readers in the salient, redundant (SR) and salient, not redundant conditions (SNR).

4.4 There is no significant difference in the number of micropropositions recalled by poor readers in the peripheral, redundant (PR) and peripheral not redundant conditions (PNR).

4.5 There is no significant difference in the number of micropropositions recalled by good readers in the salient, redundant (SR) and peripheral, redundant conditions (PR).

4.6 There is no significant difference in the number of micropropositions recalled by good readers in the peripheral, not redundant (PNR) and salient, not redundant conditions (SNR).

4.7 There is no significant difference in the number of micropropositions recalled by poor readers in the salient, redundant (SR) and peripheral, redundant conditions (PR).

4.8 There is no significant difference in the number of micropropositions recalled by poor readers in the peripheral, not redundant (PNR) and salient, not redundant conditions (SNR).

In this case also a Reading Ability x Redundancy x Salience interaction was predicted for each story and the same pattern of planned comparisons was designed to test the null hypotheses. The results were expected to be different from those for macro-recall only in one instance, as indicated in Table 15.

Table 15

Planned Comparisons for Microrecall

Condition		Microrecall
Redundant vs Not Redundant	in Salient conditions for Good Readers	s
	in Peripheral conditions for Good Readers	s
	in Salient conditions for Poor Readers	n
	in Peripheral conditions for Poor Readers	n
Salient vs Peripheral	in Redundant conditions for Good Readers	n
	in Not Redundant conditions for Good Readers	s
	in Redundant conditions for Poor Readers	s
	in Not Redundant conditions for Poor Readers	s

s - significant difference
n - not significant difference

It will be obvious that macro and microrecall predictions are highly correlated except in the case of Redundant vs Not Redundant in the Peripheral conditions for Good Readers. Peripheral words are not relevant to macrorecall and hence it makes no difference whether they are redundant or not. In microrecall however, good readers may capitalize on redundancy and include more peripheral items in recall under this condition than in the not redundant condition. Poor readers were not expected to capitalize on redundancy in this manner.

CHAPTER IV

RESULTS AND DISCUSSION

1. Aural Story Recall

The aural story comprehension test was included because it was important to control for variations in pupils' abilities to follow the semantic organization of simple stories without the possible influence of their attempts at decoding unknown words. This was essential to the investigation of pupils' use of redundancy to construct meanings for unknown words and to the investigation of the effects of unknown words on story recall. In considering the construction of meaning for unknown words, it was hypothesized that good readers, but not poor readers, were more likely to use redundancy to construct meanings for unknown words that were salient to the gist of the story rather than peripheral to it. Therefore it had to be established initially that both groups of readers were comparable in the ability to perceive the gist of the story. It could then be argued more forcefully that the lower scores obtained by the poor readers relative to good readers, in the use of redundancy to construct meanings for unknown, salient words, were due to the disruption these words cause to poor readers. If pre-existing differences in pupils' use of story organization could be controlled for, the lower scores of poor readers on use of redundancy to construct word meanings, could be attributed to their inability to use redundancy in coordinating the establishment of focal meaning and overall text meaning. The control of such pre-existing differences is obviously also necessary to an investigation of the effects of unknown words on pupils' utilization of story organization in reading comprehension as indicated in story recall scores.

The aural comprehension test and scoring procedure were developed in a pilot study which was reported in Ch. III part 2a. The test required pupils to listen to a tape recording of a simple, well organized story while following their individual copies of the printed text. This was followed by a rote rehearsal buffer task involving ten simple single digit addition and subtraction exercises. Pupils were then asked to write the whole story as they remembered it using their own words or those of the text.

The recall protocols were scored according to the four point scale devised in the pilot study. A sample of ten recalls was scored by the researcher and a graduate student as second judge. Neither the researcher nor the second judge were aware of the reading ability of the subjects who produced the recalls because the recall protocols were identified only by numerical codes derived solely from the pupils' names. This code was later checked with a mastersheet for the recording of scores. The Pearson product moment correlation coefficient for the two sets of scores was .967. The mean of the scores assigned by the researcher was 2.9 with a standard deviation of 1.595 while for the scores given by the second judge the mean was 3.1 and the standard deviation 1.66. These results were taken to indicate an acceptable level of objectivity in the researcher's scoring.

The means and standard deviations for the aural comprehension recall scores of good and poor readers are shown in Table 16.

Table 16

Aural Comprehension Scores

	Number of Students	Mean Score	Standard Deviation
Good Readers	32	3.75	0.51
Poor Readers	32	2.34	1.54

An independent samples t test was conducted. The F value for equal variance was significant (F=9.15, p<.001) so the t test based on separate variances was used. The result proved to be highly significant (t=4.91, df=37.69, p<.001) indicating that good readers were significantly better than poor readers in recalling the gist of a simple aural story. It has been established, consistent with the scoring principles of Glenn (1978), that a minimum score of three points was necessary to demonstrate utilization of the semantic organizational structure of such a story in recall. Twelve poor readers and one good reader scored fewer than the required three points. Data from these thirteen pupils were not included in the remaining statistical analyses.

Discussion:

In the previous studies which considered the use of story organization in pupils' recalls (Weaver and Dickinson, 1979, 1982; Graybeal, 1981; Wilkinson, 1982) the approach to determining the extent of story organization was a comparison of the relative proportion of information in story grammar categories recalled by good and poor readers. It has been shown (Weaver and Dickinson, 1979; 1982; Wilkinson, 1982) that some poor readers recall significantly less in important catgories but only Wilkinson (1982) demonstrated a difference between good readers and poor readers in the order of salience of story grammar categories in terms of the proportions of information recalled from them. This failure of poor readers within their recalls to give the same priority to story grammar categories as good readers do, indicates their lack of responsiveness to conventional story organization. They were unable to recall the story as a story. Glenn (1978) used a measure of organization in recall which determined whether or not recall protocols constituted complete episodes as defined in the Stein and Glenn (1979) story grammar.

> In order to be considered a complete episode (the protocol) had to include a consequence statement(s) and statement(s) from two of the following three categories: Event, Internal Response, Attempt (Glenn, 1978, p.236).

This seemed to be a parsimonious measure of a reader's ability to perceive the gist of a story and it formed the basis of a four point scale for measuring gist recall which was developed in the pilot study reported in Ch. III part 2c. The present study found a significant difference between good and poor readers on this measure of gist recall ($t=4.91$, $p< .001$) and wide variation within the scores of poor readers (Mean = 2.34, SD = 1.54). Twelve poor readers scored below the three point criterion for adequate gist recall. Like those in the Wilkinson (1982) study, these poor readers could not recall the story as a story. Therefore the present study lends support to the view that certain subgroups of poor readers have inadequately developed schemata for simple stories as indicated by their inability to recall the gist of simple aural stories.

2. Contextual Processing - The Construction of Meaning for Unknown Words

The first two research questions related to the effects of unknown words and semantic organization on readers' comprehension of focal meaning. They were concerned with good readers' and poor readers' utilization of redundancy to construct meanings for unknown words which were either salient or peripheral to the gist of the passages read. Two sets of 40 low frequency target words were selected for each of two stories - "Willy" and "Friends". For each story one set of target words was salient and the other set was peripheral. Two versions of the "salient words" stories were written. In one these salient, unfamiliar words were made highly redundant and in the other version they remained not redundant. A similar procedure was followed with the peripheral words. For each story then, four versions resulted in which salient or peripheral words were made either redundant or not redundant.

The meanings of the salient and peripheral target words were tested by two sets of multiple choice questions for each story. One set tested meanings of the salient words in redundant and not redundant conditions and the other set tested the meanings of peripheral words in redundant and not redundant conditions. Hence four different sets of questions were administered:

(i) Willy - Salient Questions
(ii) Willy - Peripheral Questions
(iii) Friends - Salient Questions
(iv) Friends - Peripheral Questions

Research Question 1.

Do good readers differ from poor readers in utilizing redundancy in text to construct meanings for unknown words?

Three separate hypotheses were derived from this question:

1.1 Good readers who answer questions testing the meaning of unknown words which are redundant in a story score higher than good readers who answer questions testing the meaning of unknown words which are not redundant in a story.

1.2 There is no significant difference in the number of correct responses given by poor readers to questions testing the meaning of unknown words which are redundant within a story, and the number of correct responses given by poor readers to such questions on unknown words which are not redundant in a story.

1.3 Good readers score higher than poor readers in answering questions designed to test the meanings of unknown words which are redundant within a story.

In order to test the corresponding null hypotheses four separate two way ANOVAs were carried out on responses to these four sets of questions by good and poor readers who had encountered the target words in either redundant or not redundant story versions. Due to the exclusion of pupils whose aural recall scores did not reach criterion, the analyses were adjusted to account for unequal cell sizes. The cell sizes for the analysis dealing with the salient questions on the "Friends" story are shown in Table 17.

Table 17

Pupils Per Cell in ANOVA:

Multiple Choice Tests of the Meanings of Salient Target Words in the "Friends" Story

Ability	Salient Target Words	
	Redundant	Not Redundant
Good Readers	8	8
Poor Readers	4	6

Results of the ANOVA of responses to the test of salient unknown words in the "Friends" story are shown in Table 18.

Table 18

Analysis of Variance -

"Friends" Salient Words Questions

Source	SS	df	MS	F	SIGNIF. of F
Ability (A)	781.1	1	781.1	113.38	.001
Redundancy (B)	188.14	1	188.14	27.42	.001
A X B	30.94	1	30.94	4.51	.045
Residual	150.96	22	6.86		
Total	1236.00	25			

The main effects for ability and redundancy were significant (p< .001) as was the interaction of ability and redundancy ($p < .05$). Good readers in redundant conditions scored higher than good readers in not redundant conditions as shown in Table 19. A simple effects test indicated that this difference was highly significant ($F = 29.63$, $p < .001$). This indicated support for hypothesis 1.1.

The simple effects test also indicated that there was no significant difference between the scores of poor readers in the redundant and not redundant conditions ($F = 2.33$, $p < .14$), providing support for hypothesis 1.2.

The main effect for ability and the direction of the ability by redundancy interaction discussed above, endorses the clear indication in the pattern of mean scores in Table 19 showing that good readers in redundant conditions scored higher than poor readers in redundant conditions.

Table 19

Mean Scores on "Friends" Salient Questions

	Redundant	Not Redundant
Good Readers	30.13	23
Poor Readers	16.25	13.67

A simple effects test indicated that good readers scored significantly higher than poor readers in redundant conditions ($F = 75.26$, $p < .001$). Support was therefore also provided for hypothesis 1.3. The effects of redundancy on the ability of good and poor readers to construct meanings for unknown, salient words in text is shown in Figure 5.

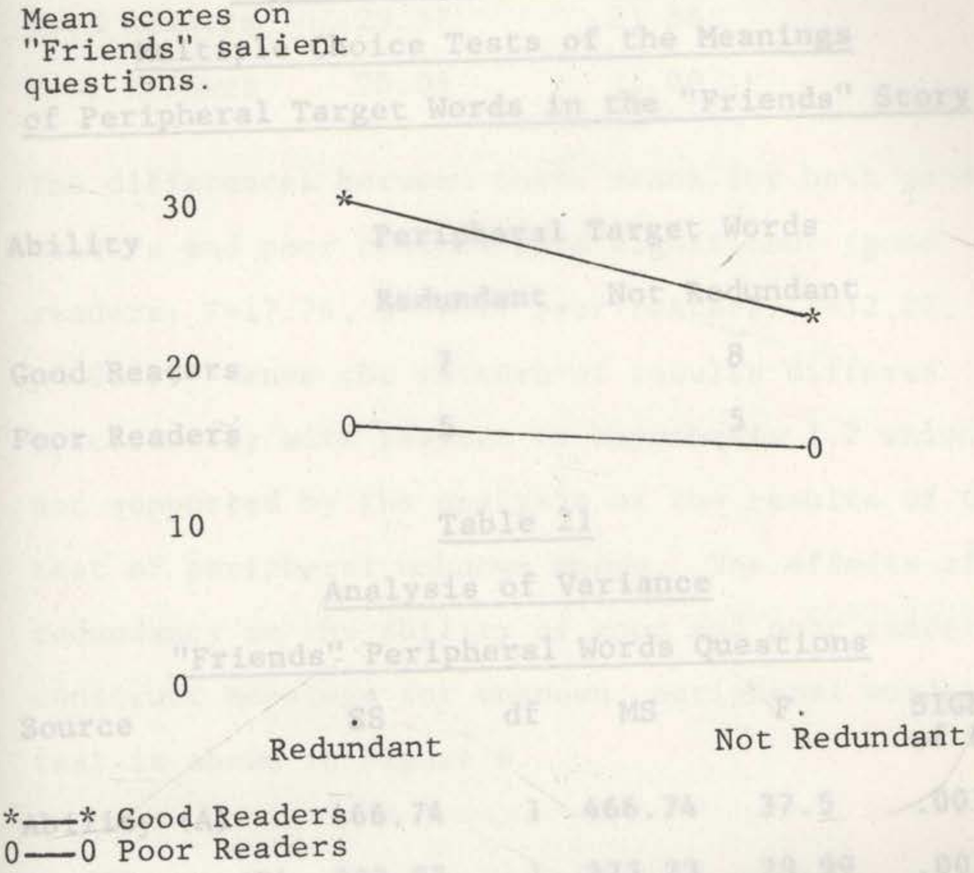

Figure 5. Ability x redundancy interaction for questions on salient, unknown words in the "Friends" story.

A somewhat different pattern of results emerged for the test of peripheral unknown words in the "Friends" story. Significant main effects were found for ability (F = 37.49, p<.001) and redundancy (F = 29.99, p<.001). However the interaction of ability and redundancy was not significant (F =.001, p<.97). The exclusion of readers whose aural recall scores did not reach criterion also necessitated the adjustment for unequal cell sizes in the ANOVA of the results on the tests of the meanings of peripheral target words. The cell sizes are shown in Table 20.

Table 20

Pupils Per Cell in ANOVA: Multiple Choice Tests of the Meanings of Peripheral Target Words in the "Friends" Story

Ability	Peripheral Target Words	
	Redundant	Not Redundant
Good Readers	7	8
Poor Readers	5	5

Table 21

Analysis of Variance "Friends" Peripheral Words Questions

Source	SS	df	MS	F	SIGNIF. of F
Ability (A)	466.74	1	466.74	37.5	.001
Redundancy (B)	373.23	1	373.23	29.99	.001
A X B	.02	1	.02	.001	.97
Residual	261.39	21	12.45		
Total	1074.96	24			

Inspection of the mean scores for the peripheral questions in Table 22 suggests that the lack of interaction is due to the fact that the poor readers as well as the good readers scored better in the redundant compared with the not redundant conditions.

Table 22

Mean Scores "Friends" Peripheral Questions

	Redundant	Not Redundant
Good Readers	29.57	21.88
Poor Readers	20.08	13.00

The differences between these means for both good readers and poor readers were significant (good readers: F=17.74, $p < .001$; poor readers: F=12.22, $p < .002$). Hence the pattern of results differed specifically with respect to hypothesis 1.2 which was not supported by the analysis of the results of the test of peripheral unknown words. The effects of redundancy on the ability of good and poor readers to construct meanings for unknown, peripheral words in text is shown in Figure 6.

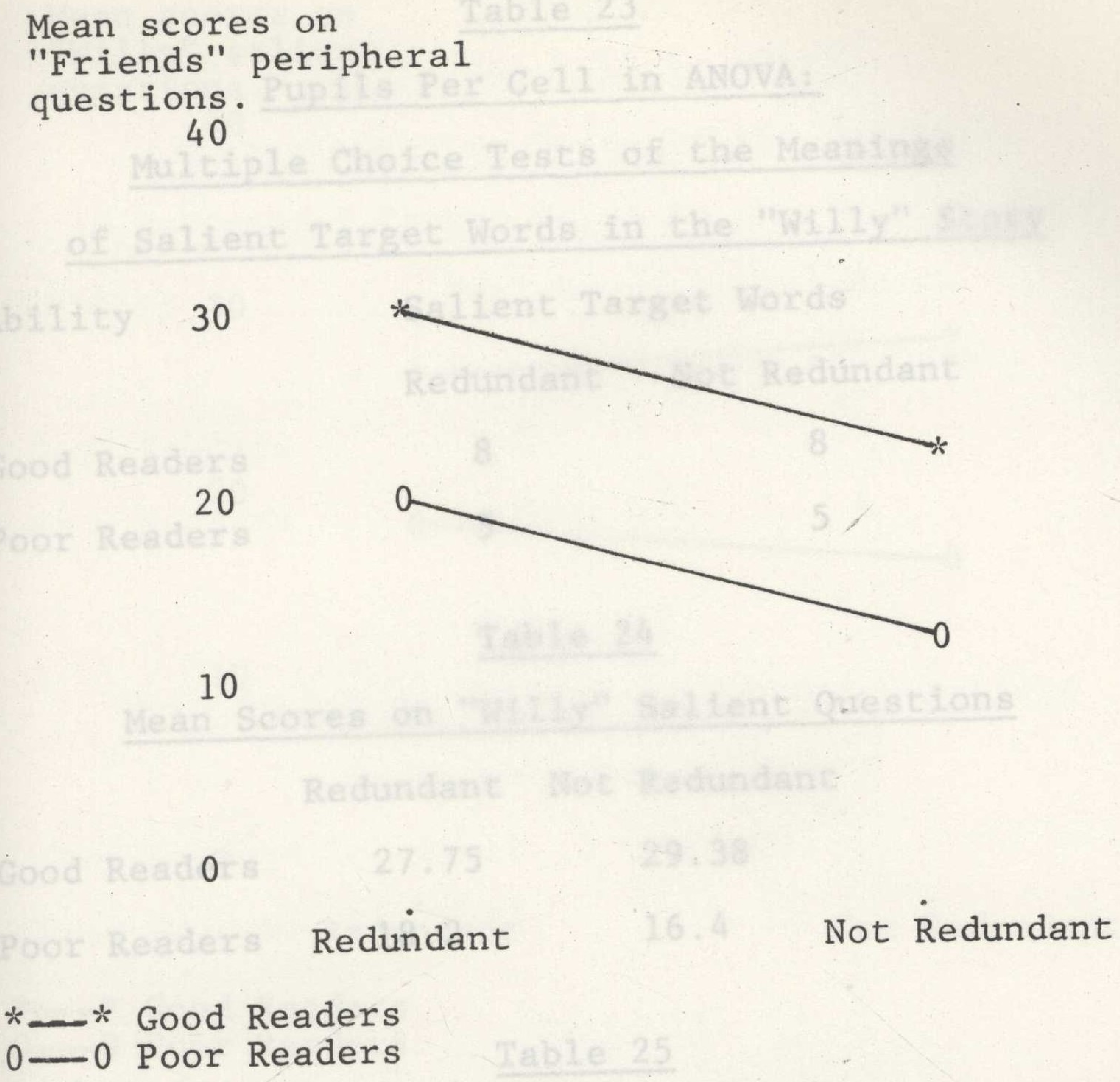

Figure 6. Ability x redundancy interaction for questions on peripheral, unknown words in the "Friends" story.

The two ANOVAs carried out on the results of the tests dealing with salient and peripheral target words in the "Willy" story revealed main effects for ability only. Results of the ANOVA on responses to the test for salient target words are shown in Table 25. The first ANOVA on the results of the test on the meanings of salient, unknown words was adjusted for unequal cell sizes as shown in Table 23. The mean scores for this test are shown in Table 24.

Table 23

Pupils Per Cell in ANOVA: Multiple Choice Tests of the Meanings of Salient Target Words in the "Willy" Story

Ability	Salient Target Words	
	Redundant	Not Redundant
Good Readers	8	8
Poor Readers	5	5

Table 24

Mean Scores on "Willy" Salient Questions

	Redundant	Not Redundant
Good Readers	27.75	29.38
Poor Readers	18.2	16.4

Table 25

ANOVA: Multiple Choice Questions Testing the Meaning of Salient Target Words in the "Willy" Story

Source	SS	df	MS	F	SIGNIF. of F
Ability (A)	780.58	1	780.58	33.19	.001
Redundancy (B)	.62	1	.62	.03	.87
A X B	18.05	1	18.05	.77	.39
Residual	517.38	22	23.52		
Total	1316.62	25			

These results are represented graphically in Figure 7.

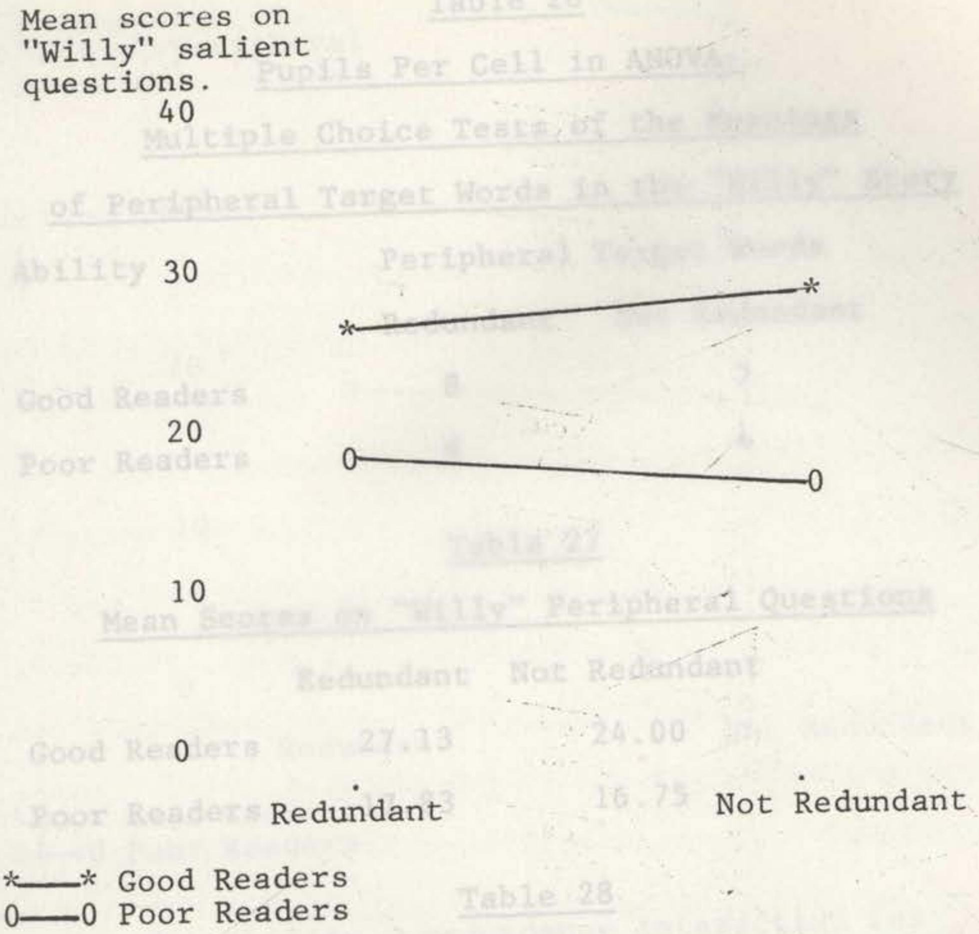

Figure 7. Ability x redundancy interaction for questions on salient, unknown words in the "Willy" story.

Results of the ANOVA of responses to the test for peripheral target words are shown in Table 28. This analysis was adjusted for unequal cell sizes as shown in Table 26. The mean scores for this test are shown in Table 27.

Table 26

Pupils Per Cell in ANOVA:

Multiple Choice Tests of the Meanings

of Peripheral Target Words in the "Willy" Story

Ability	Peripheral Target Words	
	Redundant	Not Redundant
Good Readers	8	7
Poor Readers	6	4

Table 27

Mean Scores on "Willy" Peripheral Questions

	Redundant	Not Redundant
Good Readers	27.13	24.00
Poor Readers	17.83	16.75

Table 28

ANOVA: Multiple Choice Questions

Testing the Meaning of Peripheral Target Words

in the "Willy" Story

Source	SS	df	MS	F	SIGNIF. of F
Ability (A)	423.71	1	423.71	21.78	.001
Redundancy (B)	33.19	1	33.19	1.71	.206
A X B	6.09	1	6.09	.31	.58
Residual	408.59	21	19.45		
Total	857.76	24			

These results are represented graphically in Figure 8.

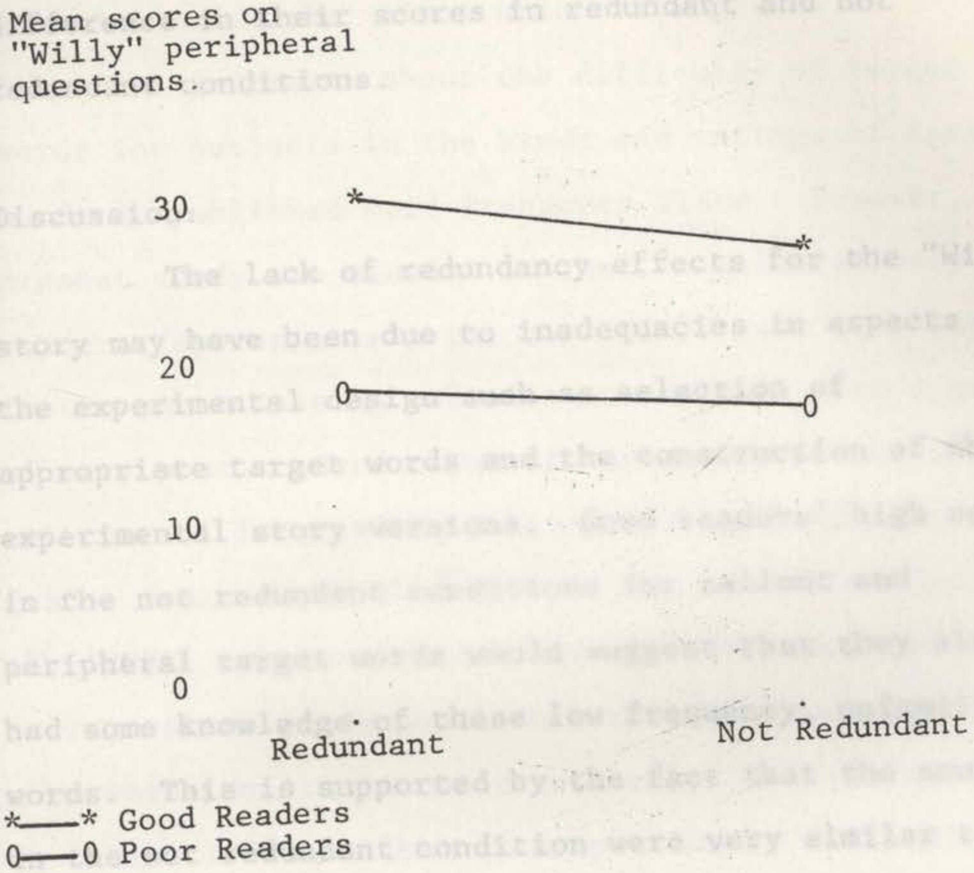

Figure 8. Ability x redundancy interaction for questions on peripheral, unknown words in the "Willy" story.

These results for the "Willy" story did not indicate that good readers in redundant conditions scored higher than good readers in not redundant conditions as predicted in hypothesis 1.1 however, the mean scores were consistent with hypothesis 1.2, indicating that the scores of poor readers in redundant and not redundant conditions were similar. While the mean scores were also consistent with hypothesis 1.3, indicating that good readers in redundant conditions scored higher than poor readers in redundant conditions, this may not be attributable to good readers' utilization of redundancy, since there was no difference in their scores in redundant and not redundant conditions.

Discussion:

The lack of redundancy effects for the "Willy" story may have been due to inadequacies in aspects of the experimental design such as selection of appropriate target words and the construction of the experimental story versions. Good readers' high scores in the not redundant conditions for salient and peripheral target words would suggest that they already had some knowledge of these low frequency, unfamiliar words. This is supported by the fact that the scores in the not redundant condition were very similar to the scores in the redundant condition and that, by contrast, the results on the "Friends" story revealed significant differences for good readers in redundant compared with not redundant conditions for both peripheral and salient target words. It was surprising that good readers seemed to know the target words in the "Willy" story since, on the criterion of low frequency they certainly appeared to be equivalent to the target words in the "Friends" story (Table 7, Ch. III, part 2b). In retrospect it seems that the difficulty of these words should have been tested empirically in a pilot study with a comparable group of very good readers, although this has not been the practice in previous studies (Freebody and Anderson, 1981; Kameenui, Carnine and Freschi, 1982; Carnine, Kameenui and Coyle, 1984) which have relied on intuitive judgments about the difficulty of target words for subjects in the study and ratings of target words in published word frequency lists. However, the present study was unusual in that it selected very good readers (approximately the top 10% of year five pupils in the participating schools) to contrast with a group of very poor readers. Two of the previous studies did not control for reading ability and used subjects from grades four to six (Kameenui et al, 1982; Carnine et al, 1984). Freebody and Anderson (1981) used above average sixth grade pupils but their mean reading comprehension stanine score was only 5.76 (standard deviation 1.85). Although comparison is difficult it is likely that the good readers in the present study were relatively more proficient and this should have signalled the need for greater sophistication in procedures used to select low frequency words that would be unknown to subjects in the study.

Another possible explanation for the lack of redundancy effects has come to light in very recent material published subsequent to the design and construction of test materials for the present study. An innovative theory has been developed concerning the manner in which word meanings might be constructed through contextual processing (Sternberg and Powell, 1983; Sternberg, Powell and Kaye, 1983). The theory distinguishes between contextual cues and mediating variables. Contextual cues are within the verbal context itself and convey various types of information about the word which determine the quality of a definition that can theoretically be inferred for a word from a given context. Mediating variables lie at least partially within the individual and affect how well a given set of cues will actually be utilized in a particular task and situation.

Sternberg and Powell (1983, p.882) proposed that context cues could be classified into eight categories:

(i) temporal cues: cues regarding the duration or frequency of X (the unknown word) or regarding when X can occur;
(ii) spatial cues: cues regarding the general or specific location of X or possible location in which X can sometimes be found;
(iii) value cues: cues regarding the worth or desirability of X or regarding the kind of affect X arouses;
(iv) stative descriptive cues: cues regarding physical properties of X (such as size, shape, colour, odour, feel etc.);
(v) functional descriptive cues: cues regarding possible purposes of X, actions X can perform, or potential uses for X;
(vi) causal/enablement cues: cues regarding possible causes of or enabling conditions of X;
(vii) equivalence cues: cues regarding the meaning of X or contrasts (such as antonomy) to the meaning of X.

The context cues for a particular unknown word may consist of information from any one or several of the above categories. This capacity to quantify the richness of contextual information relevant to unknown words contrasts with previous context clue classifications such as those of McCullough (1945), which are still given prominence in current publications (Smith and Robinson, 1980; Harris and Smith, 1980; Hittleman, 1983). Even recent research using similar classifications (Kameenui, Carnine and Freschi, 1982; Carnine, Kameenui and Coyle, 1984) has considered contextual information about unknown words to be focussed in single text locations and to be of uniform informational value to the reader.

The variation in richness of contextual information emphasized in the Sternberg and Powell (1983) classification is not a simple index of how effectively meaning can be constructed from context cues. The application of the contextual cues is affected by the following mediating variables:

> (i) the number of occurrences of the unknown word,
> (ii) the variability of contexts in which multiple occurrences of the unknown word appears,
> (iii) the density of unknown words,
> (iv) the importance of the unknown word to understanding the context in which it is embedded (both at the sentence level and at the overall passage level),
> (v) the perceived helpfulness of surrounding context in understanding the meaning of the unknown word,
> (vi) the concreteness of the unknown word and the surrounding context,
> (vii) the usefulness of prior knowledge in context utilization.
> (Sternberg and Powell, 1983, p.83)

The first four of these were at least taken into account in the present study - albeit without the benefit of the Sternberg and Powell classification.

Sternberg and Powell (1983) provided empirical evidence that ratings for contextual cues derived from their framework successfully predicted the quality of secondary school students' definitions of previously unknown words which the students encountered within substantial paragraphs. The implications for the present study are that, despite the absence of "contextually appropriate synonyms, summary phrases or definitions" (Ch.III, part 2b.), the "not redundant" versions of the "Willy" story may well have included sufficient contextual information to allow very good readers to construct tentative definitions of the target words which were at least sufficient to permit correct responses to multiple choice questions.

An examination of the first paragraph of the salient, not redundant version of the "Willy" story certainly indicates the presence of the value cue for the target words "incorrigible delinquent".

> Willy was an incorrigible delinquent. He always had been. He was also my sibling. He hated toys although some were games which cost too much for things we didn't need. He never thought about that. His games were so different you could not stop playing with them. But Willy was very much different from most other young children.....

The negative affect associated with the target words may be inferred from Willy's hatred of toys and the fact that he was very much different from other young children. Other categories of contextual information can be identified for target words. The spatial cue for "saunter" is apparent in the following sentence:

> When we got home Willy wanted to saunter around outside.

It would seem that even the "not redundant" versions of this story may contain contextual cues for unknown words which are of significant information value - at least to good readers. Unfortunately it is not practicable at present, to undertake a full analysis of the test stories based on the Sternberg and Powell (1983) framework. Although these researchers have reported a summary of some of the data collected, details of their methodology and data analysis remain unpublished (Powell and Sternberg, 1983). The published summary (Sternberg and Powell, 1983) gives no information about the reliability of the contextual cue ratings, indicating only that they were provided by Powell. When sufficient information is available to permit adequate training of raters, the quantification of contextual cue strength may well permit a refinement and extension of the work undertaken in this study.

In contrast to the "Willy" story, results from the "Friends" story did show redundancy effects. On the basis of these results it would seem that when unknown words were salient to the gist of a story good readers used redundancy to construct meanings for these words but poor readers did not. However, when unknown words were peripheral to the gist of the story both good and poor readers used redundancy to construct meanings for them. One reason for this may relate to the different processing demands of unknown words which are salient and those which are peripheral and the different abilities of good and poor readers to meet these demands.

When readers meet unknown words during oral reading they must resolve at least three processing goals. One of these involves recoding or pronouncing the word, another concerns the construction of focal meaning for that part of the text containing the unknown word and the third is the maintenance of the developing gist of the text as a whole. Where unknown words are salient to the gist, the use of context is integral to two of these processing goals viz. the construction of focal meaning and maintenance of developing gist. However in the case of peripheral unknown words, the use of context is central to the construction of focal meaning only. Therefore when readers encounter unknown salient words more processing capacity is required and it must be coordinated among a greater number of processing goals than is the case when they encounter peripheral unknown words.

It has been argued that good readers and poor readers differ with respect to the relative attention they give to each of these processing goals. While poor readers may use context primarily to aid word recognition (Stanovich, 1980), good readers use context to monitor comprehension (Stanovich, 1980) and centre normal processing on criterion decisions at a thematic level (Schwartz, 1980). Schwartz (1980) proposed that an important difference between skilled and less skilled readers might rest in the flexibility with which they coordinate such processing goals. When good readers encounter unknown salient words in redundant conditions they utilize the redundant information to infer focal meaning and maintain the gist of the text in a coordinated way without undue attention to the pronunciation of the word. The facilitative effect of redundancy for good readers is apparent in their significantly higher scores for the meanings of unknown salient words in redundant compared with not redundant conditions.

It would seem that poor readers respond to the additional processing demands of salient unknown words in a much less efficient manner. They apparently cannot deal with pronunciation, the construction of focal meaning and the monitoring of the developing gist of the story all at the same time. Their unsuccessful attempts to coordinate processing goals result in a diffusion of processing capacity to the extent that there is no significant difference in their ability to construct meaning for unknown salient words in redundant and not redundant conditions.

Where unknown words are peripheral, the coordination task for the poor readers is less demanding. The use of context is now integral to the construction of focal meaning only. Hence, at the point of encounter, less processing capacity is required to monitor the story line than would be the case with salient words and more processing capacity is available to resolve focal meanings. This may explain why poor readers who read the "Friends" story, were able to make use of redundancy with peripheral words whereas they were not able to do so for salient words. The explanation remains somewhat tenuous however, due to the lack of redundancy effects in the "Willy" story.

Research Question 2

Are good readers and poor readers more likely to use redundancy in text to construct meanings for unknown words which are salient in text compared with such words which are peripheral?

It was specifically hypothesized that:

2.1 Good readers who answer questions testing the meaning of unknown words which are redundant and salient to the gist of a story (SR) score higher than good readers who answer such questions on words which are redundant and peripheral to the story (PR).

2.2 There is no significant difference between the scores of poor readers who answer questions testing the meaning of unknown words which are redundant and salient to the gist of the story (SR) and the scores of poor readers who answer such questions on words which are redundant but peripheral to the story (PR).

In order to test the corresponding null hypotheses a 2x2x2 ANOVA was conducted on the results of the tests of the meanings of salient unknown words and peripheral unknown words obtained by good and poor readers who read redundant or not redundant story versions. This data has already been analysed separately for salient and peripheral conditions because the tests of the meanings of the salient and peripheral words were two different tests of two different sets of words. It will be recalled however, that efforts were made in the construction of the tests to ensure that they were equivalent. The frequency ratings for both sets of target words were similar (Table 7, Ch. III, part 2b.), the multiple choice items were constructed according to common specifications (Schlesinger and Weiser,1970) and a pilot study (Ch.III, part 2c.) indicated acceptable and comparable reliability coefficients for each test. It was therefore considered that there was a reasonable basis for deeming the tests equivalent and analysing the data for both salient and peripheral words together in the three way ANOVAs. As noted in previous analyses, adjustments for unequal cell sizes were necessitated by the exclusion of pupils whose aural recall scores did not reach criterion. Cell sizes for the three way ANOVA on the "Friends" story are shown in Table 29.

Table 29

Cell Sizes for ANOVA:

Ability X Redundancy X Salience

on Tests for Salient and Peripheral Target Words

for the "Friends" Story

Ability	Salient Target Words		Peripheral Target Words	
	Redundant	Not Redundant	Redundant	Not Redundant
Good Readers	8	8	7	8
Poor Readers	4	6	5	5

Results for the "Friends" story revealed significant main effects for ability (F = 126.81, p<.001) and redundancy (F = 58.34, p<.001) but not for salience (F = .007, p<.94). No significant interactions were found.

Table 30

ANOVA: Ability X Redundancy X Salience on Salient and Peripheral Questions for the "Friends" Story

Source	SS	df	MS	F	SIGNIF. of F.
Ability (A)	1216.08	1	1216.08	126.81	.001
Redundancy (B)	559.7	1	559.7	58.34	.001
Salience (C)	.07	1	.07	.01	.935
A X B	14.79	1	14.79	1.54	.221
A X C	20.46	1	20.46	2.13	.151
B X C	17.78	1	17.78	1.86	.180
A X B X C	16.17	1	16.17	1.69	.201
Residual	412.35	43	9.59		
Total	2310.98	50			

Hypothesis 2.1 was not supported and the corresponding null hypothesis was accepted. Hypothesis 2.2 was supported. The effects of redundancy and relative salience of unknown words in the "Friends" story on the ability of good and poor readers to construct meanings for these unknown target words are shown in Figure 9.

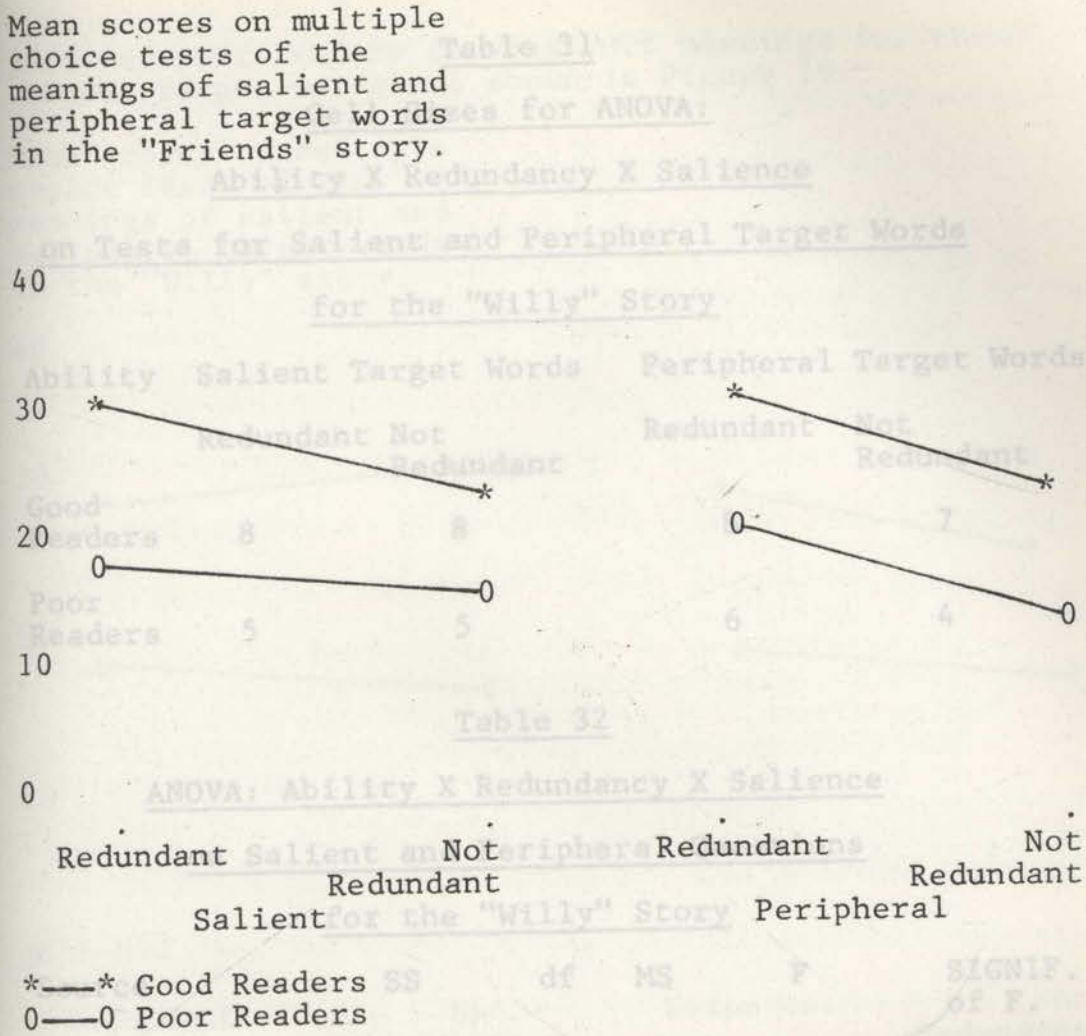

Figure 9. Effects of relative salience and redundancy of unknown words in the " Friends" story on the ability of good and poor readers to construct meanings for these target words.

The analysis for the "Willy" story did not provide any evidence to conflict with these results. Cell sizes for the three way ANOVA are shown in Table 31. The only significant main effect was for ability. No significant interactions were found.

Table 31

Cell Sizes for ANOVA:

Ability X Redundancy X Salience

on Tests for Salient and Peripheral Target Words

for the "Willy" Story

Ability	Salient Target Words		Peripheral Target Words	
	Redundant	Not Redundant	Redundant	Not Redundant
Good Readers	8	8	8	7
Poor Readers	5	5	6	4

Table 32

ANOVA: Ability X Redundancy X Salience

on Salient and Peripheral Questions

for the "Willy" Story

Source	SS	df	MS	F	SIGNIF. of F.
Ability (A)	1170.1	1	1170.1	54.35	.001
Redundancy (B)	13.1	1	13.1	.61	.44
Salience (C)	40.27	1	40.27	1.87	.179
A X B	1.74	1	1.74	.08	.78
A X C	23.37	1	23.37	1.09	.30
B X C	21.81	1	21.81	1.01	.32
A X B X C	22.39	1	22.39	1.04	.31
Residual	925.83	43	21.53		
Total	2218.98	50			

The effects of relative salience and redundancy of unknown words in the "Willy" story on the ability of good and poor readers to construct meanings for these unknown target words are shown in Figure 10.

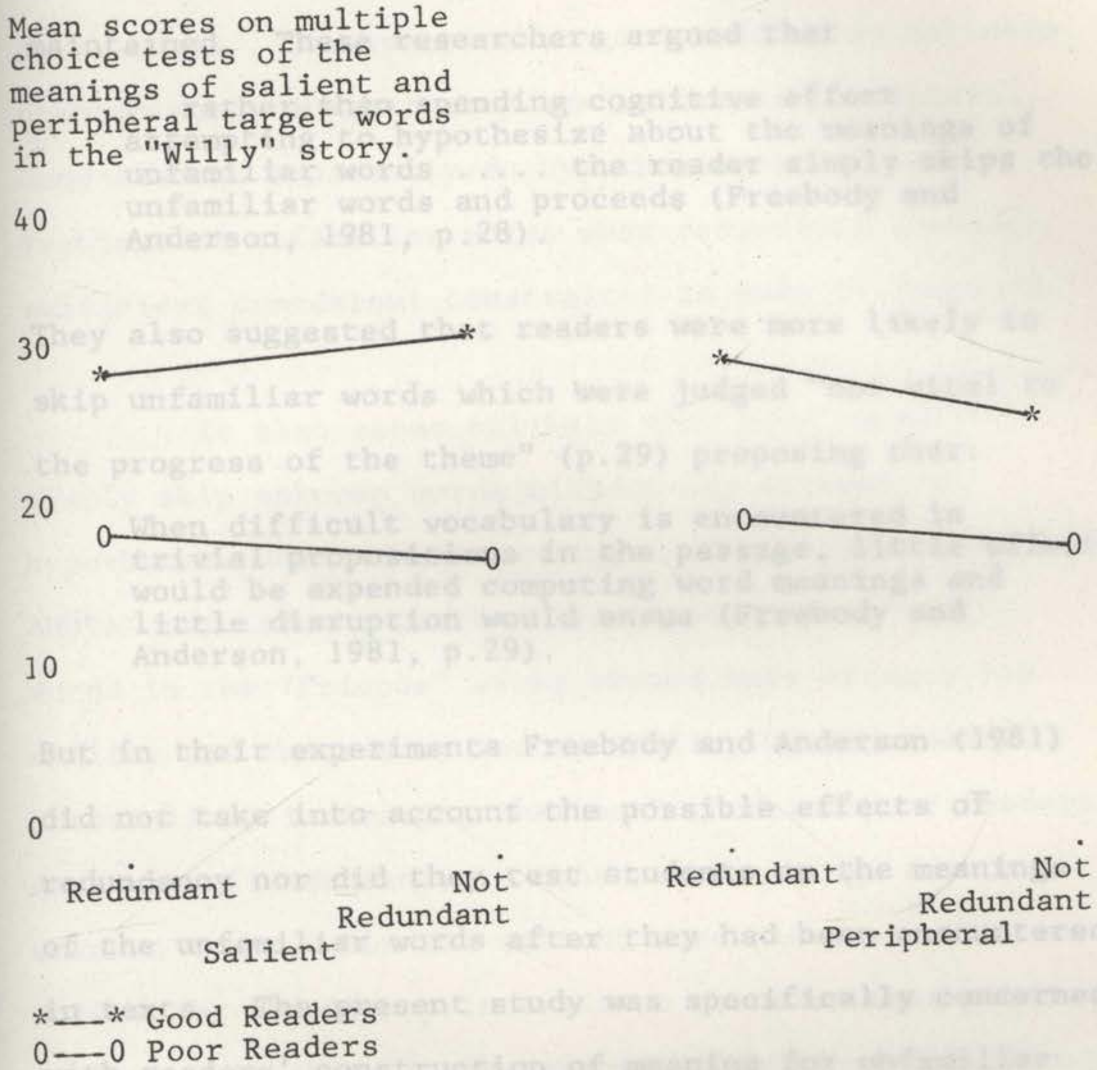

Figure 10. Effects of relative salience and redundancy of unknown words in the "Willy" story on the ability of good and poor readers to construct meanings for these target words.

Discussion:

It had been hypothesized that good readers were more likely to use redundancy to construct meanings for unknown words when these words were salient to the gist of the story than when they were peripheral. According to the minimum effort principle proposed by Freebody and Anderson (1981) readers would avoid attempts at deep processing of unfamiliar words and "skip" them provided the gist of the story could be maintained. These researchers argued that

> ...rather than spending cognitive effort attempting to hypothesize about the meanings of unfamiliar words ..... the reader simply skips the unfamiliar words and proceeds (Freebody and Anderson, 1981, p.28).

They also suggested that readers were more likely to skip unfamiliar words which were judged "not vital to the progress of the theme" (p.29) proposing that:

> When difficult vocabulary is encountered in trivial propositions in the passage, little effort would be expended computing word meanings and little disruption would ensue (Freebody and Anderson, 1981, p.29).

But in their experiments Freebody and Anderson (1981) did not take into account the possible effects of redundancy nor did they test students on the meanings of the unfamiliar words after they had been encountered in texts. The present study was specifically concerned with readers' construction of meaning for unfamiliar words and whether this was affected by redundancy. Good readers were expected to be responsive to redundancy and to derive meanings for unknown words but it still seemed logical that they might skip peripheral unknown words. It was therefore expected that good readers' scores on a test of the meanings of these peripheral words would be low in comparison with such a test for salient words which were less likely to be skipped. However, this study showed that good readers made significant use of redundancy to construct meanings for unknown words in the "Friends" story and that this was not affected by the relative salience of these words. It appears that good readers do not skip unknown words whether they are salient or peripheral. Good readers apparently do hypothesize about the meanings of unfamiliar words when redundancy provides sufficient contextual constraints to make it feasible.

It also seems unlikely that poor readers simply skip unknown words without any attempt to hypothesize about their meanings. The separate two way ANOVA carried out on the test on peripheral target words in the "Friends" story showed main effects for ability and redundancy and no ability by redundancy interaction, indicating that both good and poor readers made use of redundancy to construct meanings for the unknown words. For the salient words however, the ability by redundancy interaction revealed that good readers were able to make significant use of redundancy while poor readers were not. This difference has been explained in terms of the different processing demands of salient and peripheral words. It was argued that unknown words which were salient demanded the coordination of cognitive capacity among more processing goals than did unknown words which were peripheral and that good readers may be differentiated from poor readers in terms of their flexibilty in coordinating these processing goals. Hence the efficiency with which poor readers coordinate their cognitive processing capacity in reading is sufficient to allow the utilization of redundancy to construct meaning for peripheral words but not for salient words.

This reasoning would lead one to expect a significant ability by redundancy by salience interaction in the three way ANOVA. Although the pattern of mean scores for the "Friends" story (Table 33) was consistent with this view the three way interaction was not significant (F = 1.69, p<.2).

Table 33

Mean Scores on Tests of the Meanings of Salient and Peripheral Unknown Words for the "Friends" story

	Salient		Peripheral	
	Redundant	Not Redundant	Redundant	Not Redundant
Good Readers	30.13	23	29.57	21.88
Poor Readers	16.25	13.67	20.8	13

These conclusions must be treated cautiously for two reasons. The first is that they are based on one story only. The second reason relates to the lack of certainty regarding the equivalence of the tests of the meanings of the salient and peripheral target words.

3. Macrorecall

A measure of macrorecall was devised to gauge readers' sensitivity to the pattern of organization of main ideas, or gist, of simple stories. The derivation of this measure was described in Chapter III, part 2e and the scoring procedures are detailed in Appendix 4. Pupils' scores indicate the percentage of criterion macropropositions which appeared in their oral story recalls.

Reliability of Scoring Procedures

Ten randomly selected recall protocols for each test story were scored independently by the researcher and a graduate student as second judge. Neither the researcher nor the second judge were aware of the reading ability of the subjects who produced the recalls nor the story conditions from which the recalls came because the recall protocols were identified only by numerical codes derived solely from the pupils' names. This code was later checked on a mastersheet for the recording of scores. The reliability data are shown in Table 34.

Table 34

Macrorecall Scores - Interjudge Reliability

Story	Friends		Willy	
	Mean	SD	Mean	SD
Researcher	5.1	4.35	11.6	6.0
Second Judge	6.0	4.97	11.5	5.5
Pearson's r	.97		.97	

These results were taken to indicate an acceptable level of objectivity in the researcher's scoring of macrorecall.

Research Question 3

How does the degree of redundancy and salience of unknown words affect the ability of good readers to follow story organization?

It was hypothesized that the conditions under which redundant information about unknown words facilitated ability to follow story organization were such that the information related to unknown words which were salient to the gist of stories read by skilled readers. Four specific hypotheses were formulated:

3.1 Good readers recall more macropropositions from stories where salient, unknown words are redundant (SR) than from stories where unknown words are salient but not redundant (SNR).

3.2 There is no difference in the mean number of macropropositions recalled by good readers from stories where unknown words are redundant and peripheral (PR) compared with stories where unknown words are not redundant and peripheral (PNR).

3.3 There is no difference in the mean number of macropropositions recalled by poor readers from stories where salient words are unknown and redundant (SR) compared with stories where salient, unknown words are not redundant (SNR).

3.4 There is no difference in the mean number of macropropositions recalled by poor readers from stories where peripheral, unknown words are redundant (PR) compared with stories where peripheral, unknown words are not redundant (PNR).

A three way ANOVA was conducted on pupils' macrorecall scores for each of the two experimental stories. However, as explained in the previous section (Ch. IV, part 2), the target words in the "Willy" story were relatively familiar to the good readers and could not be adequately described as unknown words. As would be expected therefore, the macrorecall results on this story were not very illuminating with respect to the hypotheses being investigated. The hypotheses have therefore been discussed initially, in terms of the analysis of macrorecall from the "Friends" story.

Due to the exclusion of pupils whose aural recall scores did not reach criterion, the ANOVA conducted on results from the "Friends" story was adjusted to account for unequal cell sizes as shown in Table 35.

Table 35

Cell Sizes for ANOVA:

Ability X Redundancy X Salience on Macrorecall

for the "Friends" Story

Ability	Salient Target Words		Peripheral Target Words	
	Redundant	Not Redundant	Redundant	Not Redundant
Good Readers	8	8	7	8
Poor Readers	4	6	5	5

The results of the ANOVA revealed main effects for ability (F=41.98, p<.001), redundancy (F=27.79, p<.001) and salience (F=47.03, p<.001). There was a significant salience X redundancy interaction (F=11.92, p<.001) and, as predicted, a significant ability X salience X redundancy interaction (F=6.75, p<.01).

Table 36

ANOVA: Ability X Redundancy X Salience on Macrorecall for the "Friends" Story

Source	SS	df	MS	F	SIGNIF. of F.
Ability (A)	5670.3	1	5670.3	41.98	.001
Redundancy (B)	3753.58	1	3753.8	27.79	.001
Salience (C)	6352.8	1	6352.8	47.03	.001
A X B	41.65	1	41.65	.31	.58
A X C	110.44	1	110.44	.82	.37
B X C	1610.15	1	1610.15	11.92	.001
A X B X C	911.29	1	911.29	6.75	.01
Residual	5808.33	43	135.08		
Total	24258.52	50			

In order to test the null hypotheses corresponding to the four specific research hypotheses listed above, simple effects tests were carried out according to the pattern of planned comparisons shown in Figure 11.

	in Salient conditions for Good Readers
Redundant vs	in Peripheral conditions for Good Readers
Not Redundant	in Salient conditions for Poor Readers
	in Peripheral conditions for Poor Readers

Figure 11. Planned comparisons for macrorecall.

The overall pattern of interactive effects of salience and redundancy of unknown words on the macrorecall of good and poor readers who read the "Friends" story is shown in Figure 12.

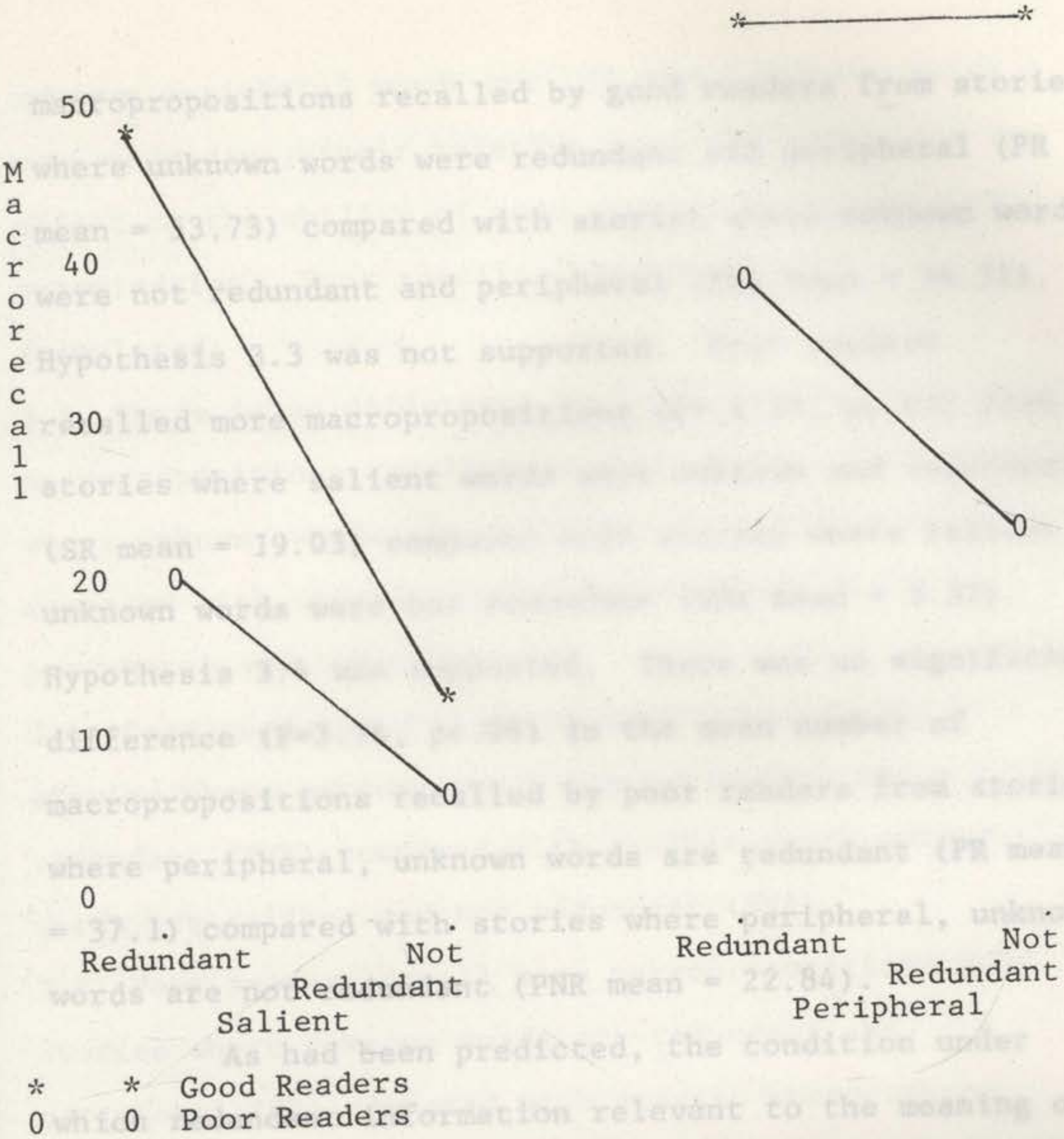

Figure 12. Ability X salience X redundancy interaction on macrorecall for the "Friends" story.

Hypothesis 3.1 was supported. Good readers recalled more macropropositions from stories where salient, unknown words were redundant (SR mean = 47.6) than from stories where such unknown words were salient but not redundant (SNR mean = 11.86). The simple effects test indicated that the difference was highly significant (F=37.82,p<.001).

Hypothesis 3.2 was supported. There was no significant difference (F=.004, p<.95) in the mean number of macropropositions recalled by good readers from stories where unknown words were redundant and peripheral (PR mean = 53.73) compared with stories where unknown words were not redundant and peripheral (PNR mean = 54.11). Hypothesis 3.3 was not supported. Poor readers recalled more macropropositions (F= 4.27, p<.05) from stories where salient words were unknown and redundant (SR mean = 19.03) compared with stories where salient, unknown words were not redundant (SNR mean = 3.52). Hypothesis 3.4 was supported. There was no significant difference (F=3.76, p<.06) in the mean number of macropropositions recalled by poor readers from stories where peripheral, unknown words are redundant (PR mean = 37.1) compared with stories where peripheral, unknown words are not redundant (PNR mean = 22.84).

As had been predicted, the condition under which redundant information relevant to the meaning of unknown words affected recall of the gist of a story was when the unknown words were highly salient to the gist of the story. Contrary to expectation, poor readers as well as good readers were able to make use of this redundant information in recalling the gist of the story.

Further hypotheses dealing with the effects of the relative salience of unknown words and the combined effects of salience, redundancy and ability on macrorecall were investigated. It was thought that unknown words which were salient to story organization would impede the ability to follow the story more than unknown peripheral words but, if these unknown words were redundant, their relative salience would have no effect on the ability of good readers to follow story organization. Four specific hypotheses were formulated:

3.5 There is no difference in the mean number of macropropositions recalled by good readers from stories where unknown words are salient and redundant (SR) compared with stories where unknown words are peripheral and redundant (PR).

3.6 Good readers recall more macropropositions from stories where unknown words are peripheral and are not redundant (PNR) compared with stories where unknown words are salient and not redundant (SNR).

3.7 Poor readers recall more macropropositions from stories where unknown words are redundant and peripheral (PR) compared with stories where unknown words are redundant and salient (SR).

3.8 Poor readers recall more macropropositions from stories where unknown words are peripheral and not redundant (PNR) compared with stories where unknown words are salient and not redundant (SNR).

In order to test the corresponding null hypotheses, simple effects tests were carried out according to the pattern of planned comparisons shown in Figure 13.

	in Redundant conditions for Good Readers
Salient vs Peripheral	in Not Redundant conditions for Good Readers
	in Redundant conditions for Poor Readers
	in Not Redundant conditions for Poor Readers

Figure 13. Further planned comparisons for macrorecall.

Hypothesis 3.5 was supported. There was no significant difference (F=1.04, p<.31) in the mean number of macropropositions recalled by good readers from stories where unknown words were salient and redundant (SR mean = 47.6) compared with stories where unknown words were peripheral and redundant (PR mean = 53.73).

Hypothesis 3.6 was supported. Good readers recalled more macropropositions from stories where unknown words were peripheral and not redundant (PNR mean = 54.11) compared with stories where unknown words were salient and not redundant (SNR mean = 11.86). The simple effects test indicated that this difference was highly significant (F=52.86, p<.001).

Hypothesis 3.7 was supported. Poor readers recalled more macropropositions (F=5.38, p<.03) from stories where unknown words were redundant and peripheral (PR mean =37.1) compared with stories where unknown words were redundant and salient (SR mean = 19.03).

Hypothesis 3.8 was supported. Poor readers recalled more macropropositions from stories where unknown words were peripheral and not redundant (PNR mean = 22.84) compared with stories where unknown words are salient and not redundant (SNR mean =3.52). A significant difference was indicated by the results of the simple effects test (F=7.54, p<.009).

Due to the exclusion of pupils whose aural recall scores did not reach criterion, the three way ANOVA conducted on the macrorecall for the "Willy" story was adjusted for unequal cell sizes as shown in Table 37. The mean scores for macrorecall on the "Willy" story are shown in Table 38.

Table 37

Cell Sizes for ANOVA:

Ability X Redundancy X Salience

on Macrorecall for the "Willy" Story

Ability	Salient Target Words		Peripheral Target Words	
	Redundant	Not Redundant	Redundant	Not Redundant
Good Readers	8	8	8	7
Poor Readers	5	5	6	4

Table 38

Mean Scores on Macrorecall for the "Willy" Story

	Salient		Peripheral	
	Redundant	Not Redundant	Redundant	Not Redundant
Good Readers	41.75	34.05	37.05	58.1
Poor Readers	15.78	4.06	23.47	17.08

Table 39

ANOVA: Ability X Redundancy X Salience on Macrorecall for the "Willy" Story

Source	SS	df	MS	F	SIGNIF. of F.
Ability (A)	8749.11	1	8749.11	29.61	.001
Redundancy (B)	1.71	1	1.71	.01	.94
Salience (C)	1213.81	1	1213.81	4.11	.05
A X B	711.29	1	711.29	2.41	.13
A X C	2.44	1	2.44	.01	.93
B X C	1219.82	1	1219.82	4.13	.05
A X B X C	411.06	1	411.06	1.39	.25
Residual	12707.3	43	295.52		
Total	25016.55	50			

The results of this analysis showed significant main effects for reading ability (F=29.61, p<.001) and salience (F=4.11, p<.05) and a significant salience by redundancy interaction (F=4.13, p<.05). In view of the fact that the design of this study involved a number of planned comparisons (Figures 11 and 13), the corresponding simple effects tests were conducted despite the flaws in the experimental materials due to the selection of inappropriate target words. The results of these comparisons are summarized in Table 40.

Table 40

Results of Planned Comparisons on Macrorecall for the "Willy" Story

GOOD READERS

	Means		F	Signif. of F	Hypothesis Supported/ Rejected
	Redundant	Not Redundant			
Salient	41.75	34.05	.80	.38	3.1 R
Peripheral	37.05	58.1	5.60	.02	3.2 R
	Salient	Peripheral			
Redundant	41.75	37.05	.30	.59	3.5 S
Not Redundant	34.05	58.1	7.30	.009	3.6 S

POOR READERS

	Redundant	Not Redundant			
Salient	15.78	4.06	1.16	.29	3.3 S
Peripheral	23.47	17.08	.33	.57	3.4 S
	Salient	Peripheral			
Redundant	15.78	23.47	.55	.46	3.7 R
Not Redundant	4.06	17.08	1.27	.27	3.8 R

As would be expected, comparisons between good readers who read the different experimental story versions of "Willy" did not yield a pattern of results comparable with those of the "Friends" story, because the target words in the "Willy" story did not appear to be entirely unknown to the good readers as the design required. In the first comparison relating to hypothesis 3.1 there was no significant difference in the mean scores of good readers in salient redundant and salient not redundant conditions. This was contrary to expectation and in contrast with results on the "Friends" story. The lack of any significant decrement in macrorecall in the salient, not redundant condition may well have been due to the fact that the target words were relatively familiar and did not inhibit good readers' ability to follow the story line.

The second comparison related to hypothesis 3.2 and, also contrary to expectation and results on the "Friends" story, indicated that for the peripheral story version good readers in the not redundant conditions had significantly higher macrorecall scores than good readers in redundant conditions. These results are not readily explicable. It may be that the low frequency, peripheral, target words were simply more familiar to good readers who read the not redundant story version. The remaining two comparisons between groups of good readers concerned hypotheses 3.5 and 3.6. The results of these comparisons were as predicted, and consistent with results from the "Friends" story.

The first comparison between groups of poor readers compared those in salient, redundant and salient, not redundant conditions. The results indicated support for hypothesis 3.3. Although this lack of a significant difference contrasted with results for the "Friends" story, the direction of the mean scores was consistent with the corresponding "Friends" comparison resulting in the rejection of hypothesis 3.3. The second comparison within the poor readers indicated support for hypothesis 3.4 as was the case with the "Friends" story. The remaining two comparisons between groups of poor readers concerned hypotheses 3.7 and 3.8. In both cases the differences in the mean scores failed to reach statistical significance but the pattern of mean scores was consistent with that for the "Friends" story where the statistically different result did support hypotheses 3.7 and 3.8. It appeared then, that poor readers who encountered unknown words which were redundant and peripheral had better gist recall than those poor readers who encountered unknown words which were redundant and salient and that the effects on gist recall were similar for salient, unknown words whether they were redundant or not redundant.

The apparently inadequate selection of target words in the "Willy" story suggested that the pupil response data was rendered largely inappropriate as an adequate basis for the testing of the hypotheses under investigation. Nevertheless, when the limitations in the construction of the "Willy" story were taken into account, there appeared to be some consistency between the pattern of scores obtained by pupils on both the "Willy" and "Friends" stories.

Discussion

It seems highly probable that anomalies within the results of the "Willy" story were largely attributable to the use of inappropriate target words in the construction of the experimental story versions. The discussion relating to pupils' gist recall has therefore been focussed on the results of analyses of pupils' recall of the gist of the "Friends" story.

As expected, macrorecall scores of good and poor readers were significantly lower when unknown words were not redundant and were salient rather than peripheral. Under these conditions unknown words blocked readers' access to textual information which was essential to follow the gist of the story. In redundant conditions the relative salience of unknown words had no significant effect on the macrorecall of good readers because in salient conditions, they were able to make efficient use of redundant information to maintain the gist of the story and in the peripheral story versions there were no difficult words associated with the gist. However, poor readers were not as efficient in coordinating their use of redundancy. When unknown words were salient, poor readers did recall more of the gist in the redundant compared with the not redundant story versions. Despite the unknown words they did appear to make some use of redundant information in attempting to follow the story line. However, their gist recall was still significantly less than in the peripheral redundant version where the gist of the story was unencumbered by unknown words. Seven of the eight hypotheses relating to research question three were supported. Hence the pattern of results depicted in Figure 12 was substantially as predicted.

When good readers encounter unknown words in text their ability to retain the gist of a story is significantly impeded only when the unknown words are highly salient to the gist and not redundant in the text (SNR). The mean scores for good readers under other conditions were very similar as shown in Figure 12. Although poor readers did not retain the gist of the story as well as good readers, the presence of highly salient, not redundant, unknown words similarly produces the most dramatic reduction in gist recall for poor readers. The only difference between poor readers and good readers in the pattern of results for macrorecall was that poor readers who encountered unknown words that were redundant and peripheral scored higher than those who encountered unknown words that were redundant and salient. There was no such difference for good readers. The least detrimental effect of unknown words on the gist recall of poor readers occurred in this condition where the unknown words were peripheral and redundant. In redundant conditions poor readers score higher when unknown words are peripheral rather than salient for two reasons. The first is that, by definition, peripheral words are not associated with the gist and hence there are no direct impediments to poor readers' following the story line. The second reason relates to the relatively lower processing demands involved in dealing with redundant information associated with peripheral, as opposed to salient, unknown words. This has been explained in the previous section (Ch. IV, part 3). As predicted, there was no significant difference between the effects of peripheral, redundant and not redundant, unknown words on the gist recall of poor readers, however the difference did approach significance ($F=3.76$, $p<.06$). It was also noted that Cochrans C Test (5,8; $C=.48984$, $p=.001$) did not support the homogeneity of variance assumption for the three way ANOVA on macrorecall scores for the "Friends" story. It can be seen in Table 41 that the variance in the scores of poor readers in the peripheral, redundant conditions (standard deviation = 24.5) was much greater than that of the other groups.

Table 41

Means and Standard Deviations for Macrorecall on the "Friends" Story

			Mean	Standard Deviation
Good Readers	Salient	Redundant	47.6	15.27
		Not Redundant	11.86	8.41
	Peripheral	Redundant	53.73	6.58
		Not Redundant	54.11	6.2
Poor Readers	Salient	Redundant	19.03	12.85
		Not Redundant	3.52	4.14
	Peripheral	Redundant	37.1	24.35
		Not Redundant	22.84	7.05

The disproportionate variance for the poor readers in the peripheral, redundant condition was due to one pupil who scored zero for macrorecall as shown in Table 42.

Table 42

Macrorecall Scores for Poor Readers on "Friends" Peripheral, Redundant Story Version

Pupil	Macrorecall Score
26	48
28	33
31	67
61	38
64	0

In view of this the ANOVA was recomputed deleting the result for pupil 64. The pattern of significant main effects and interactions remained the same. The simple effects tests involving this group of poor readers in the peripheral, redundant condition were also recomputed. The result of the comparison between poor readers in the peripheral, redundant and not redundant conditions which had approached significance (F= 3.76, p<.06) was now highly significant (F = 12.65, p<.001). The other comparison between poor readers in the peripheral, redundant and salient, redundant conditions indicated significant differences in both the original and recomputed analyses. The results of the reanalysis support the indication, illustrated in Figure 12, that poor readers recalled significantly more gist information when the unknown words they encountered were peripheral and redundant in the text. This may reflect poor readers' lack of flexibility in coordinating processing goals (Ch. II, part 5). The unknown words were not directly relevant to the gist, but lack of redundancy prevented an adequate construction of their meanings and the persistence of this problem at the focal level may have diverted poor readers' processing capacity away from concern with the passage's idea structure (Schwartz, 1980, p.447) and thus inhibited their maintenance of the gist of the story.

4. Microrecall

Microrecall scores are a measure of the total amount of text information in each reader's oral story recall. The scores are the percentage of micropropositions recalled. The system of text analysis, which produces micropropositions representing every individual idea unit in the text, was described in Chapter III, part 1b. The method of scoring pupils' recalls is detailed in Appendix 4.

Reliability of Scoring Procedures

Reliability data on the scoring of microrecall was obtained in a similar manner to that for macrorecall. The researcher and a second judge scored ten randomly selected recall protocols for each test story unaware of the subjects' reading abilities or the story versions they read. The results are shown in Table 43.

Table 43

Microrecall Scores - Interjudge Reliability

Story	Friends		Willy	
	Mear	SD	Mean	SD
Researcher	12.8	10.8	31.5	17.0
Second Judge	12.6	9.8	29.4	16.3
Pearson's r	.95		.95	

These results were taken to indicate an acceptable level of objectivity in the researcher's scoring of microrecall.

Research Question 4

How does the degree of redundancy and salience of unknown words in stories affect the total amount recalled by good and poor readers?

It was hypothesized that the presence of redundant information relating to unknown words in text would increase the total amount recalled by good readers but would not affect the amount recalled by poor readers.

Four specific hypotheses were formulated:

4.1 Good readers recall more micropropositions after reading stories where unknown words are salient and redundant (SR) compared with stories where unknown words are salient and not redundant (SNR).

4.2 Good readers recall more micropropositions after reading stories where unknown words are peripheral and redundant (PR) compared with stories where unknown words are peripheral and are not redundant (PNR).

4.3 There is no difference in the mean number of micropropositions recalled by poor readers after reading stories where unknown words are salient and redundant (SR) compared with stories where unknown words are salient and not redundant (SNR).

4.4 There is no difference in the mean number of micropropositions recalled by poor readers after reading stories where unknown words are peripheral and are redundant (PR) compared with stories where unknown words are peripheral and are not redundant (PNR).

Separate three way ANOVAs were conducted on pupils' microrecall scores for both the "Friends" and the "Willy" stories. The results for the "Friends" story are shown in Table 44. It has already been noted (Table 35) that cell sizes were unequal due to the exclusion of pupils whose aural recall scores did not reach criterion.

Table 44

ANOVA: Ability X Redundancy X Salience on Microrecall for the "Friends" Story

Source	SS	df	MS	F	SIGNIF. of F.
Ability (A)	1205.59	1	1205.59	55.62	.001
Redundancy (B)	293.8	1	293.8	13.55	.001
Salience (C)	197.93	1	197.93	9.13	.005
A X B	10.9	1	10.9	.5	.48
A X C	3.39	1	3.39	.16	.69
B X C	52.58	1	52.58	2.43	.127
A X B X C	16.83	1	16.83	.78	.383
Residual	932.10	43	21.68		
Total	2713.13	50			

The results of the ANOVA showed significant main effects for ability (F=55.62, p<.001), redundancy (F=13.55, p<.001)and salience (F=9.13, p<.005). These results indicated that good readers recalled more than poor readers, readers who read redundant story versions recalled more than those who read not redundant versions and unknown salient words impeded recall more than unknown peripheral words. No significant interactions were found. However a number of specific comparisons were built into this design. Winer (1971, 384) pointed out in his discussion of individual and multiple comparisons among means in factorial experiments that these can and should be made individually, regardless of the outcome of the corresponding overall F test. Accordingly, in order to test the null hypotheses corresponding to the specific research hypotheses listed above, simple effects tests were carried out as indicated by the pattern of planned comparisons shown in Figure 14.

in Salient conditions for Good Readers
Redundant in Peripheral conditions for Good Readers
vs
in Salient conditions for Poor Readers
Not Redundant
in Peripheral conditions for Poor Readers

Figure 14. Planned comparisons for microrecall.

The overall pattern of effects of salience and redundancy of unknown words on the microrecall of good and poor readers who read the "Friends" story is shown in Figure 15.

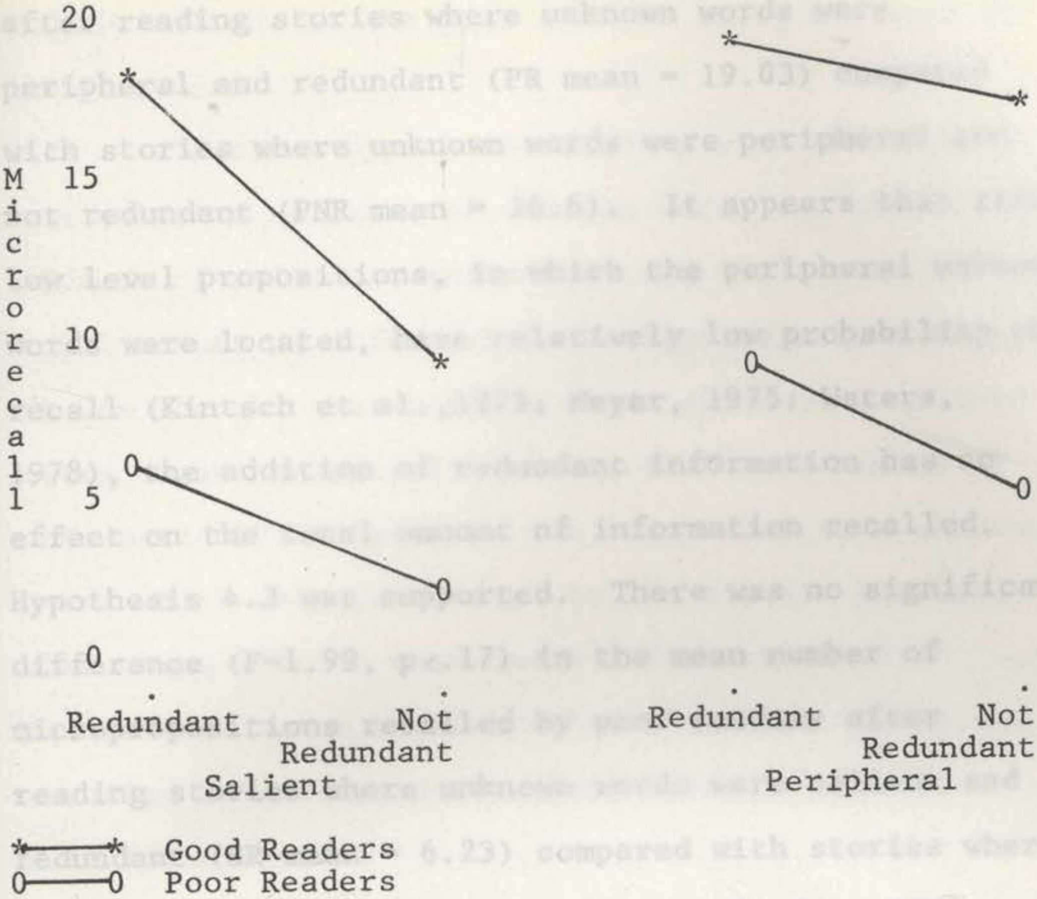

Figure 15. Pattern of effects of salience and redundancy of unknown words on microrecall for the "Friends" story.

Hypothesis 4.1 was supported. Good readers recalled more micropropositions after reading stories where unknown words were salient and redundant (SR mean = 17.68) compared with stories where unknown words were salient and not redundant (SNR mean = 9.33). The simple effects test indicated the statistical significance of the difference (F=12.87, p<.001). Hypothesis 4.2 was not supported. There was no significant difference (F=1.02, p<.32) in the mean number of micropropositions recalled by good readers after reading stories where unknown words were peripheral and redundant (PR mean = 19.03) compared with stories where unknown words were peripheral and not redundant (PNR mean = 16.6). It appears that since low level propositions, in which the peripheral unknown words were located, have relatively low probability of recall (Kintsch et al.,1975; Meyer, 1975; Waters, 1978), the addition of redundant information has no effect on the total amount of information recalled.

Hypothesis 4.3 was supported. There was no significant difference (F=1.99, p<.17) in the mean number of micropropositions recalled by poor readers after reading stories where unknown words were salient and redundant (SR mean = 6.23) compared with stories where unknown words were salient and not redundant (SNR mean = 2.03).

Hypothesis 4.4 was supported. There was no significant difference (F=1.08, p<.31) in the mean number of micropropositions recalled by poor readers after reading stories where unknown words were peripheral and redundant (PR mean = 8.98) compared with stories where unknown words were peripheral and not redundant (PNR mean = 5.92).

Apart from the fact that poor readers' microrecall was not aided by the presence of redundancy related to salient, unknown words, the pattern of these results is similar to that for macrorecall. The only condition under which redundant information relevant to the meaning of unknown words affected the total amount of information recalled was when the unknown words were highly salient to the gist and the story was read by good readers.

Further hypotheses dealing with the effects of the relative salience of unknown words and the combined effects of salience, redundancy and ability on the total amount of information recalled were investigated. It was thought that unknown words which were salient to story organization would reduce the total amount of information recalled from the story more than unknown words which were peripheral to the story. However, when these unknown words were redundant, their relative salience would have no effect on the amount recalled by good readers. Four specific hypotheses were formulated:

4.5 There is no difference in the mean number of micropropositions recalled by good readers after reading stories where unknown words are salient and redundant (SR) and stories where unknown words are peripheral and redundant (PR).

4.6 Good readers recall more micropropositions after reading stories where unknown words are peripheral and are not redundant (PNR) compared with stories where unknown words are salient and are not redundant (SNR).

4.7 Poor readers recall more micropropositions after reading stories in which unknown words are peripheral and are redundant (PR) compared with stories where unknown words are salient and are redundant (SR).

4.8 Poor readers recall more micropropositions after reading stories in which unknown words are peripheral and are not redundant (PNR) compared with stories where unknown words are salient and are not redundant (SNR).

In order to test the corresponding null hypotheses simple effects tests were carried out according to the pattern of planned comparisons shown in Figure 16.

	in Redundant conditions for Good Readers
Salient	in Not Redundant conditions for Good Readers
vs	in Redundant conditions for Poor Readers
Peripheral	in Not Redundant conditions for Poor Readers

Figure 16. Further planned comparisons for microrecall.

Hypothesis 4.5 was supported. There was no significant difference (F=.32, p<.58) in the mean number of micropropositions recalled by good readers after reading stories where unknown words were salient and redundant (SR mean = 17.68) and stories where unknown words were peripheral and redundant (PR mean = 19.03). Hypothesis 4.6 was supported. Good readers recalled more micropropositions after reading stories where unknown words were peripheral and not redundant (PNR mean = 16.6) compared with stories where unknown words were salient and not redundant (SNR mean = 9.53). The simple effects test indicated a highly significant difference (F=9.77, p<.003).

Hypothesis 4.7 was not supported and the null hypothesis was accepted. There was no significant difference (F=.75, p<.39) in the mean number of micropropositions recalled by poor readers after reading stories in which unknown words were peripheral and redundant (PR mean = 8.98) compared with stories where unknown words were salient and redundant (SR mean = 6.28).

Hypothesis 4.8 was not supported. There was no significant difference in the mean number of micropropositions recalled by poor readers after reading stories in which unknown words were peripheral and not redundant (PNR mean = 5.92) compared with stories where unknown words were salient and not redundant (SNR mean = 2.03). The results of the simple effects test failed to reach statistical significance (F=1.9, p<.18).

As noted in the previous section (Ch.IV, part 3), the data from the "Willy" story could not be regarded as a valid basis on which to test the hypotheses because the assumption that the target words would be unknown to good readers was apparently not supported. This was reflected in the results of the three way ANOVA shown in Table 45. As previously indicated (Table 37), the analysis was adjusted for unequal cell sizes due to the exclusion of pupils whose aural recall scores did not reach criterion.

Table 45

ANOVA: Ability X Redundancy X Salience on Microrecall for the "Willy" story

Source	SS	df	MS	F	SIGNIF. of F.
Ability (A)	1787.01	1	1707.01	36.19	.001
Redundancy (B)	.69	1	.69	.01	.91
Salience (C)	58.31	1	58.31	1.18	.28
A X B	105.72	1	105.72	2.14	.15
A X C	1.91	1	1.91	.04	.85
B X C	22.98	1	22.98	.47	.5
A X B X C	12.73	1	12.73	.26	.61
Residual	2123.53	43	49.38		
Total	4122.88	50			

The results of this analysis showed a significant main effect for ability only ($F= 36.19, p<.001$). In view of the fact that the design of the study involved a number of planned comparisons (Figures 14 and 16), the corresponding simple effects tests were conducted despite the fact that the "unknown" target words seemed familiar to good readers. The results of these comparisons are summarized in Table 46.

Table 46

Results of Planned Comparisons on Microrecall for the "Willy" Story

GOOD READERS	Means Redundant	Means Not Redundant	F	Signif. of F	Hypothesis Supported/ Rejected
Salient	17.71	17.83	.001	.98	4.1 R
Peripheral	17.38	21.79	1.47	.23	4.2 R
	Salient	Peripheral			
Redundant	17.71	17.38	.009	.92	4.5 S
Not Redundant	17.83	21.79	1.87	.28	4.6 R
POOR READERS	Redundant	Not Redundant			
Salient	6.88	3.12	.72	.4	4.3 S
Peripheral	5.75	9.33	.62	.43	4.4 S
	Salient	Peripheral			
Redundant	6.88	9.33	.33	.57	4.7 R
Not Redundant	3.12	5.75	.31	.58	4.8 R

The lack of any significant differences in the comparisons between groups of good readers is consistent with good readers being familiar with the target words. This is clearly illustrated in the first comparison relating to hypothesis 4.1. Contrary to expectation and in contrast with the results for the "Friends" story, there was no significant difference in the total amount recalled by good readers who encountered unknown words that were salient and redundant and those who encountered unknown words that were salient and not redundant. As reported in Ch.IV, part 2, there was also no difference between these groups on the tests of the meanings of the target words. The planned comparisons for good readers do not therefore, provide information relevant to a discussion of the hypotheses because the target words were not unknown to the good readers. The planned comparisons for poor readers on the "Willy" story yielded results consistent with those on the "Friends" story.

Discussion

Since the results of the "Willy" story were confounded by the good readers' apparent familiarity with the target words, the discussion of pupils' microrecall has been focussed on the analyses of pupils' microrecall scores for the "Friends" story.

For good readers the pattern of results for microrecall was similar to that for macrorecall. The only condition under which unknown words produced a significant decrement in the total amount of information recalled was when these unknown words were highly salient to the gist of the story and not redundant in the text. Under these conditions the unknown words blocked the access of even good readers to the central framework of ideas on which the story development was based. It has been demonstrated (Meyer, 1975; Rumelhart, 1975; Thorndyke, 1977; Waters, 1978) that these top level structures or patterns of superordinate ideas appear to provide readers with a systematic, organized strategy for encoding information from text and retrieving it from memory. Unknown words inhibited this global text processing strategy for good readers only when the words were salient in the central framework and relevant meanings could not be constructed for them through contextual processing.

For poor readers the pattern of results for microrecall was different from that for macrorecall. For both salient and peripheral, unknown words, the presence of redundant information had no effect on the total amount of information recalled. In the case of stories containing peripheral, unknown words this result was as anticipated and similar to that for macrorecall because the text segments containing the peripheral unknown words were less likely to be recalled in any case and the presence of redundancy would not significantly increase the probability of their recall. The presence of redundancy did increase the macrorecall of poor readers who encountered the salient, unknown words but, as predicted, the redundant information had no significant effect on microrecall. Although poor readers did make significant use of redundancy in macrorecall of stories containing salient, unknown words, their macrorecall scores were much lower than those of good readers. It would appear that the macrorecall of poor readers was inadequate to represent sufficient of the central framework which would facilitate retrieval of more of the total text information. This may also explain the absence of any significant effects on poor readers' microrecall, of the relative salience of unknown words in both redundant and not redundant conditions. As expected, poor readers' macrorecall of stories containing peripheral unknown words was higher than for stories containing salient, unknown words but contrary to expectation, there were no significant differences in microrecall. It seems likely that, under these conditions also, the macrorecall of poor readers did not constitute a framework which was sufficiently substantial to facilitate an increase in the total amount of text information recalled.

While the total amount of text information recalled by good readers was significantly lower in only one of the conditions under which they encountered unknown words (ie. when unknown words were salient and not redundant), the total amount recalled by poor readers was significantly less than that recalled by good readers and was not differentially affected by the relative salience and redundancy of the unknown words.

CHAPTER V

CONCLUSIONS AND IMPLICATIONS

This study sought to clarify the nature of the relationship between knowledge of word meanings and reading comprehension. More specifically, it was concerned with the effects of encountering unknown words in texts on reading comprehension. Gollinkoff (1975-76, p.638) noted that few studies had "sought to disentangle problems in the organization of text from problems in the access of word meanings." While much previous research considered each set of problems separately, the present study is one of the few to investigate the relationship between the effects of unknown words and the semantic structure of texts on reading comprehension.

The initial task involved the identification of readers' problems in utilizing the semantic structure of text in recalling text content, independent of problems with access to word meanings. Results indicated significant differences between good readers and poor readers in the use of story structure in recall. Subjects with comparable abilities in using story structure then read various experimental versions of two stories containing unknown words of varying redundancy and salience to the main story line. Tests of the meanings of these unknown target words revealed redundancy effects in only one test story. In this story both good readers and poor readers used redundancy to construct meanings for unknown words but poor readers were not able to make significant use of this contextual processing if the unknown words were salient to the main idea structure of the story. Assessment of pupils' oral story retellings after reading the experimental story versions indicated how the presence of unknown words, associated redundancy and the structural importance of their text segments combined to affect text recall. There were then, three main aspects of the empirical investigation:

(i) the use of story structure in recall on an aural story comprehension task,

(ii) contextual processing - the use of redundancy to construct meanings for unknown words in text,

(iii) the effects on text recall of both the degree of redundancy associated with unknown words and the location of these unknown words in the semantic organizational structure of the story.

The conclusions and educational implications to be drawn from these aspects of the study are detailed in the following sections.

1. Story Structure and Recall.

The study first investigated year five pupils' ability to comprehend the gist of a simple story with the possible effects of unknown words and decoding difficulty removed. This was done by means of the aural story comprehension test using a text consisting of very simple, very high frequency words. Although a pilot study had shown no significant difference between good and poor readers on this measure, it was decided to include it in the main study since there was little relevant research reported in the literature and the results of these studies were not consistent. In addition, the pilot study had merely dichotomized readers on the basis of the median score on a standardized reading comprehension test and hence both groups of good and poor readers actually contained a number of average readers.

In the main study good readers differed significantly from poor readers on the measure of gist recall for the aural story comprehension test. This result and the wide variation among the scores of the poor readers lend support to the results from studies by Smiley et al.(1977), Weaver and Dickinson (1979, 1982) and Wilkinson (1982) indicating that at least some subgroups of poor readers fail to comprehend because they have inadequately developed schemata for simple stories.

a. Implications for Remediation

These findings have clear implications for the kinds of remediation appropriate to these subgroups of poor readers. They need a lot of learning experiences with stories which will strengthen their internalized story schemata and encourage the processing of story material according to these conventional story structures. This is in contrast to the current practices in many schools where remedial reading largely consists of teachers and/or parents listening to poor readers' attempts at oral reading. Some poor readers may profit more from being read to and learning experiences which include anticipating plot development and outcomes, recalling stories, modifying and retelling stories, and discussing characters' motives.

2. Contextual Processing

This aspect of the investigation concerned the extent to which good readers and poor readers utilized redundancy in text to construct focal meanings for text segments containing unknown words. This contextual processing was measured by pupils' responses to multiple choice tests of the meanings of the target words. The extent of contextual processing was determined by comparing the mean scores of readers who encountered unknown words in redundant conditions with the mean scores of those who encountered the unknown words in not redundant conditions.

It was anticipated that good readers would respond to redundancy to construct meanings for unknown words and in the "Friends" story this did occur for both salient and peripheral unknown words. However it was also expected that relatively greater use would be made of redundancy in dealing with salient unknown words due to the likelihood that good readers would "skip" unknown words that were peripheral to the main story line. This was not so, as evidenced in the lack of any interactions in the three way ANOVA (Table 30). Good readers scored as well in the peripheral, redundant condition (mean = 29.57) as they did in the salient, redundant condition (mean = 30.13). Poor readers were not expected to make any significant use of redundancy to construct meanings for unknown words. In the case of the salient, unknown words this expectation was confirmed but, contrary to expectations, poor readers did score significantly higher in the "Friends" story on peripheral, unknown words in redundant compared with not redundant conditions. This has been explained in terms of the different processing demands of salient and peripheral words. It was argued that unknown words which are salient demand the coordination of cognitive capacity among more processing goals than do unknown words which are peripheral and that good readers may be differentiated from poor readers in terms of their flexibility in coordinating these processing goals. Hence results on the "Friends" story suggest that the efficiency with which poor readers coordinate their cognitive processing capacity in reading may be sufficient to allow the utilization of redundancy to construct meaning for peripheral words but not for salient words.

a. Implications for Teaching Context Clues

Whilst it was shown that good readers scored significantly higher than poor readers in redundant conditions for both salient and peripheral unknown words, poor readers were nevertheless able to make significant use of redundancy for peripheral unknown words. They scored significantly higher in peripheral, redundant compared with peripheral, not redundant conditions in the "Friends" story. One must be cautious about generalizing from the results of just one story read by a relatively small number of pupils, but if this finding does prove robust, there are implications for the ways in which poor readers are taught to improve their use of context clues. This usually involves practice examples within single sentences or very short paragraphs (Carnine, Kameenui and Coyle, 1984). Even when longer passages are used as a basis for "cloze" exercises the replacements can often be made by what Cambourne and Brennan (1983, p.23) call "fragment grabbing", or responding to clues in the immediately preceding or following context. This emphasis on focal processing, using isolated fragments of text, is not sufficient to improve poor readers' use of context clues in normal reading. As the present study suggests, poor readers have greatest difficulty in using context clues when unknown words are salient and they need to coordinate contextual processing at this focal level with monitoring development of the overall story meaning. Carnine et al. (1984) have demonstrated this lack of transfer from practice sentences to complex texts but fail to consider the possible influence of the salience of unknown words in overall text organization. Their solution consists of more practice and refinement of the ability to use repeated focal processing strategies within longer texts.

> The longer passages with several unfamiliar words might have disrupted students' overall comprehension. If this was the case, subsequent research could either teach students to paraphrase passage segments after encountering an unfamiliar word in a longer passage, or present more transfer passages, each with fewer unfamiliar words. (Carnine, Kameenui and Coyle, 1984, pp. 201-202)

More appropriate approaches might be those which try to encourage the coordination of focal and global text processing by using complete texts (whole stories, episodes or expository extracts) to practice the utilization of context clues, but combining this with teaching strategies designed to maintain processing at a macro or thematic level. Such an approach is central to the "Predicted, Substantiated, Silent, Discourse Reading" (PSSDR) strategy formulated by Sloan and Latham (1981, p.143) and the ERICA model (Effective Reading In Content Areas) of Morris and Stewart-Dore (1984). In the former, context clue practice is combined with a "discourse level" question prior to reading which is "set to facilitate the retention of the central idea in the selection" (Sloan and Latham, 1981, p.144) while in the latter model this purpose is achieved through the reader's construction of "graphic outlines" of the text prior to reading.

3. Influences of Text Organization on the Effects of Unknown Words on Story Recall

A further purpose of this study was to determine the effect of unknown words on the ability of good readers and poor readers to follow the semantic organizational structure of simple stories. This was reflected in pupils' macrorecall scores indicating the extent to which they were able to retell the gist of the story after oral reading. The predicted effects of unknown words on this measure were substantially borne out in the results for the "Friends" story. Seven of the eight specific hypotheses were supported. Overall it appeared that the ability of good readers to retain the gist of a story was significantly impeded only when unknown words were encountered which were highly salient to the main story line and were not redundant in the text. Poor readers did not retain the gist of a story as well as good readers. But, similar to good readers, the gist recall of poor readers was dramatically decreased when they encountered unknown words which were salient and not redundant.

These results for macrorecall have extended the findings of currently available research on the effects of unfamiliar words on text recall. Of particular interest is the proportion of unknown words required to effect a decrement in recall. Previous studies have not simultaneously controlled for the relative redundancy and salience of unknown words in test passages. McKeown et al.(1983) took importance but not redundancy into account and found significant effects for difficult vocabulary on multiple choice questions and recall with a substitution rate of eleven percent. Freebody and Anderson (1981) had concluded that a substitution rate of one in three "substance" words (approximately 16% substitution rate) was necessary to produce a reliable decrement in recall measures. In their second experiment, which controlled for salience, they used a substitution rate of only about six percent and indicated that redundancy might have been reduced - albeit that this reduction was unplanned. This second experiment revealed significant effects of unfamiliar words in important positions on summary recall, hence, somewhat inadvertently, Freebody and Anderson indicated that very low substitution rates could significantly affect gist recall if both importance and redundancy were controlled. This was clearly demonstrated in the results for the "Friends" story in the present study which also used a substitution rate of approximately six percent. Good readers who encountered salient, not redundant, unknown words which comprised approximately six percent of the text, scored significantly lower than good readers who encountered the same proportion of salient, unknown words which were redundant. So a very low substitution rate of difficult words can have a dramatic effect on the gist recall of even very good readers if these words are central to the story line and are not redundant. But the same substitution rate of unknown words whether redundant or not, had no significant effect on gist recall if the unknown words were peripheral to the main story line. The same pattern of results occurred for good readers' microrecall scores which indicated the total amount of text information in their recalls.

a. Implications for Miscue Analysis Procedures

These findings have important implications for the interpretation of readers' responses to informal assessment procedures based on miscue analysis. It has been noted that proponents of miscue analysis procedures in the assessment of reading processes have acknowledged the lack of clarity in the relationship between semantically unacceptable responses to words during oral reading and the quality of recall of the passage read. The discussion of the few studies which have addressed this issue revealed that the results were either inconclusive or contradictory. Goodman and Burke (1972, pp.115-116) did offer some explanation as to why some readers were unable to make meaningful responses to words during oral reading and yet produced quite acceptable retellings of the content of the passages read. They suggested that the subject matter of the material might have been so well known by the reader that the retelling was almost text independent. Alternatively readers might have been "very effective at reading picture cues and ... able to supply the needed information from that source." A third suggestion was that some readers were "not concerned that oral reading sound like language" but that such readers "must be doing a good bit of silent correcting." The present study provides additional explanations in terms of the salience and redundancy of unknown words.

Current miscue analysis procedures measure the proficiency of a reader's comprehending during oral reading by the proportion of miscues which are semantically equivalent and syntactically acceptable in terms of the original words in the text. No account is taken of how important the "meaning loss" miscues are to the central ideas of the passage nor the extent of redundancy associated with the text segments in which miscues are located. The limitation this places on interpreting miscue analysis data is indicated in the results for the "Friends" story which showed that both gist and total recall were significantly affected by differences in the salience and redundancy of unknown words. However, the implications of this research for the diagnostic use of miscue analysis can be further clarified through discussion of a number of the planned comparisons undertaken in the study.

The performance of good readers who encountered salient, unknown words which were not redundant (SNR) was compared with that of good readers who encountered peripheral, unknown words that were not redundant(PNR). The unknown words were forty unfamiliar, low frequency target words comprising about six percent of each story version. The mean scores of both groups of good readers on multiple choice questions testing the meanings of the target words were very similar. Those in the salient, not redundant condition obtained a mean score of 23 while for the peripheral, not redundant condition the mean was 21.9. This would mean that for both groups the percentage of unfamiliar words encountered which resulted in meaning loss during oral reading was also very similar (SNR = 42.5%; PNR = 45%). Since this measure of meaning loss consisted of questions administered after oral reading, it is clear that, for this percentage of unfamiliar words, there was no construction of meaning through contextual processing or the "silent correcting" suggested by Goodman and Burke (1972, pp.115-116). Both groups of readers therefore had comprehension patterns showing similar proportions of meaning loss and yet the mean scores for both gist recall and total recall were significantly lower for those in the salient, not redundant condition (SNR). The explanation for such differences is not to be found in a simple tally of the percentage of miscues which are semantically equivalent to the original words in the text. The location of miscues within the semantic organizational structure of the text as a whole must be considered in accounting for the quality and quantity of text recall.

The comparison of good readers in the peripheral, redundant and peripheral, not redundant conditions revealed further implications for miscue analysis. In this comparison there was no significant difference between groups on the mean scores for either gist recall or total recall. However, on the multiple choice test of the meanings of the unfamiliar target words the peripheral redundant group (PR mean = 29.6) scored significantly higher (F=17.74, p<.001) than the peripheral, not redundant group (PNR mean = 21.9). This means that the percentage of unfamiliar words encountered which resulted in meaning loss was 26% for the peripheral, redundant group and 45% for the peripheral, not redundant group. According to the guidelines provided by Goodman and Burke (1972, pp.113-114) these scores would be consistent with a classification of the peripheral, redundant group as typifying the "proficient reader who makes highly effective use of reading strategies" and the peripheral, not redundant group would typify "the reader who is beginning to show some effective use of reading strategies." Yet there was no difference between these groups on recall scores. In fact the difference in the comprehension patterns for these readers was not due to differences between readers but rather to characteristics of the texts viz. differences in the redundancy of the unfamiliar words. In addition the difference in the comprehension patterns had no effect on the quality or quantity of information in the recalls. This was also due to text characteristics. The meaning loss experienced during oral reading was concentrated in text segments which were quite peripheral to the development of the main theme of the passage. These peripheral propositions had low probability of recall regardless of their relative familiarity or associated redundancy.

In the specific comparisons discussed above a very similar pattern of results emerged for good readers and poor readers but good readers scored higher on all measures. The only exception was in the microrecall scores of poor readers who read the salient, not redundant (SNR) story version compared with those who read the peripheral, not redundant story version (PNR). The similarity between their mean scores on the meanings of unknown words (SNR = 13.67; PNR = 13) was inconsistent with their significantly different macrorecall scores (SNR = 3.52; PNR = 22.84) and to that extent, the nature of the discrepancy reflected the similarly discrepant results for good readers. However, unlike the good readers, poor readers' microrecall scores in these conditions did not differ significantly. Hence there were two groups of poor readers whose ability to construct meaning for unknown words during oral reading appeared to be very similar, whose mean scores on total text information recalled did not differ significantly but whose gist recall scores did differ significantly. The difference in macrorecall between the two groups was due to the differing salience of the unknown words. This has been explained in Ch.IV, part 3. The lack of a significant difference in microrecall has been discussed in Ch.IV, part 4. These findings caution against the practice, in miscue analysis procedures, of expressing pupils' competence in retelling a story after oral reading, as a single quantitative result.

The need to abandon the use of the single retelling score in miscue analysis is further emphasized in another two of the planned comparisons among groups of poor readers. Poor readers in the peripheral redundant (PR) and salient redundant (SR) conditions differed in their scores on the meanings of the unknown words (PR = 20.8; SR = 16.25). The two groups did not differ in microrecall (F=.75, p<.39) but they did differ significantly in macrorecall (F=5.38, p<.03). The total amount of story information recalled was similar but the quality of recall from those in peripheral, redundant conditions (PR) was higher because it contained more of the gist of the story. The difference in quality of recall appears to be due to the difference in the salience of the unknown words for which readers could not construct meanings. The next comparison was between poor readers in the salient, redundant (SR) and salient, not redundant conditions (SNR). They did not differ significantly in the total amount of text information recalled (F=1.99, p<.17), nor in the their scores on the meanings of unknown words (F=2.33, p<.14), but their mean scores on macrorecall were significantly different (F=4.27, p<.05). The difference, once again, was not in the quantity but in the quality of the recall and it was due to characteristics of the text ie. the relatively simple, redundant information associated with those elements of the story's gist expressed by unknown words. This redundancy allowed poor readers to follow the story line to a certain extent, despite their inability to construct meanings for unknown, salient words.

The remaining comparisons dealt with conditions under which the results could be reconciled within the limitations of current miscue analysis scoring systems. For example, the comparison of good readers in the salient, redundant and salient, not redundant conditions shows that those in the salient, redundant condition scored significantly higher on both gist and total recall measures. This group also scored significantly higher on the test of the meanings of unfamiliar words. In this and the other planned comparisons, the comprehension pattern during oral reading was consistent with the recall measures and hence results are quite explicable within existing miscue analysis guidelines. Nevertheless, the results of this study do provide a basis for resolution of some of the discrepant findings of miscue analysis research. It suggests that designers of miscue analysis procedures should investigate a classification of miscues according to the relative salience of the text segments in which miscues occur and the extent to which redundant information is associated with these text segments. It also suggests that the single, numerical retelling score should be replaced by a measure which indicates the quality of the retelling in terms of its responsiveness to the central concerns of the story.

4. In Summary

The conclusions suggested by this study must remain tentative in view of the fact that they are based on the results of responses by a relatively small number of pupils to only one story. Nevertheless, there is sufficient evidence to conclude that the following propositions warrant further investigation.

(i) Some poor readers are unable to recall the gist of simple, aural stories.

(ii) Both good readers and poor readers make use of redundancy within texts to construct meanings for unknown words.

(iii) Poor readers are less likely to use redundancy to construct meanings for unknown words if these words are concentrated in text segments which are salient to the gist of a story.

(iv) Good readers recall more gist information and more of the total information from stories than do poor readers.

(v) Unknown words comprising approximately six percent of the text produce a significant decrement in both gist and total recall of good readers only when these unknown words are salient to the story organization and are not redundant in the text.

(vi) The effect of unknown words comprising approximately six percent of the text, on poor readers' recall of the gist of a story seems to be similar to the effects on good readers except that poor readers score better when the unknown words are peripheral and redundant rather than salient and redundant. When redundancy is associated with unknown words their relative salience has no such effect on the gist recall of good readers.

(vii) The effects of unknown words comprising approximately six percent of the text, on the total amount of story information recalled by poor readers do not differ according to the concentration of these words in peripheral or salient text segments or according to whether such words are redundant in the text or not.

The issues dealt with in these conclusions have implications for three areas of educational practice:

(i) The inability of poor readers to recall the gist of a simple, aural story suggests that their reading difficulties may be partly due to inadequately developed story schemata. Approaches to remediation for these poor readers should include learning experiences designed to develop their sensitivity to story organization.

(ii) Poor readers used redundancy to construct meanings for unknown words which were peripheral to the story but could not use redundancy when unknown words were concentrated in text segments that were salient to the gist of the story. This suggests that learning experiences designed to develop readers' responsiveness to context clues should be combined with efforts to increase readers' capacity to simultaneously monitor the developing global or thematic meaning of the passage as in procedures described by Sloan and Latham (1981) and Morris and Stewart-Dore (1984).

(iii) The discrepancies which sometimes occur in miscue analysis between results from the comprehension pattern and the retelling score might be resolved if two aspects of the miscue analysis procedures were modified. The first would involve the replacement of the single numerical retelling score by a measure reflecting the relative importance of text elements. The second modification would be an elaboration of the classification of miscues to take account of the relative salience of miscues to the overall semantic structure of the text and the extent of redundancy associated with text segments in which miscues occur.

It is to be hoped that future research might test further the conclusions from this study. Similar studies could be conducted using a larger number of test stories and readers at different age levels. Such studies could also benefit from the very recent advances in theoretical accounts of the nature of context clues to the meaning of unknown words in text and their relationship to overall text organization. A useful extension would be an investigation of text types other than stories. If the conclusions receive further substantiation, they might usefully be pursued in more naturalistic learning contexts via an alternative research paradigm.

APPENDIX 1

Test Stories

Aural Comprehension Test Story - "The Secret Trip"

"Willy" - Base Version (with low frequency words included)

"Willy" - Experimental Versions:
Salient, Redundant (WSR)
Salient, Not Redundant (WSNR)
Peripheral, Redundant (WPR)
Peripheral, Not Redundant (WPNR)

"Friends" - Base Version (with low frequency words included)

"Friends" - Experimental Versions:
Salient, Redundant (FSR)
Salient, Not Redundant (FSNR)
Peripheral, Redundant (FPR)
Peripheral, Not Redundant (FPNR)

Placement Test Story - "The Brothers"

The Secret Trip

Once there were two kids named Peter and Mary who lived across the street from one another. They were both about the same age and knew each other very well. Peter and Mary went to different schools but after school and on the weekends they often played together. Sometimes they played at Mary's house and sometimes at Peter's house.

One morning Peter's father went to work in the garage and his mother was busy outside. After breakfast Peter had nothing to do so he got out all of his toys. He went down to the fence and called out to Mary who was in her front yard. Peter asked Mary to come over and play.

Mary really wanted to say yes to Peter but she knew that the next day was very special. Peter was going to be nine. She thought about buying something. She thought about a new toy - something quite different. This was the only time she had to get a present before tomorrow's party.

So Mary told Peter that she was sick. She said her mother wanted her to play quietly by herself. Mary told Peter that she didn't want to make him feel sick too, so she really couldn't come over to play.

A few minutes later Mary got into the car with her mother and went shopping in town. She took all her pocket money. Mary looked at lots of things in many shops. After a long time she made up her mind. She went to the toyshop and bought a brand new skateboard.

Mary felt very pleased when she looked at what she had bought. She thought this was something really special. It would be so much more fun the next time they played together. Mary did not feel so bad about keeping her shopping a secret from Peter. Now he wouldn't guess why she had gone.

Willy

(Base Version)

Willy was an incorrigible delinquent. He was also my sibling. He hated toys although some were extortionately indulgent games. They were addictively unconventional. But Willy was obsessed with excavating all kinds of invertebrates.

One day I saw Mum writing one of her exhaustive shopping lists increasingly dominated by food. I went outside to retrieve Willy as we were going shopping. He was characteristically dishevelled and he had procured the most repulsive specimen I had yet confronted. I induced Willy to give it some respite. Then I ushered him into the house. Soon after I had given some respectability to his appearance.

We went shopping in a square with a nondescript shop which sold primarily a miscellany of inexpensive toys. Mum pressed something into our hands. It was a week's allowance. But this installment was prohibitively miniscule. It would never finance an exorbitant purchase. I saw a box of intriguingly innovative watches. Willy inspected miniature imitation animals.

When we got home Willy wanted to saunter around outside the house but I said that meant further ablutions. Willy unleashed a stream of protestations. He was then confined to his room in the old sunroom which was a dilapidated adjunct at the extremity of the domicile. It was isolated from the living room with its contemporary renovations.

Soon we were settled down. Mum got her box of antiquated books with the fragmenting, deteriorating paper and indecipherable writing. They delineated many appetizing repasts. We enjoyed what Mum made and then I went to bed.

It was extraordinarily late when suddenly I was awake. I turned on the desk light which stood perilously on the periphery of the desk. Then I apprehended a grotesque silhouette. At first I was petrified. Then I deduced it must be one of Willy's replicas. I extinguished the light which had fortuitously kept its precariously strategic position.

Later I discerned perambulation over my arm. One excruciating wail brought Mum and Dad. I was hysterical. The small intruder was animate and I despatched it instantaneously.

Mum held me for a while, then kissed me and went back to bed. When all was quiet I could just hear Willy laughing to himself.

SR

Willy

Willy was an incorrigible delinquent. He was my sibling. Nothing kept my brother out of trouble. He hated toys although some were games which cost too much for things we did not need. He never thought about that. His games were so different you could not stop playing with them. But Willy was very much different from most other young children. He loved to dig up worms and insects. In fact he was obsessed with excavating all kinds of invertebrates.

One day I saw Mum writing one of her long shopping lists which had more and more food every time. I had to get ready. Then I had to find Willy as we were going shopping. I went outside to retrieve him. He was characteristically dishevelled. Willy was never neat. He had procured the most repulsive specimen I've seen. He found the most horrible insect I had confronted yet. It was hard to talk Willy into letting it go but I induced him to give it some respite. Then I ushered him into the house walking behind him all the way. Soon after I had given some respectability to his appearance. Willy was clean.

We went shopping in a square with a plain shop which sold a mixture of cheap toys. We visited it every shopping day. Mum pressed something into our hands. It was a week's pocket money. But the small payments would not let you buy much. Mum and Dad never thought of that. It would never buy things that cost a lot. But Willy and I still visited the shop . I looked at a box of interesting new watches. There were always interesting things in the shop. Willy inspected some small imitation animals. He liked looking at models.

When we got home Willy wanted to walk around outside. He said he would just saunter around but I said that meant further ablutions and I had already washed him once. Willy acted very cross. He unleashed a stream of protestations and was then confined to his room in the old sunroom. This was an added part that was almost falling down. It was at the very end of our house and was far away from the living room which had been fixed up to look modern. Willy quite liked staying in his room. He liked it because he could do what he wanted without worrying us. But when he was in the living room he had to be much more careful.

Soon we were settled down. Mum got her box of old books with the crumbling, worn paper and writing you cannot read. The books listed many tasty dinners. Mum read the pages carefully. It took her a long time.

At last she found what she was looking for. We enjoyed what Mum made then I went to bed.

It was quite late when suddenly I was awake. I didn't think about this at the time. I turned on my light which stood dangerously on the edge of the desk. This was not a good place but tonight I was pleased it was there. Then I saw an awful shape. I just apprehended the grotesque silhouette. I had never been so scared. I was petrified at first. Then I deduced it must be one of Willy's replicas. I figured it must be a model. I extinguished the light which had luckily kept its dangerously useful position. With the light off again, I went back to sleep.

Later I discerned perambulation over my arm. I felt something crawling on me. I was almost mad with fear. I was hysterical. One excruciating wail brought Mum and Dad. My cry sounded frightening. The small intruder was animate. I despatched it instantaneously. The little unwanted guest was alive but I felt better after I killed it so quickly.

Mum held me for a while, then kissed me and went back to bed. When all was quiet I could just hear Willy laughing to himself.

SNR

Willy

Willy was an incorrigible delinquent. He always had been. He was also my sibling. He hated toys although some were games which cost too much for things we didn't need. He never thought about that. His games were so different you could not stop playing with them. But Willy was very much different from most other young children. He was obsessed with excavating all kinds of invertebrates. He had done it since he could walk.

One day I saw Mum writing one of her long shopping lists which had more and more food every time. This always meant that I had to start getting ready. I went outside to retrieve Willy as we were going shopping. That part was very easy. He was characteristically dishevelled, just as I thought. He had procured the most repulsive specimen I had yet confronted. I thought carefully about what I should do. I induced Willy to give it some respite, even though I had not been able to do this before. Then I ushered him into the house. I knew I would have to do this. Soon after I had given some respectability to his appearance. That was not easy.

We went shopping in a square with a plain shop which sold mostly a mixture of cheap toys. We visited it every shopping day. Mum pressed something into our hands. It was a week's pocket money. But the small payments would not let you buy anything very much. Mum and Dad never thought about that. It would never buy things that cost a lot. But Willy and I still visited the shop. I looked at a box of interesting new watches. There were always different things in the shop. Willy inspected some small imitation animals. He liked the little things.

When we got home Willy wanted to saunter around outside. He thought we would not mind but I said that meant further ablutions. I did not like that idea. Willy unleashed a stream of protestations. This kind of thing happened at least once a week in our house. Willy was then confined to his room in the old sunroom. This was an added room that was almost falling down. It was at the very end of our house and was far away from the living room which had been fixed up to look very modern. Willy liked his room because he could do whatever he wanted without worrying us. But when he was in the living room he had to be much more careful.

Soon we were settled down. Mum got her box of old books with the crumbling, worn paper and writing you cannot read. The books listed many tasty dinners. She read the pages carefully. At last she found what she was looking for. It took her a long time. We enjoyed what Mum made then I went to bed.

It was quite late when suddenly I was awake. But I didn't think about this at the time. I turned on my light which stood dangerously on the edge of the desk. This was not a good place but tonight I was pleased it was there. Then I apprehended a grotesque silhouette. I was wide awake. At first I was petrified. This had never happened before. Then I deduced it must be one of Willy's replicas. I was used to Willy's things all over the house. I extinguished the light which had luckily kept its dangerously useful position. Mum didn't like it there.

Later I discerned perambulation over my arm. I acted without thinking. One excruciating wail brought Mum and Dad. I was hysterical. I had never been like that in my life before. The small intruder was animate. I despatched it instantaneously. I don't like that sort of thing but tonight I did not feel sorry.

Mum held me for a while, then kissed me and went back to bed. When all was quiet I could just hear Willy laughing to himself.

Willy

Willy was a real terror. He always had been. He was also my brother. He hated toys although some games cost just too much for things we did not need. They were extortionately indulgent and addictively unconventional. They were so different you could not stop playing with them. But Willy loved to dig up all kinds of insects or worms. He had done it ever since he could walk.

One day I saw Mum writing one of her exhaustive shopping lists increasingly dominated by food. It was taking over more of each long list. I went outside to get Willy as we were going shopping. That part was very easy. He was dirty as usual, just as I thought. He had found the most horrible insect I had seen yet. I thought carefully about what I should do. I talked him into letting it go for a while even though I had not been able to do this before. Then I took him to the house. I knew I would have to do this. Soon after I had him looking neat again. That was not very easy.

PR

Willy

Willy was a real terror. He always had been. He was also my brother. He hated toys although some games cost just too much for things we did not need. They were extortionately indulgent and addictively unconventional. They were so different you could not stop playing with them. But Willy loved to dig up all kinds of insects or worms. He had done it ever since he could walk.

One day I saw Mum writing one of her exhaustive shopping lists increasingly dominated by food. It was taking over more of each long list. I went outside to get Willy as we were going shopping. That part was very easy. He was dirty as usual, just as I thought. He had found the most horrible insect I had seen yet. I thought carefully about what I should do. I talked him into letting it go for a while even though I had not been able to do this before. Then I took him to the house. I knew I would have to do this. Soon after I had him looking neat again. That was not very easy.

We went shopping in a square with a plain shop which had a mixture of mostly cheap things. It was a nondescript shop which sold primarily an inexpensive miscellany of toys. Mum pressed something into our hands. It was a week's allowance. We always got pocket money but the small payments would not buy much. The installments were prohibitively miniscule. They would never finance exorbitant purchases. We never could buy costly things. New and different things are always interesting. I saw a box of intriguingly innovative watches. Willy liked the small things. He looked at miniature animal models.

When we got home Willy wanted to walk around outside. He thought we would not mind but I said that meant another wash. I did not like that idea. Willy became very cross. He was sent to his room in the sunroom. This kind of thing happened at least once every week in our house. The sunroom was added to the end of the house long ago and now was almost falling down. It was a dilapidated adjunct at the extremity of our domicile. Far from Willy's room the living room had been fixed up to look very modern. But Willy's room was isolated from the living area with its contemporary renovations.

Soon we were settled down. Mum got her box of antiquated books with the fragmenting, deteriorated paper and indecipherable writing. I could never read

Mum's writing. She turned the crumbling, worn paper of the old books. They delineated many appetizing repasts. Every page described a tasty dinner. We enjoyed what Mum made then I went to bed.

It was extraordinarily late when suddenly I was awake. It was so late everything was dark and quiet. I turned on my light which stood perilously on the periphery of the desk. It was not very safe but I needed it on the edge to read in bed. Then I saw an awful shape. I was wide awake. At first I was scared. This had never happened before. Then I knew it must be one of Willy's models. I was used to Willy's things all over the house. I turned off the light and went back to sleep. The light had fortuitously kept its precariously strategic position. It stayed in that dangerously useful spot by pure chance.

Later I felt something move over my arm. I did not expect that and went almost mad with fear. I acted without thinking. One frightening cry brought Mum and Dad. I had never done that before. The little unwanted guest was alive. I killed it straight away. I don't like that sort of thing but tonight I did not feel sorry.

Mum held me for a while, then kissed me and went back to bed. When all was quiet I could just hear Willy laughing to himself.

PNR

Willy

Willy was a real terror. He always had been. He was also my brother. He hated toys although some were games which were extortionately indulgent. He never even thought about that at all. The games were addictively unconventional. But Willy was very much different from most other young children. He just loved to dig up all kinds of insects and worms. He had done it ever since he could walk.

One day I saw Mum writing one of her exhaustive shopping lists increasingly dominated by food. This always meant that I had to start getting ready. I went outside to get Willy as we were going shopping. That part was easy. He was dirty as usual, just as I thought. He had found the most horrible insect I had seen yet. I thought very carefully about what I should do. I talked him into letting it go for a while even though I had not been able to do this before. Then I took him to the house. I knew I would have to do that. Soon after I had him looking neat again. That was not easy.

We went shopping in a square with a nondescript shop which sold primarily an inexpensive miscellany of toys. We always visited that shop every time Mum took us shopping with her. Mum pressed something into our hands. It was a week's allowance. But each installment was prohibitively miniscule. Mum and Dad never thought about that. It would never finance exorbitant purchases. But Willy and I still visited the shop. I saw a box of intriguingly innovative watches. We always had a lot of fun in the shop. Willy looked at miniature animal models. He liked the little things.

When we got home Willy wanted to walk around outside. He thought we would not mind but I said that meant another wash. I did not like that idea. Willy became very cross. He was sent to his room in the old sunroom. This kind of thing happened at least once every week in our house. The sunroom was a dilapidated adjunct at the extremity of our domicile. It was isolated from the large living room which had a lot of contemporary renovations. Willy quite liked his room because in there he could do whatever he wanted to without worrying other people in the house. When he was in the living room he had to be much more careful.

Soon we were settled down. Mum got her box of antiquated books with the fragmenting deteriorated paper and indecipherable writing. The books delineated many appetizing repasts. She read the pages carefully. It took her a long time. At last she found what she was looking for. We enjoyed what Mum made then I went to bed.

It was extraordinarily late when suddenly I was awake. But I did not think about that at the time. I turned on my light which stood perilously on the periphery of the desk. This was not a good place but tonight I was pleased it was there. Then I saw an awful shape. I was wide awake. At first I was scared. This had never happened before. Then I knew it must be one of Willy's models. I was used to Willy's things all over the house. I turned off the light and went back to sleep. The light had fortuitously kept its precariously strategic position. Mum never did like where I had put it.

Later I felt something move over my arm. I did not expect that and went almost mad with fear. I acted without thinking. One frightening cry brought Mum and Dad. I had never done that before. The little unwanted guest was alive. I killed it straight away. I don't like that sort of thing but tonight I did not feel sorry.

Mum held me for a while, then kissed me and went back to bed. When all was quiet I could just hear Willy laughing to himself.

Friends

(Base Version)

Tom and Mary went to the same school in Sydney with its growing conurbation. These places had principally a dormitory purpose. Tom and Mary were antagonists. They had lots of altercations. When they left school Tom emigrated. Mary was disinclined to surrender her domicile. The inside had many voguish, contemporary appointments.

One summer Mary's bungalow was incinerated. Mary was disconsolate. To recuperate she arranged a long sojourn at a nondescript resort on an insignificant island. The inhabitants of the island were primarily insolvent with a minority of influential business people.

When Mary arrived at the resort she was incensed to find that Tom was the proprietor. Mary felt apprehensive. She knew they could not maintain a harmonious relationship. She had also missed the return crossing back from the island. It was made by a solitary commuter craft which was indefatigably disappearing from view. It looked decrepit and of dubious reliability.

Mary decided to acknowledge her culpability and entreat Tom to think about reconciliation. To emphasize her sincerity to Tom, Mary procured a token to demonstrate her conciliatory intentions. It was a message sign. This was a decorative artefact used by the indigenes at certain junctures in ceremonies when they commemorate munificent people.

Tom was amicable when Mary confronted him. He was appreciative of her gesture. He said he was elated at fortuitously seeing her again. They talked about the resort. It had been the idea of a doctor who died last century. He envisaged a secluded retreat. Eminent doctors he knew, would visit it to contemplate insoluble questions. The planned retreat was abandoned.

Tom and Mary were not adversaries now. Mary wanted to instigate island resort peregrinations among her colleagues. The island was extraordinarily inaccessible. The resort had only one hotel. It's cuisine was not at all pretentious. The island's people were convivial and this compensated for innumerable things. Mary was rejuvenated. She thought positively because of the way her early inauspicious experiences turned out.

SR

Friends

Tom and Mary went to the same school in Sydney with its growing spread of houses. All of the schools built near the new houses were very modern. Most of the homes were for people who work in the city. There were many such places being built then. Tom and Mary didn't like each other. They were antagonists. They had lots of altercations. In fact they were always fighting. Tom wanted to live in another country. When he left school Tom emigrated. Mary was disinclined to surrender her domicile. The rooms had many popular, modern fittings. She did not want to give up her home. She enjoyed the way she lived.

One summer Mary's bungalow was incinerated. The fire burned the house to the ground. Nothing made Mary happy. She was disconsolate. A holiday would make her feel better. To recuperate she arranged a long sojourn at an ordinary resort on a little known island. A place like this would suit her very well. Most of the people who lived on the island were very poor. A few business people had a lot of power. This didn't seem to have any effect on day to day living which was friendly and quiet.

When Mary arrived at the resort she was angry to find that Tom was the proprietor. She was incensed because she chose a place Tom owned. Mary felt apprehensive. Her fear was because of their past.

They could never get on. She knew they could not maintain a harmonious relationship. She also missed the return crossing back from the island. It was made by one ferry boat which was slowly but surely disappearing from view. People needed this service a lot even though it looked broken down and not very safe. All the people who lived there said the same thing.

Mary decided she would accept the blame and beg Tom to make friends. She would acknowledge her culpability and entreat him to think about reconciliation. To emphasize her sincerity, and to make sure Tom would believe her, Mary procured a token to demonstrate her conciliatory intentions. This present would show she wanted to make friends. It was a message sign. Just what she needed. These were fancy objects used by the natives who thought such things should always play a part during special times when they remember people who give a lot to the island. Events put on for this reason often go on for many days.

Tom was amicable, in fact very friendly, when Mary confronted him. She met him outside. Tom thanked her for making the first move. He was appreciative of her gesture. He said he was elated at fortuitously seeing her again. He wanted a chance to make friends and he was pleased. They talked about the resort. It had been the idea of a doctor who died last century. He wanted it as an out of the way retreat. But the reason for this retreat would be a special kind of work. Leading doctors he knew, who thought the idea was a good one, would visit it to think about questions they couldn't answer. This might have brought together doctors from different countries. The planned retreat was never finished and no one really knows why.

Tom and Mary were not adversaries now. They were friends. Mary wanted to get her friends from work to trip around the island. She would instigate island resort peregrinations among her colleagues. The island was very hard to get to and would stay that way for a long time. It could only supply people's simple needs. The resort had only one hotel. Its food was not at all showy but its people were friendly and this made up for many things. This was the best thing about the island. Mary was full of life again. She was rejuvenated. She thought positively because of the way her early inauspicious experiences, which did not make the future look good, turned out. Things were going well.

SNR

Friends

Tom and Mary went to the same school in Sydney with its growing spread of houses. All the schools built near the new houses were very modern. Most of the homes were for people who work in the city. There were many such places being built then. Tom and Mary were antagonists. They had been since they were children. They had lots of altercations. In fact these were always happening. When they left school Tom emigrated. It was something he had always wanted to do. Mary was disinclined to surrender her domicile. The rooms had many popular, modern fittings. Mary knew how she wanted to live her life. She enjoyed the way she lived.

One summer Mary's bungalow was incinerated. Nothing could have been done to stop it. Mary was disconsolate. Most people would feel the same. To recuperate she arranged a long sojourn at an ordinary resort on a little known island. She thought this was the best thing to do. A place like this one would suit her very well. Most of the people who lived on the island were very poor. A few business people had a lot of power. This did not seem to have any effect on day to day living which was friendly and quiet.

When Mary arrived at the resort she was incensed to find that Tom was the proprietor. She thought it was a strange thing to happen. Mary felt apprehensive. She felt this because of their past.

She knew they could not maintain a harmonious relationship. It had always been like that. She also missed the return crossing back from the island. It was made by one ferry boat which was slowly but surely disappearing from view. People needed this service a lot even though it looked broken down and not very safe. All the people who lived there said the same thing.

Mary decided to acknowledge her culpability and entreat Tom to think about reconciliation. She decided on this course of action because she really did not have anything to lose. To emphasize her sincerity to Tom in the clearest way she could Mary procured a token to demonstrate her conciliatory intentions. This should assist her purpose. It was a message sign. Just what was needed. These were fancy objects used by the natives who thought such things should always play a part during special times when they remember people who give a lot to the island. Events put on for this reason often go on for many days at a time.

Tom was amicable, it seemed, when Mary confronted him. She was outside. Tom was appreciative of her gesture and acted like he meant it. He said he was elated at fortuitously seeing her again and his actions seemed to show this too. They talked about the resort. It had been the idea of a doctor who died last century. He wanted it as an out of the way retreat. But the reason for this retreat would be a special kind of work. Leading doctors he knew, who thought the idea was a good one, would visit the island to think about questions they couldn't answer. This might have brought together doctors from different countries. The planned retreat was never finished and no one really knows why.

Tom and Mary were not adversaries now. This was certain. Mary wanted to instigate island resort peregrinations among her colleagues. Of course there were strange things about this island. It was very hard to get to and would stay that way for a long time. The island could only supply people's simple needs. The resort had only one hotel. Its food was not at all showy but its people were friendly and this made up for many things. This was the best thing about the island. One result was very sure. Mary was rejuvenated. She thought positively because of the way her early inauspicious experiences, which she had lived through, turned out. Things often happen that way.

PR

Friends

Tom and Mary went to the same school in Sydney with its growing conurbation where the new spread of houses joined up to the city. Most people just lived there and travelled to work in the city. These places had principally a dormitory purpose. Tom and Mary were enemies. They had been ever since they were children. They had lots of fights. In fact these were always happening. When they left school Tom went to live in another country. It was something he had always wanted to do. Mary did not want to give up her home. The rooms had many popular, modern fittings. These voguish, contemporary appointments made life very easy. Mary knew just how she wanted to live her life.

One summer Mary's house was burned down. Nothing could have been done to stop it. Nothing made Mary happy. Most people would feel the same. To get over it she arranged a long stay at a nondescript resort on an insignificant island. She thought this was the best thing to do. Living in an ordinary, little known place would be good. The inhabitants of the island were primarily insolvent with a minority of influential business people. Even though most of the people were poor and the few business people had power, life was friendly and quiet.

When Mary arrived at the resort she was angry to find that Tom was the owner. She thought it was a strange thing to happen. Mary felt afraid. She felt this because of their past. She knew they could not get on well. It had always been like that. She also missed the return crossing back from the island. The single ferry boat looked broken down and not very safe, but slowly and surely it was leaving. Even though it looked decrepit and of dubious reliability, the solitary commuter craft was indefatigably disappearing from view.

Mary decided to admit to Tom that she was to blame and ask him to make friends. She decided on this course of action because she really did not have anything to lose. To make Tom believe her, in the clearest way she could, Mary found a present to show him she wanted to make up. This should clearly assist her purpose. It was a message sign. The object was very fancy. It was a decorative artefact used by the indigenes. These natives who had always lived on the island, used the object at certain junctures in ceremonies when they commemorate munificent people. These people who give a lot to the island are remembered at times during special occasions.

Tom was friendly, it seemed, when Mary met him. She was outside. Tom thanked her for making the first move and acted like he meant it. He said he was pleased about seeing her again by chance and his actions seemed to show this too. They talked about the resort. It had been the idea of a doctor who died last century. He envisaged a secluded retreat. He dreamed of it being out of the way then and it still is.

Eminent doctors he knew, who were leaders in their field, would visit it to contemplate insoluble questions. After thinking quietly they might have found answers. But no one did anything about it and the planned retreat was abandoned.

Tom and Mary were not enemies now. This was certain. Mary wanted to get her friends from work to make trips to the island. It was so hard to get to and being extraordinarily inaccessible was not good. The resort had only one hotel. Its food was plain but fresh so the island's cuisine was not pretentious. The island people were convivial and this compensated for innumerable things. Friendly people can make up for a lot. One result was very sure. Mary was full of life again because her early unhappy experiences, which she had lived through, turned out so well. Things often happen that way.

PNR

Friends

Tom and Mary went to the same school in Sydney with its growing conurbation. All of the schools in places like this were very modern. These places had principally a dormitory purpose. There were many such places being built then. Tom and Mary were enemies. They had been since they were children. They had lots of fights. In fact these were always happening. When they left school Tom went to live in another country. It was something he had always wanted to do. Mary did not want to give up her home. The rooms had many voguish, contemporary appointments. Mary knew how she wanted to live her life. She enjoyed the way she lived.

One summer Mary's house burned down. Nothing could have been done to stop it. Nothing made Mary happy. Most people would feel the same. To get over it she arranged a long stay at a nondescript resort on an insignificant island. She thought this was the best thing to do. A place like this one would suit her very well. The inhabitants of the island were primarily insolvent with a minority of influential business people. This did not seem to have any effect on day to day living which was friendly and quiet.

When Mary arrived at the resort she was angry to find that Tom was the owner. She thought it was a strange thing to happen. Mary felt afraid. She felt this because of their past. She knew they could not get on well. It had always been like that. She also missed the return crossing back from the island. It was made by a solitary commuter craft which was indefatigably disappearing from view. People needed this service a lot, even though it looked decrepit and of dubious reliability. All the people who lived there said the same thing.

Mary decided to admit to Tom that she was to blame and ask him to make friends with her. She decided on this course of action because she really did not have anything to lose. To make Tom believe her in the clearest way she could, Mary found a present to show him she wanted to make up. This should clearly assist her purpose. It was a message sign. Just what was needed. It was a decorative artefact used by the indigenes who thought such things should always play a part at certain junctures in ceremonies when they commemorate munificent people. Events put on for this reason often go on for many days at a time.

Tom was friendly, it seemed, when Mary met him. She was outside. Tom thanked her for making the first move and acted like he meant it. He said he was pleased at seeing her again by chance and his actions seemed to show this too. They talked about the resort. It had been the idea of a doctor who died last century. He envisaged a secluded retreat. But the reason for this retreat would be a special kind of work. Eminent doctors he knew, who thought the idea was a good one, would visit the island to contemplate insoluble questions. This might have brought together doctors from different countries. The planned retreat was abandoned and no one really knows why.

Tom and Mary were not enemies now. This was certain. Mary wanted to get her friends from work to make trips to the island resort. Of course there were strange things about this island. It was extraordinarily inaccessible and would stay that way for a long time. The island could only supply people's simple needs. It had only one hotel so the resort's cuisine was not at all pretentious but its people were convivial and this compensated for innumerable things. This was the best thing about the island. One result was very sure. Mary was full of life again because her early unhappy experiences, which she had lived through, turned out so well. Things often happen that way.

The Brothers

Robert never could get on with his little brother Danny. They were real enemies. Robert liked to buy games that were different and interesting but all Danny wanted to do was play outside and catch all kinds of little animals. Sometimes Robert used his games to scare the animals and sometimes Danny let his animals play with Robert's games.

One winter's day their mother had to go shopping while their father was away on business. She told the boys they could have their pocket money if they did not get untidy or dirty while she was out. But while their mum was out the boys started to fight and by pure chance the heater fell over. The house was burned to the ground.

Robert went to live with a friend and Danny had to stay with the owner of his father's shop. They felt like little unwelcome guests. They did not see each other and their mother and father only came to visit sometimes for a short time after dinner. The boys knew they were to blame. They were scared about how they were going to live from now on.

Robert sent a letter to his mother. He said he was to blame. He said he was very unhappy and wanted to be friends with Danny if he could have another chance. Danny made a fancy sign with a message on it for Robert. Mum said Robert would be going away with his father and Danny would go away with her.

Robert's father took him on a long trip to an island. When they got off the boat he was still unhappy until he saw Danny and his mother. They were all going to have a holiday on the island before they went back to live in a new flat in Sydney.

The boys' mother and father had been very angry at first but their early unhappy experiences had turned out well. Now they knew Robert and Danny would always be friends.

APPENDIX 2

Micropropositional Analysis of Test Stories

"The Secret Trip"

"Willy" (Base Version)

"Friends" (Base Version)

Micropropositional Analysis - "The Secret Trip"

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      Proposition Level
No. 1 2 3 4 5 6 7 8 9 10
1   EXIST KIDS
2     NUMBER OF 1, TWO
3   CONJUNCTION AND PETER, MARY
4     REFERENCE 2, 3
5       TIME 4, ONCE
6     LIVE PETER
7       LOCATION 6, ACROSS STREET
8         LOCATION 7, FROM MARY
9     POSSESS 3 AGE
10      QUALITY OF 9, SAME
11        QUALIFY 10, ABOUT
12    KNOW PETER MARY
13      QUALIFY 12, WELL
14        QUALIFY 13, VERY
15      CONJUNCTION AND 9, 14
16    GO TO 3 SCHOOLS
17      QUALITY OF SCHOOLS, DIFFERENT
18    PLAY 3
19      QUALIFY 18, TOGETHER
20        TIME WHEN 19, OFTEN
21        TIME WHEN 19, AFTER SCHOOL
22        TIME WHEN 19, ON WEEKENDS
23          CONJUNCTION AND 21,22
24        CONCESSION BUT,17,23
25    POSSESS MARY HOUSE
26      LOCATION AT 18, 25
27        QUALIFY 26, SOMETIMES
28    POSSESS PETER HOUSE
29      LOCATION AT 18, 28
30        QUALIFY 29, SOMETIMES
31          CONJUNCTION AND 27, 30
32    POSSESS PETER FATHER
33      GO 32 WORK
34        TIME 33, ONE MORNING
35        LOCATION 34, IN GARAGE
36    POSSESS PETER MOTHER
37      QUALITY OF 36, BUSY
38        LOCATION 37 OUTSIDE
39          CONJUNCTION AND 35, 38
40    POSSESS PETER NOTHING
41      PURPOSE 40, TO DO
42        TIME 41, AFTER BREAKFAST
43    POSSESS PETER TOYS
44      EXTENT OF 43, ALL
45    GET OUT PETER, 44
46      CAUSE 45, 42
47    GO PETER
48      LOCATION 47, DOWN TO FENCE
49    CALL OUT PETER
50      LOCATION 49 TO MARY
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    Proposition Level
No. 1 2 3 4 5 6 7 8 9 10
51   EXIST MARY
52   POSSESS MARY YARD
53    QUALIFY 52, FRONT
54    LOCATION IN 51, 53
55     CONJUNCTION AND 48, 50
56   ASK PETER MARY 60
57   COME MARY OVER
58   PLAY MARY
59    CONJUNCTION AND 57, 58
60    PURPOSE 56, 59
61   SAY MARY YES
62    LOCATION 61 TO PETER
63   WANT MARY 62
64    QUALIFY 63, REALLY
65  QUALIFY DAY,NEXT
66   QUALITY OF 65, SPECIAL
67    QUALIFY 66, VERY
68   KNOW MARY 67
69    CONCESSION BUT 64, 68
70   BECOME PETER NINE
71   THINK MARY
72   BUY MARY SOMETHING
73    PURPOSE TO 71, 72
74   THINK ABOUT MARY TOY
75    QUALITY OF TOY, NEW
76     ISA 75 SOMETHING
77      QUALITY OF SOMETHING, DIFFERENT
78       QUALIFY 77, QUITE
79     TIME WHEN 60, THIS TIME
80   POSSESS MARY TIME
81    QUALIFY 80, ONLY
82     REFERENCE 81, 79
83   GET MARY PRESENT
84  GIVE $ PARTY
85   TIME WHEN 84, TOMORROW
86    TIME BEFORE 85, 83
87     PURPOSE TO 82, 86
88   QUALITY OF MARY, SICK
89   TELL MARY PETER 88
90    CAUSE 87, 89
91   POSSESS MARY MOTHER
92   PLAY MARY
93    QUALIFY 92, QUIETLY
94     QUALIFY 93 ,BY HERSELF
95    WANT 91, 94
96   SAY MARY 95
97   FEEL PETER SICK
98    CONJUNCTION ALSO 88, 97
99   MAKE MARY 98
100  WANT MARY 99
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    Proposition Level
No. 1 2 3 4 5 6 7 8 9 10
101     NEGATE 100
102   TELL MARY PETER 109
103   CAN MARY 108
104   COME MARY
105     LOCATION 105, OVER
106   PLAY MARY
107     PURPOSE 105, 106
108       NEGATE 107
109       CAUSE 101, 103
110   CONJUNCTION AND MARY, 91
111     GET INTO 110, CAR
112       CONJUNCTION AND 111, 116
113     GO 111
114       LOCATION 113 INTO TOWN
115     SHOP 111
116       PURPOSE 114, 115
117         TIME 112, LATER
118           QUALIFY 117, A FEW MINUTES
119   POSSESS MARY POCKET MONEY
120     QUANTITY OF 119, ALL
121   TAKE MARY 120
122   LOOK AT MARY THINGS
123     QUANTITY OF THINGS, LOTS
124       LOCATION IN 123, SHOPS
125         NUMBER OF SHOPS, MANY
126   POSSESS MARY MIND
127   MAKE UP MARY, 126
128     AFTER TIME 127
129       QUALIFY TIME, LONG
130   GO MARY
131     LOCATION TO 130, TOYSHOP
132   BUY MARY SKATEBOARD
133     QUALIFY SKATEBOARD, NEW
134       QUALIFY 133, BRAND
135     CONJUNCTION AND 131, 132
136   FEEL MARY PLEASED
137     QUALIFY 136, VERY
138   LOOK AT MARY 134
139     TIME WHEN 137, 138
140     ISA 134 SOMETHING
141       QUALIFY 140, SPECIAL
142         QUALIFY 141, REALLY
143   THINK MARY 142
144 EXIST FUN
145   QUALITY OF FUN, ,MORE
146     QUALIFY 145, MUCH
147       QUALIFY 146, SO
148       TIME WHEN 19, NEXT TIME
149         TIME WHEN 147, 148
150   FEEL MARY BAD
151     QUALIFY BAD, SO
152       NEGATE 151
153   POSSESS MARY SHOPPING
154     REFERENCE SHOPPING SECRET
155   KEEP MARY 154
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156 LOCATION FROM 155 PETER
157 CAUSE 156, 152
158 POSSESS MARY REASON
159 GO MARY
160 SHOP MARY
161 PURPOSE 159, 160
162 PURPOSE 158, 161
163 GUESS PETER 162
164 NEGATE 163
165 TIME WHEN 164, NOW

Micropropositional Analysis - "Willy"

	Propositional Level									
No.	1	2	3	4	5	6	7	8	9	10
1	ISA, WILLY, DELINQUENT									
2		QUALITY OF DELINQUENT, INCORRIGIBLE								
3	POSSESS ME SIBLING									
4		REFERENCE 2,3								
5			CONJUNCTION, ALSO 2,4							
6		HATE WILLY TOYS								
7			NUMBER OF TOYS, SOME							
8				REFERENCE 7, GAMES						
9					QUALITY OF GAMES, INDULGENT					
10						QUALIFY INDULGENT, EXTORTIONATELY				
11			CONCESSION, ALTHOUGH 10,6							
12					QUALITY OF 8, UNCONVENTIONAL					
13						QUALIFY 12, ADDICTIVELY				
14		OBSESS 15 WILLY								
15		EXCAVATE WILLY INVERTEBRATES								
16			EXTENT OF INVERTEBRATES, ALL KINDS							
17			CONCESSION BUT, 6,14							
18		SEE I MUM								
19			TIME, 18, ONE DAY							
20			POSSESS MUM LISTS							
21				QUALITY OF 20, SHOPPING						
22					QUALIFY 21, EXHAUSTIVE					
23						DOMINATE FOOD 22				
24							QUALIFY 23, INCREASINGLY			
25								NUMBER OF 24, ONE		
26			WRITE MUM 25							
27				TIME WHEN 19, 26						
28		GO I OUTSIDE								
29		RETRIEVE I WILLY								
30			PURPOSE TO, 28, 29							
31			CONJUNCTION, WILLY, MUM, SPEAKER							
32			REFERENCE 31, WE							
33				GO 32 SHOPPING						
34				PURPOSE 30, 33						
35		QUALITY OF WILLY, DISHEVELLED								
36			QUALIFY 35, CHARACTERISTICALLY							
37		PROCURE WILLY SPECIMEN								
38			QUALITY OF 37, REPULSIVE							
39				QUALIFY 38, MOST						
40			ISA 39 INVERTEBRATE							
41		CONFRONT I 40								
42			TIME WHEN, 40, YET							
43				CONJUNCTION AND 36, 42						
44		INDUCE I WILLY								
45		GIVE WILLY 40 RESPITE								
46			PURPOSE TO 44, 45							
47		USHER I WILLY								
48			LOCATION 47, INTO HOUSE							
49				TIME AFTER 46,48						
50		POSSESS WILLY APPEARANCE								

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        Propositional Level
No.  1 2 3 4 5 6 7 8 9 10
51       REFERENCE 50, 36
52     GIVE I RESPECTABILITY
53       EXTENT OF RESPECTABILITY, SOME
54       LOCATION TO 52, 51
55         TIME AFTER 49,54
56           QUALIFY 55, SOON
57         GO 32 SHOPPING
58           LOCATION IN 57, SQUARE
59             POSSESS SQUARE SHOP
60               QUALITY OF SHOP, NONDESCRIPT
61       SELL 60 TOYS
62         QUALITY OF 60, INEXPENSIVE
63         QUANTITY OF 62, MISCELLANY
64           QUALIFY 63, PRIMARILY
65     CONJUNCTION AND, WILLY, SPEAKER
66     POSSESS 65 HANDS
67       PRESS MUM SOMETHING
68       LOCATION INTO 67, 66
69         REFERENCE SOMETHING, ALLOWANCE
70           EXTENT OF ALLOWANCE, ONE WEEK
71           REFERENCE 70, INSTALLMENT
72             QUANTITY OF 71, MINISCULE
73               QUALIFY 72, PROHIBITIVELY
74             CONCESSION BUT, 70, 72
75                 FINANCE 72 PURCHASE
76                   QUALITY OF 74, EXORBITANT
77                     TIME WHEN, 75, NEVER
78     SEE SPEAKER BOX
79       CONTAIN BOX WATCHES
80         QUALITY OF WATCHES, INNOVATIVE
81           QUALIFY 80, INTRIGUINGLY
82     INSPECT WILLY ANIMALS
83       QUALITY OF ANIMALS, IMITATION
84         QUALITY OF 83, MINIATURE
85         ARRIVE 32 HOME
86     WANT WILLY 89
87     SAUNTER WILLY
88       LOCATION AROUND, 87
89         LOCATION, 88 OUTSIDE THE HOUSE
90       TIME WHEN, 85, 86
91     SAY SPEAKER 92
92       MEAN 86 ABLUTIONS
93         QUANTITY OF ABLUTIONS, FURTHER
94       CONCESSION BUT, 86, 91
95     (INF)CONSEQUENCE: BECAUSE 91, 95
96     UNLEASH WILLY PROTESTATIONS
97       QUANTITY OF PROTESTATIONS, STREAM
98       TIME AFTER 96, 99
99     CONFINE $ WILLY
100      LOCATION TO 99, 102
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       Proposition Level
No.  1 2 3 4 5 6 7 8 9 10
101    POSSESS WILLY ROOM
102      LOCATION IN 101 SUNROOM
103        QUALITY OF SUNROOM, OLD
104        ISA SUNROOM ADJUNCT
105          QUALITY OF 104, DILAPIDATED
106          REFERENCE DOMICILE, HOUSE
107            POSSESS 106 EXTREMITY
108            LOCATION AT 105, 107
109            QUALITY OF 105, ISOLATED
110              LOCATION FROM 109, LIVING ROOM
111                POSSESS LIVING ROOM RENOVATIONS
112                  QUALITY OF RENOVATIONS,
                     CONTEMPORARY
113        SETTLE DOWN 32
114          TIME WHEN 113, SOON
115      POSSESS MUM BOX
116      GET MUM 115
117        CONTAIN 115 BOOKS
118          QUALITY OF BOOKS, ANTIQUATED
119            POSSESS 118 PAPER
120              QUALITY OF 119, FRAGMENTING
121              QUALITY OF 119, DETERIORATING
122            POSSESS 118 WRITING
123              QUALITY OF 122, INDECIPHERABLE
124              CONJUNCTION AND 119,122
125            DELINEATE 118 REPASTS
126              QUALITY OF REPASTS, APPETIZING
127                NUMBER OF 126, MANY
128      MAKE MUM SOMETHING
129        ENJOY 32, 128
130    GO I BED
131      TIME AFTER 129,130
132    WAKE SPEAKER
133      QUALIFY 132, SUDDENLY
134        TIME WHEN, 131, LATE
135          QUALIFY LATE, EXTRAORDINARILY
136    TURN ON SPEAKER LIGHT
137      QUALITY OF LIGHT, DESK
138        POSSESS DESK, PERIPHERY
139        STAND 137
140          QUALIFY 139, PERILOUSLY
141          LOCATION ON 140, 138
142    APPREHEND SPEAKER SILHOUETTE
143      QUALITY OF SILHOUETTE, GROTESQUE
144      TIME AFTER 136, 142
145    QUALITY OF SPEAKER, PETRIFIED
146      TIME WHEN 145, AT FIRST
147      TIME AFTER 146,148
148    DEDUCE SPEAKER 152
149    POSSESS WILLY REPLICAS
150      NUMBER OF 149, ONE
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      Propositional Level
No. 1 2 3 4 5 6 7 8 9 10
151       ISA 143, 150
152         QUALIFY 151, NECESSARY
153     EXTINGUISH SPEAKER 137
154       KEEP 137 POSITION
155         QUALITY OF POSITION, STRATEGIC
156           QUALIFY 155 PRECARIOUSLY
157         QUALIFY 154, FORTUITOUSLY
158     DISCERN SPEAKER PERAMBULATION
159     POSSESS SPEAKER ARM
160       LOCATION OVER 158, 159
161         TIME WHEN 160, LATER
162     MAKE SPEAKER WAIL
163       NUMBER OF 162, ONE
164       QUALITY OF 162, EXCRUCIATING
165       CONJUNCTION AND , MUM, DAD
166         BRING 164, 165
167     QUALITY OF SPEAKER, HYSTERICAL
168 EXIST INTRUDER
169     QUALITY OF INTRUDER, SMALL
170       QUALITY OF 169, ANIMATE
171       REFERENCE 170, 143
172         CONJUNCTION AND, 170, 173
173     DESPATCH SPEAKER, 170
174       QUALIFY 173, INSTANTANEOUSLY
175     HOLD MUM SPEAKER
176       TIME, FOR 175, A WHILE
177     KISS MUM SPEAKER
178       TIME AFTER 175, 180
179     GO MUM BED
180       CONJUNCTION AND 177, 179
181 QUALITY OF EVERYTHING, QUIET
182     TIME WHEN 181, 183
183     HEAR SPEAKER 185
184     LAUGH WILLY
185       LOCATION TO 184, HIMSELF
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Micropropositional Analysis - "Friends"

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    Propositional Level
No. 1 2 3 4 5 6 7 8 9 10
1   CONJUNCTION AND TOM, MARY
2     ATTEND 1 SCHOOL
3       QUALIFY SCHOOL, SAME
4         LOCATION IN 3, SYDNEY
5           POSSESS SYDNEY CONURBATION
6             QUALITY OF 5, GROWING
7             REFERENCE CONURBATION, PLACES
8             POSSESS 7 PURPOSE
9               QUALITY OF PURPOSE, DORMITORY
10                QUALIFY 9, PRINCIPALLY
11    ISA 1 ANTAGONISTS
12    HAVE 1 ALTERCATIONS
13      QUANTITY OF ALTERCATIONS, LOTS
14    LEAVE 1 SCHOOL
15    EMIGRATE TOM
16      TIME AFTER 14, 15
17    INCLINE MARY 18
18    SURRENDER MARY DOMICILE
19      NEGATE 17
20      PART OF DOMICILE, INSIDE
21        POSSESS 20 APPOINTMENTS
22          QUANTITY OF APPOINTMENTS, MANY
23          QUALITY OF APPOINTMENTS, CONTEMPORARY
24          QUALITY OF APPOINTMENTS, VOGUISH
25    POSSESS MARY BUNGALOW
26      INCINERATE 25,$
27        TIME WHEN 26, SUMMER
28          QUALIFY 27, ONE
29    FEEL MARY DISCONSOLATE
30    (INF) CAUSE 28, 29
31    RECUPERATE MARY
32    ARRANGE MARY SOJOURN
33      QUALITY OF SOJOURN, LONG
34      LOCATION AT 30, RESORT
35        QUALITY OF RESORT, NONDESCRIPT
36        LOCATION ON 35, ISLAND
37          QUALITY OF ISLAND, INSIGNIFICANT
38      PURPOSE TO 31,32
39          POSSESS ISLAND INHABITANTS
40            QUALITY OF 39, INSOLVENT
41              QUALIFY 40, PRIMARILY
42            PART OF INHABITANTS, MINORITY
43              ISA 42 PEOPLE
44                QUALITY OF 43, BUSINESS
45                  QUALITY OF 44, INFLUENTIAL
46    ARRIVE MARY
47      LOCATION AT 46, 36
48    FEEL MARY INCENSED
49      TIME WHEN 48, 47
50    FIND MARY 51
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Propositional Level

No.	1	2	3	4	5	6	7	8	9	10
51	REFERENCE TOM PROPRIETER									
52		CAUSE 50, 48								
53	FEEL MARY APPREHENSIVE									
54		(INF) CAUSE 58, 53								
55	KNOW MARY 58									
56	MAINTAIN 1 RELATIONS									
57		QUALITY OF RELATIONS, HARMONIOUS								
58		NEGATE 56								
59			CONJUNCTION AND 55, 60							
60	MISS MARY CROSSING									
61		QUALITY OF CROSSING, RETURN								
62		LOCATION TO 61, MAINLAND								
63			MAKE CRAFT 62							
64				QUALITY OF CRAFT, COMMUTER						
65				QUALITY OF CRAFT, SOLITARY						
66				DISAPPEAR CRAFT						
67					LOCATION FROM 66, VIEW					
68						QUALIFY 67, INDEFATIGABLY				
69				LOOK CRAFT DECREPIT						
70				QUALITY OF CRAFT, RELIABLE						
71					QUALIFY 70, DUBIOUS					
72	DECIDE MARY 73									
73	ACKNOWLEDGE MARY 74									
74	POSSESS MARY CULPABILITY									
75		CONJUNCTION AND 73, 76								
76	ENTREAT MARY TOM 77									
77	CONSIDER TOM RECONCILIATION									
78	EMPHASIZE MARY TOM 79									
79	POSSESS MARY SINCERITY									
80		PURPOSE TO 78, 81								
81	PROCURE MARY TOKEN									
82	DEMONSTRATE MARY 83									
83	POSSESS MARY INTENTIONS									
84		QUALITY OF INTENTIONS, CONCILIATORY								
85		PURPOSE TO 82, 81								
86		ISA TOKEN SIGN								
87			QUALITY OF SIGN MESSAGE							
88				REFERENCE SIGN ARTEFACT						
89					QUALITY OF 88, DECORATIVE					
90						USE INDIGINES 89				
91							TIME AT 90 JUNCTURES			
92								LOCATION IN 91 CEREMONIES		
93						COMMEMORATE INDIGINES PEOPLE				
94							QUALITY OF PEOPLE, MUNIFICENT			
95							PURPOSE TO 90, 93			
96	QUALITY OF TOM, AMICABLE									
97	CONFRONT MARY TOM									
98		TIME WHEN 96,97								
99	MAKE MARY GESTURE									
100	APPRECIATE TOM 99									

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      Proposition Level
No. 1 2 3 4 5 6 7 8 9 10
101   SAY TOM 102
102   FEEL TOM ELATED
103   SEE TOM MARY
104     QUALIFY 103, FORTUITOUSLY
105     CAUSE 104, 102
106   DISCUSS 1 RESORT
107     REFERENCE RESORT IDEA
108       POSSESS DOCTOR IDEA
109         DIE DOCTOR
110           TIME WHEN 109, LAST CENTURY
111         ENVISAGE DOCTOR RETREAT
112           QUALITY OF RETREAT, SECLUDED
113         KNOW DOCTOR DOCTORS
114           QUALITY OF DOCTORS, EMINENT
115             VISIT 114, 112
116             CONTEMPLATE 114 PROBLEMS
117               QUALITY OF PROBLEMS, INSOLUBLE
118               PURPOSE TO 115,116
119             QUALITY OF 112, PLANNED
120               ABANDON $ 119
121   ISA 1 ADVERSARIES
122     NEGATE 121
123     TIME WHEN 122, NOW
124   POSSESS MARY COLLEAGUES
125   WANT MARY 126
126   INSTIGATE MARY 127
127     MAKE 124 PEREGRINATIONS
128       LOCATION TO 127, 36
129       QUALITY OF ISLAND, INACCESSIBLE
130         QUALIFY 129, EXTRAORDINARILY
131     POSSESS 36 HOTEL
132       QUANTITY OF 131, ONE
133         POSSESS 132 CUISINE
134           QUALITY OF 133 PRETENTIOUS
135             NEGATE 134
136     POSSESS 36 PEOPLE
137       QUALITY OF 136, CONVIVIAL
138       CONCESSION BUT 135, 137
139         COMPENSATE 137 THINGS
140           NUMBER OF THINGS, INNUMERABLE
141         CONJUNCTION AND 138,139
142   FEEL MARY REJUVENATED
143   THINK MARY POSITIVELY
144   POSSESS MARY EXPERIENCES
145     QUALITY OF 144 INAUSPICIOUS
146       TURN OUT 145
147     CAUSE 146,143
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APPENDIX 3

Macropropositional Analysis of Test Stories

"The Secret Trip"

"Willy"

"Friends"

Macropropositional Analysis - "The Secret Trip"

No.	Micropropositions	Macro-Operator	No.	Macropropositions
1	EXIST KIDS	D		
2	NUMBER OF 1, TWO	D		
3	CONJUNCTION AND PETER,MARY	I	1	CONJUNCTION AND, PETER, MARY
4	REFERENCE 2, 3	D		
5	TIME 4, ONCE	D		
6	LIVE PETER	C		
7	LOCATION 6, ACROSS STREET	C	2	LIVE 1
8	LOCATION 7, FROM MARY	C	3	LOCATION 2 OPPOSITE EACH OTHER
9	POSSESS 3 AGE	I	4	POSSESS 1 AGE
10	QUALITY OF 9, SAME	I	5	QUALITY OF 4, SAME
11	QUALIFY 10, ABOUT	D		
12	KNOW PETER MARY	G		
13	QUALIFY 12, WELL	G	6	REFERENCE 1 FRIENDS
14	QUALIFY 13, VERY	G		
15	CONJUNCTION AND 9, 14	D		
16	GO TO 3 SCHOOLS	I	7	GO TO, 1 SCHOOLS QUALITY OF SCHOOLS, DIFFERENT
17	QUALITY OF SCHOOLS DIFFERENT	I		
18	PLAY 3	I	8	PLAY 1
19	QUALIFY 18, TOGETHER	I	9	QUALIFY 18, TOGETHER
20	TIME WHEN 19, OFTEN	G		
21	TIME WHEN 19, AFTER SCHOOL	G	10	LOCATION AT 9, HOME
22	TIME WHEN 19, ON WEEKENDS	G		
23	CONJUNCTION AND 21, 22	G		
24	CONCESSION BUT, 17, 23	D		
25	POSSESS MARY HOUSE	G		
26	LOCATION AT 18, 25	G		
27	QUALIFY 26, SOMETIMES	G		(Macroproposition 10)
28	POSSESS PETER HOUSE	G		
29	LOCATION AT 18, 28	G		
30	QUALIFY 29, SOMETIMES	G		
31	CONJUNCTION AND 27, 30	G		
32	POSSESS PETER FATHER	I	11	POSSESS PETER FATHER
33	GO 32 WORK	G		
34	TIME 33, ONE MORNING	G		(Macroproposition 14)
35	LOCATION 34, IN GARAGE	G		

No.	Micropropositions	Macro-Operator	No.	Macropropositions
36	POSSESS PETER MOTHER	G	12	POSSESS PETER MOTHER
37	QUALITY OF 36, BUSY	G	13	CONJUNCTION AND 11,12
38	LOCATION 37 OUTSIDE	G	14	QUALIFY 13, BUSY
39	CONJUNCTION AND 35,38	G		
40	POSSESS PETER NOTHING	I	15	POSSESS PETER NOTHING
41	PURPOSE 40, TO DO	I	16	PURPOSE 15, TO DO
42	TIME 41, AFTER BREAKFAST	D		
43	POSSESS PETER TOYS	I	17	POSSESS PETER TOYS
44	EXTENT OF 43, ALL	C		
45	GET OUT PETER, 44	C	18	GET PETER 17
46	CAUSE 45, 42	D		
47	GO PETER			
48	LOCATION 47, DOWN TO FENCE	C		
49	CALL OUT PETER	C		(Macroproposition 19)
50	LOCATION 49 TO MARY	C		
51	EXIST MARY	C		
52	POSSESS MARY YARD	C		(Macroproposition 19)
53	QUALIFY 52, FRONT	C		
54	LOCATION IN 51, 53	C		
55	CONJUNCTION AND 48, 50	C	19	ASK PETER MARY 20
56	ASK PETER MARY 60	C		
57	COME MARY OVER	C		
58	PLAY MARY	C	20	PLAY MARY
59	CONJUNCTION AND 57, 58	C		
60	PURPOSE 56, 59	C		
61	SAY MARY YES	I	21	SAY MARY YES
62	LOCATION 61 TO PETER	G		
63	WANT MARY 62	I	22	WANT MARY 21
64	QUALIFY 63, REALLY	D		
65	QUALIFY DAY,NEXT	C		(Macroproposition 25)
66	QUALITY OF 65, SPECIAL	C		(Macroproposition 24)
67	QUALIFY 66, VERY	C		
68	KNOW MARY 67	I	23	KNOW MARY 25
69	CONCESSION BUT 64, 68	D		
70	BECOME PETER NINE	I	24	BECOME PETER NINE
			25	TIME WHEN 24, TOMORROW
71	THINK MARY	D		

No.	Micropropositions	Macro-Operator	No.	Macropropositions
72	BUY MARY SOMETHING	C		
73	PURPOSE TO 71, 72	C		
74	THINK ABOUT MARY TOY	C		
75	QUALITY OF TOY, NEW	C		(Macroproposition 30)
76	ISA 75 SOMETHING	C		
77	QUALITY OF SOMETHING DIFFERENT	C		
78	QUALIFY 77, QUITE	C		
79	TIME WHEN 60, THIS TIME	C	26	POSSESS MARY OPPORTUNITY
80	POSSESS MARY TIME	C	27	QUALIFY 26, ONLY
81	QUALIFY 80, ONLY	C	28	TIME WHEN 27, NOW
82	REFERENCE 81, 79	C	29	PURPOSE 28, 30
83	GET MARY PRESENT	I	30	GET MARY PRESENT
84	GIVE $ PARTY	C		
85	TIME WHEN 84, TOMORROW	C		(Macroproposition 28)
86	TIME BEFORE 85, 83	C		
87	PURPOSE TO 82, 86	C		
88	QUALITY OF MARY, SICK	I	31	QUALITY OF MARY, SICK
89	TELL MARY PETER 88	I	32	TELL MARY PETER 35
90	CAUSE 87, 89	D		
91	POSSESS MARY MOTHER	C		
92	PLAY MARY	C		
93	QUALIFY 92, QUIETLY	C		
94	QUALIFY 93, BY HERSELF	C		(Macroproposition 34)
95	WANT 91, 94	C		
96	SAY MARY 95	C		
97	FEEL PETER SICK	C		
98	CONJUNCTION ALSO 88, 97	C		
99	MAKE MARY 98	C		
100	WANT MARY 99	C		
101	NEGATE 100			
102	TELL MARY PETER 109			
103	CAN MARY 108	C		
104	COME MARY	C		
105	LOCATION 105, OVER	C	33	CAN MARY PLAY
106	PLAY MARY	C		

Micropropositions No.	Macro-Operator	Macropropositions No.
107 PURPOSE 105, 106	C	
108 NEGATE 107	I	34 NEGATE 33
109 CAUSE 101, 103	C	35 CAUSE 31,34
110 CONJUNCTION AND MARY, 91	I	36 CONJUNCTION AND MARY, MOTHER
111 GET INTO 110, CAR	G	
112 CONJUNCTION AND 111, 116	G	
113 GO 111	G	
114 LOCATION 113 INTO TOWN	G	37 GO 36 SHOPPING
115 SHOP 111	G	
116 PURPOSE 114, 115	G	
117 TIME 112, LATER	D	
118 QUALIFY 117, A FEW MINUTES	D	
119 POSSESS MARY POCKET MONEY	D	
120 QUANTITY OF 119, ALL	D	
121 TAKE MARY 120	D	
122 LOOK AT MARY THINGS	C	38 LOOK FOR MARY PRESENT
123 QUANTITY OF THINGS, LOTS	C	
124 LOCATION IN 123, SHOPS	G	(Macroproposition 37)
125 NUMBER OF SHOPS, MANY	G	
126 POSSESS MARY MIND	D	
127 MAKE UP MARY, 126	D	
128 AFTER TIME 127	D	
129 QUALIFY TIME, LONG	D	
130 GO MARY	G	
131 LOCATION TO 130, TOYSHOP	G	(Macroproposition 37)
132 BUY MARY SKATEBOARD	I	39 BUY MARY SKATEBOARD
133 QUALIFY SKATEBOARD, NEW	D	
134 QUALIFY 133, BRAND	D	
135 CONJUNCTION AND 131, 132	D	
136 FEEL MARY PLEASED	C	
137 QUALIFY 136, VERY	C	
138 LOOK AT MARY 134	C	
139 TIME WHEN 137, 138	C	40 PLEASE SKATEBOARD MARY
140 ISA 134 SOMETHING	C	
141 QUALIFY 140, SPECIAL	C	
142 QUALIFY 141, REALLY	C	

No.	Micropropositions	Macro-Operator	No.	Macropropositions
143	THINK MARY 142	D		
144	EXIST FUN	C		
145	QUALITY OF FUN, MORE	C		
146	QUALIFY 145, MUCH	C		
147	QUALIFY 146, SO	C	41	PROVIDE PRESENT 1 FUN
148	TIME WHEN 19, NEXT TIME	C		
149	TIME WHEN 147, 148	C		
150	FEEL MARY BAD	I	42	FEEL MARY BAD
151	QUALIFY BAD, SO	D		
152	NEGATE 151	I	43	NEGATE 42
153	POSSESS MARY SHOPPING	C		
154	REFERENCE SHOPPING SECRET	C	44	TELL MARY PETER LIE
155	KEEP MARY 154	C		
156	LOCATION FROM 155 PETER	C		
157	CAUSE 156, 152	I	45	CAUSE 44, 43
158	POSSESS MARY REASON	I	46	POSSESS MARY REASON
159	GO MARY	I	47	GO MARY
160	SHOP MARY	I	48	SHOP MARY
161	PURPOSE 159, 160	I	49	PURPOSE 47, 48
162	PURPOSE 158, 161	I	50	PURPOSE 46, 49
163	GUESS PETER 162	I	51	GUESS PETER 50
164	NEGATE 163	I	52	NEGATE 51
165	TIME WHEN 164, NOW	C	53	CAUSE 52,43

Macropropositional Analysis - "Willy"

No.	Micropropositions	Macro-Operator	No.	Macropropositions
1	ISA, WILLY, DELINQUENT	I	1	ISA WILLY DELINQUENT
2	QUALITY OF DELINQUENT, INCORRIGIBLE	D		
3	POSSESS ME SIBLING	I	2	POSSESS SPEAKER SIBLING
4	REFERENCE 2,3	I	3	REFERENCE 2,WILLY
5	CONJUNCTION, ALSO 2,4	D		
6	HATE WILLY TOYS	D		
7	NUMBER OF TOYS, SOME	D		
8	REFERENCE 7, GAMES	D		
9	QUALITY OF GAMES, INDULGENT	D		
10	QUALIFY INDULGENT, EXTORTIONATELY	D		
11	CONCESSION, ALTHOUGH 10,6	D		
12	QUALITY OF 8, UNCONVENTIONAL	D		
13	QUALIFY 12, ADDICTIVELY	D		
14	OBSESS 15 WILLY	I	4	OBSESS 5 WILLY
15	EXCAVATE WILLY INVERTEBRATES	I	5	EXCAVATE WILLY INVERTEBRATES
16	EXTENT OF INVERTEBRATES, ALL KINDS	D		
17	CONCESSION BUT, 6,14	D		
18	SEE I MUM	D		
19	TIME , 18, ONE DAY	D		
20	POSSESS MUM LISTS	D		
21	QUALITY OF 20, SHOPPING	D		
22	QUALIFY 21, EXHAUSTIVE	D		
23	DOMINATE FOOD 22	D		
24	QUALIFY 23, INCREASINGLY	D		
25	NUMBER OF 24, ONE	D		
26	WRITE MUM 25	D		
27	TIME WHEN 19, 26	D		
28	GO I OUTSIDE	C		
29	RETRIEVE I WILLY	C	6	RETRIEVE I WILLY
30	PURPOSE TO, 28, 29	C		
31	CONJUNCTION, WILLY, MUM, SPEAKER	C		
32	REFERENCE 31, WE	C		(Macroproposition 11)
33	GO 32 SHOPPING	I		
34	PURPOSE 30, 33	C	7	PURPOSE 6, 11
35	QUALITY OF WILLY, DISHEVELLED	G		
36	QUALIFY 35, CHARACTERISTICALLY	G		(Macroproposition 1)
37	PROCURE WILLY SPECIMEN	I	8	PROCURE WILLY SPECIMEN

No.	Micropropositions	Macro-Operator	No.	Macropropositions
38	QUALITY OF 37, REPULSIVE	I	9	QUALITY OF 8, REPULSIVE
39	QUALIFY 38, MOST	D		
40	ISA 39 INVERTEBRATE	D		
41	CONFRONT I 40	D		
42	TIME WHEN, 40, YET	D		
43	CONJUNCTION AND 36, 42	D		
44	INDUCE I WILLY	C		
45	GIVE WILLY 40 RESPITE	C		
46	PURPOSE TO 44, 45	C		
47	USHER I WILLY	C		
48	LOCATION 47, INTO HOUSE	C		
49	TIME AFTER 46,48	C	10	CLEAN UP SPEAKER WILLY
50	POSSESS WILLY APPEARANCE	C		
51	REFERENCE 50, 36	C		
52	GIVE I RESPECTABILITY	C		
53	EXTENT OF RESPECTABILITY, SOME	C		
54	LOCATION TO 52, 51	C		
55	TIME AFTER 49,54	C		
56	QUALIFY 55, SOON	C		
57	GO 32 SHOPPING	I		
58	LOCATION IN 57, SQUARE	C	11	GO WE SHOPPING
59	POSSESS SQUARE SHOP	C		
60	QUALITY OF SHOP, NONDESCRIPT	D		
61	SELL 60 TOYS	D		
62	QUALITY OF 60, INEXPENSIVE	D		
63	QUANTITY OF 62, MISCELLANY	D		
64	QUALIFY 63, PRIMARILY	D		
65	CONJUNCTION AND, WILLY, SPEAKER	C		
66	POSSESS 65 HANDS	C		
67	PRESS MUM SOMETHING,	C	12	GIVE MUM CHILDREN ALLOWANCE
68	LOCATION INTO 67, 66	C		
69	REFERENCE SOMETHING, ALLOWANCE	C		
70	EXTENT OF ALLOWANCE, ONE WEEK	C		
71	REFERENCE 70, INSTALLMENT	D		
72	QUANTITY OF 71, MINISCULE	D		
73	QUALIFY 72, PROHIBITIVELY	D		
74	CONCESSION BUT, 70, 72	D		
75	FINANCE 72 PURCHASE	D		
76	QUALITY OF 74, EXORBITANT	D		
77	TIME WHEN, 75, NEVER	D		

No.	Micropropositions	Macro-Operator	No.	Macropropositions
78	SEE SPEAKER BOX	D		
79	CONTAIN BOX WATCHES	D		
80	QUALITY OF WATCHES, INNOVATIVE	D		
81	QUALIFY 80, INTRIGUINGLY	D		
82	INSPECT WILLY ANIMALS	C		
83	QUALITY OF ANIMALS, IMITATION	C	13	INSPECT WILLY MODEL ANIMALS
84	QUALITY OF 83, MINIATURE	C		
85	ARRIVE 32 HOME	C		(Macroproposition 16)
86	WANT WILLY 89	I	14	WANT WILLY 15
87	SAUNTER WILLY	I	15	SAUNTER WILLY
88	LOCATION AROUND, 87	C		
89	LOCATION, 88 OUTSIDE THE HOUSE	C	16	LOCATION 15, OUTSIDE HOME
90	TIME WHEN, 85, 86	C		
91	SAY SPEAKER 92	I	17	SAY SPEAKER 18
92	MEAN 86 ABLUTIONS	I	18	MEAN 14 ABLUTIONS
93	QUANTITY OF ABLUTIONS, FURTHER	I	19	QUANTITY OF ABLUTIONS,FURTHER
94	CONCESSION BUT, 86, 91	D		
95	(INF)CONSEQUENCE: BECAUSE 91, 95	D		
96	UNLEASH WILLY PROTESTATIONS			
97	QUANTITY OF PROTESTATIONS, STREAM	C C	20	PROTEST WILLY
98	TIME AFTER 96, 99	D		
99	CONFINE $ WILLY	I	21	CONFINE $ WILLY
100	LOCATION TO 99, 102	I	22	LOCATION TO 21,23
101	POSSESS WILLY ROOM	I	23	POSSESS WILLY ROOM
102	LOCATION IN 101 SUNROOM	D		
103	QUALITY OF SUNROOM, OLD	D		
104	ISA SUNROOM ADJUNCT	D		
105	QUALITY OF 104, DILAPIDATED	D		
106	REFERENCE DOMICILE, HOUSE	D		
107	POSSESS 106 EXTREMITY	D		
108	LOCATION AT 105, 107	D		
109	QUALITY OF 105, ISOLATED	D		
110	LOCATION FROM 109, LIVING ROOM	D		
111	POSSESS LIVING ROOM RENOVATIONS	D		
112	QUALITY OF RENOVATIONS CONTEMPORARY	D		
113	SETTLE DOWN 32	D		
114	TIME WHEN 113, SOON	D		

No.	Micropropositions	Macro-Operator	No.	Macropropositions
115	POSSESS MUM BOX	C		
116	GET MUM 115	C		
117	CONTAIN 115 BOOKS	C		
118	QUALITY OF BOOKS, ANTIQUATED	C		
119	POSSESS 118 PAPER	C		
120	QUALITY OF 119, FRAGMENTING	C	24	PREPARE MUM DINNER
121	QUALITY OF 119, DETERIORATING	C		
122	POSSESS 118 WRITING	C		
123	QUALITY OF 122, INDECIPHERABLE	C		
124	CONJUNCTION AND 119, 122	C		
125	DELINEATE 118 REPASTS	C		
126	QUALITY OF REPASTS, APPETIZING	C		
127	NUMBER OF 126, MANY	C		
128	MAKE MUM SOMETHING	C		
129	ENJOY 32, 128	I	25	EAT WE DINNER
130	GO I BED	I	26	GO I BED
131	TIME AFTER 129,130	D		
132	WAKE SPEAKER	I	27	WAKE SPEAKER
133	QUALIFY 132, SUDDENLY	D		
134	TIME WHEN, 131, LATE	D		
135	QUALIFY LATE, EXTRAORDINARILY	D		
136	TURN ON SPEAKER LIGHT	D		
137	QUALITY OF LIGHT, DESK	D		
138	POSSESS DESK, PERIPHERY	D		
139	STAND 137	D		
140	QUALIFY 139, PERILOUSLY	D		
141	LOCATION ON 140, 138	D		
142	APPREHEND SPEAKER SILHOUETTE	C		
143	QUALITY OF SILHOUETTE, GROTESQUE	C		
144	TIME AFTER 136, 142	C	28	FRIGHTEN SILHOUETTE SPEAKER
145	QUALITY OF SPEAKER, PETRIFIED	C		
146	TIME WHEN 145, AT FIRST	C		
147	TIME AFTER 146,148	D		

Micropropositions No.	Micropropositions	Macro-Operator	Macropropositions No.	Macropropositions
148	DEDUCE SPEAKER 152	I	29	DEDUCE SPEAKER 32
149	POSSESS WILLY REPLICAS	I	30	POSSESS WILLY REPLICAS
150	NUMBER OF 149, ONE	I	31	NUMBER OF 30, ONE
151	ISA 143, 150	I	32	ISA SILHOUETTE 31
152	QUALIFY 151, NECESSARY	D		
153	EXTINGUISH SPEAKER 137	D		
154	KEEP 137 POSITION	D		
155	QUALITY OF POSITION, STRATEGIC	D		
156	QUALIFY 155 PRECARIOUSLY	D		
157	QUALIFY 154, FORTUITOUSLY	D		
158	DISCERN SPEAKER PERAMBULATION	I	33	DISCERN SPEAKER PERAMBULATION
159	POSSESS SPEAKER ARM	I	34	POSSESS SPEAKER ARM
160	LOCATION OVER 158, 159	I	35	LOCATION OVER 33, 34
161	TIME WHEN 160, LATER	D		
162	MAKE SPEAKER WAIL	I	36	MAKE SPEAKER WAIL
163	NUMBER OF 162, ONE	D		
164	QUALITY OF 162, EXCRUCIATING	D		
165	CONJUNCTION AND, MUM, DAD	I	37	CONJUNCTION AND, MUM, DAD
166	BRING 164, 165	I	38	BRING 36, 37
167	QUALITY OF SPEAKER, HYSTERICAL	C		(Macroproposition 36)
168	EXIST INTRUDER	C		
169	QUALITY OF INTRUDER, SMALL	C		
170	QUALITY OF 169, ANIMATE	C	39	KILL SPEAKER ANIMAL
171	REFERENCE 170, 143	C		
172	CONJUNCTION AND, 170, 173	C		
173	DESPATCH SPEAKER, 170	C		
174	QUALIFY 173, INSTANTANEOUSLY	C		
175	HOLD MUM SPEAKER	C		
176	TIME, FOR 175, A WHILE	C	40	COMFORT MUM SPEAKER

No.	Micropropositions	Macro-Operator	No.	Macropropositions
177	KISS MUM SPEAKER	C		
178	TIME AFTER 175, 180	D		
179	GO MUM BED	D		
180	CONJUNCTION AND 177, 179	D		
181	QUALITY OF EVERYTHING, QUIET	D		
182	TIME WHEN 181, 183	D		
183	HEAR SPEAKER 185	I	41	HEAR SPEAKER 43
184	LAUGH WILLY	I	42	LAUGH WILLY
185	LOCATION TO 184, HIMSELF	I	43	LOCATION TO 42, HIMSELF

Macropropositional Analysis - "Friends"

No.	Micropropositions	Macro-Operator	No.	Macropropositions
1	CONJUNCTION AND TOM MARY	I	1	CONJUNCTION AND TOM, MARY
2	ATTEND 1 SCHOOL	I	2	ATTEND 1 SCHOOL
3	QUALIFY SCHOOL, SAME	I	3	QUALITY OF SCHOOL, SAME
4	LOCATION IN 3, SYDNEY	D		
5	POSSESS SYDNEY CONURBATION	D		
6	QUALITY OF 5, GROWING	D		
7	REFERENCE CONURBATION, PLACES	D		
8	POSSESS 7 PURPOSE	D		
9	QUALITY OF PURPOSE, DORMITORY	D		
10	QUALIFY 9, PRINCIPALLY	D		
11	ISA 1 ANTAGONISTS	I		
12	HAVE 1 ALTERCATIONS	C	4	ISA 1 ANTAGONISTS
13	QUANTITY OF ALTERCATIONS, LOTS	C		
14	LEAVE 1 SCHOOL	I	5	LEAVE 1 SCHOOL
15	EMIGRATE TOM	I	6	EMIGRATE TOM
16	TIME AFTER 14, 15	I	7	TIME AFTER 5, 6
17	INCLINE MARY 18	G		
18	SURRENDER MARY DOMICILE	G		
19	NEGATE 17	G		
20	PART OF DOMICILE, INSIDE	G		
21	POSSESS 20 APPOINTMENTS	G	8	POSSESS MARY 9
22	QUANTITY OF APPOINTMENTS, MANY	G	9	QUALITY OF BUNGALOW, MODERN
23	QUALITY OF APPOINTMENTS, CONTEMPORARY	G	10	SATISFY MARY 8
24	QUALITY OF APPOINTMENTS, VOGUISH	G		
25	POSSESS MARY BUNGALOW	I		
26	INCINERATE 25,$	I	11	INCINERATE $ 8
27	TIME WHEN 26, SUMMER	D		
28	QUALIFY 27, ONE	D		
29	FEEL MARY DISCONSOLATE	I	12	FEEL MARY DISCONSOLATE
30	(INF) CAUSE 28, 29	D		
31	RECUPERATE MARY	D		

No.	Micropropositions	Macro-Operator	No.	Macropropositions
32	ARRANGE MARY SOJOURN	C		
33	QUALITY OF SOJOURN, LONG	C	13	TAKE MARY HOLIDAY
34	LOCATION AT 30, RESORT	C		
35	QUALITY OF RESORT, NONDESCRIPT	C	14	LOCATION ON 13, ISLAND
36	LOCATION ON 35, ISLAND	C		
37	QUALITY OF ISLAND, INSIGNIFICANT	C		
38	PURPOSE TO 31,32	D		
39	POSSESS ISLAND INHABITANTS	D		
40	QUALITY OF 39, INSOLVENT	D		
41	QUALIFY 40, PRIMARILY	D		
42	PART OF INHABITANTS, MINORITY	D		
43	ISA 42 PEOPLE	D		
44	QUALITY OF 43, BUSINESS	D		
45	QUALITY OF 44, INFLUENTIAL	D		
46	ARRIVE MARY	D		
47	LOCATION AT 46, 36	D		
48	FEEL MARY INCENSED	I	15	FEEL MARY INCENSED
49	TIME WHEN 48, 47	D		
50	FIND MARY 51	I	16	FIND MARY 17
51	REFERENCE TOM PROPRIETER	I	17	REFERENCE TOM PROPRIETER
52	CAUSE 50, 48	I	18	CAUSE 16, 15
53	FEEL MARY APPREHENSIVE	I	19	FEEL MARY APPREHENSIVE
54	(INF) CAUSE 58, 53	I	20	(INF) CAUSE 2, 19
55	KNOW MARY 58	G		
56	MAINTAIN 1 RELATIONS	G		
57	QUALITY OF RELATIONS, HARMONIOUS	G		(Macroproposition 2)
58	NEGATE 56	G		
59	CONJUNCTION AND 55, 60	D		
60	MISS MARY CROSSING	C		
61	QUALITY OF CROSSING, RETURN	C	21 22	MISS MARY 22 RETURN CRAFT MAINLAND
62	LOCATION TO 61, MAINLAND	C		
63	MAKE CRAFT 62	C		

No.	Micropropositions	Macro-Operator	No.	Macropropositions
64	QUALITY OF CRAFT, COMMUTER	D		
65	QUALITY OF CRAFT, SOLITARY	D		
66	DISAPPEAR CRAFT	D		
67	LOCATION FROM 66, VIEW	D		
68	QUALIFY 67, INDEFATIGABLY	D		
69	LOOK CRAFT DECREPIT	D		
70	QUALITY OF CRAFT, RELIABLE	D		
71	QUALIFY 70, DUBIOUS	D		
72	DECIDE MARY 73	C		
73	ACKNOWLEDGE MARY 74	C		
74	POSSESS MARY CULPABILITY	C	23	OFFER MARY 24
75	CONJUNCTION AND 73,76	C	24	RECONCILE 1
76	ENTREAT MARY TOM 77	C		
77	CONSIDER TOM RECONCILIATION	C		
78	EMPHASIZE MARY TOM 79	G		
79	POSSESS MARY SINCERITY	G		
80	PURPOSE TO 78, 81	G	25	GIVE MARY TOM GIFT
81	PROCURE MARY TOKEN	G	26	PURPOSE 25,23
82	DEMONSTRATE MARY 83	G		
83	POSSESS MARY INTENTIONS	G		
84	QUALITY OF INTENTIONS, CONCILIATORY	G		
85	PURPOSE TO 82, 81	G		
86	ISA TOKEN SIGN	D		
87	QUALITY OF SIGN MESSAGE	D		
88	REFERENCE SIGN ARTEFACT	D		
89	QUALITY OF 88, DECORATIVE	D		
90	USE INDIGINES 89	D		
91	TIME AT 90 JUNCTURES	D		
92	LOCATION IN 91 CEREMONIES	D		
93	COMMEMORATE INDIGENES PEOPLE	D		
94	QUALITY OF PEOPLE, MUNIFICENT	D		
95	PURPOSE TO 90, 93	D		

Micropropositions No.		Macro-Operator	Macropropositions No.
96	QUALITY OF TOM, AMICABLE	C	
97	CONFRONT MARY TOM	C	
98	TIME WHEN 96,97	C	
99	MAKE MARY GESTURE	C	
100	APPRECIATE TOM 99	C	
101	SAY TOM 102	C	27 WANT TOM 24
102	FEEL TOM ELATED	C	
103	SEE TOM MARY	C	
104	QUALIFY 103, FORTUITOUSLY	C	
105	CAUSE 104, 102	C	
106	DISCUSS 1 RESORT	I	28 DISCUSS 1 RESORT
107	REFERENCE RESORT IDEA	G	
108	POSSESS DOCTOR IDEA	G	
109	DIE DOCTOR	G	
110	TIME WHEN 109, LAST CENTURY	G	
111	ENVISAGE DOCTOR RETREAT	G	
112	QUALITY OF RETREAT, SECLUDED	G	
113	KNOW DOCTOR DOCTORS	G	(Macroproposition 28)
114	QUALITY OF DOCTORS, EMINENT	G	
115	VISIT 114, 112	G	
116	CONTEMPLATE 114 PROBLEMS	G	
117	QUALITY OF PROBLEMS, INSOLUBLE	G	
118	PURPOSE TO 115,116	G	
119	QUALITY OF 112, PLANNED	G	
120	ABANDON $ 119	G	
121	ISA 1 ADVERSARIES	G	
122	NEGATE 121	G	29 ISA 1 FRIENDS
123	TIME WHEN 122, NOW	G	
124	POSSESS MARY COLLEAGUES	G	
125	WANT MARY 126	G	
126	INSTIGATE MARY 127	G	(Macroproposition 28)
127	MAKE 124 PEREGRINATIONS	G	
128	LOCATION TO 127, 36	G	

No.	Micropropositions	Macro-Operator	No.	Macropropositions
129	QUALITY OF ISLAND, INACCESSIBLE	D		
130	QUALIFY 129, EXTRAORDINARILY	D		
131	POSSESS 36 HOTEL	D		
132	QUANTITY OF 131, ONE	D		
133	POSSESS 132 CUISINE	D		
134	QUALITY OF 133 PRETENTIOUS	D		
135	NEGATE 134	D		
136	POSSESS 36 PEOPLE	D		
137	QUALITY OF 136, CONVIVIAL	D		
138	CONCESSION BUT 135, 137	D		
139	COMPENSATE 137 THINGS	D		
140	NUMBER OF THINGS, INNUMERABLE	D		
141	CONJUNCTION AND 138,139	D		
142	FEEL MARY REJUVENATED	I	30	FEEL MARY REJUVENATED
143	THINK MARY POSITIVELY	C		
144	POSSESS MARY EXPERIENCES	C		
145	QUALITY OF 144 INAUSPICIOUS	C		
146	TURN OUT 145	C		
147	CAUSE 146,143	C		

APPENDIX 4

Manual For Scoring Story Recalls

1. Introduction
2. Recall of Story Structure
    a. Guidelines for Initial Scoring of Pilot Data
    b. Obtaining a Story Structure Recall Score
3. Microrecall
    a. Propositional Analysis
    b. Obtaining a Microrecall Score
4. Macrorecall
    a. Guidelines for Initial Scoring of Adult Recall Data
    b. Obtaining a Macrorecall Score

Manual for Scoring Story Recalls

1. Introduction

This study requires three different assessments of pupil's story recall. The first is essentially an aural comprehension test. Pupils listen to a tape recording of a well organized story while following a printed copy of the text. Children are then asked to write down in their own words, or those of the text, all they can remember of the story. The task is designed to determine pupils' use of story structure in recalling a passage when the possibility of decoding errors is eliminated. This is the "Story Structure Recall " measure. The second type of assessment is a measure of the total amount of information a pupil is able to recall after reading a story aloud. It is a measure of "Microrecall". The third type of recall assessment is a measure of "Macrorecall". This refers to the reader's ability to recall the gist of the story.

In all three measures the scorer is supplied with a criterion list of "idea statements" from the text and is required to score the recall protocols for the presence of each of these. The idea statements are expressed differently for each measure. These different expressions are explained in the following sections of the manual with an example of a scored recall for each form of assessment.

In all three measures both reproductive and reconstructive recall is allowed. A reconstruction is defined as a normal condition, component or consequence of an idea statement. For example, if an idea was expressed in the text as, "They were no longer enemies.", credit would be given also for the reconstruction, "They were friends now.", since being friends now, is a normal consequence of not being enemies any longer.

2. Recall of Story Structure

a. Guidelines for Initial Scoring of Pilot Data

The test story, "The Secret Trip", is included in Appendix 1. The list of idea statements shown in Figure 17 has been derived from the macroproposition contained in the key episodic categories of the story.

Key Episodic Category	Idea Statement
Event:	Peter's parents were busy.
	Peter had nothing to do.
	Peter got out his toys.
	Peter asked Mary to play.
Internal Response	Mary wanted to say she would play.
	She knew tomorrow was Peter's birthday.
	And now was her only chance to buy a present for him.
Attempt	Mary told Peter she was sick and couldn't play.
Consequence	Mary and her mother went shopping.
	Mary searched for a present for Peter.
	She bought a skateboard.

Figure 17. Idea statements corresponding to macropropositions in key story categories.

The recall protocols are to be scored for the presence of each statement. An example of a recall is shown in Figure 18 and the way in which it is scored is shown in Figure 19.

Pupil: Nicola
Story Recall: The Secret Trip.

Peter was very good friends with Mary who loved across the road. They didn't got to the same school. One day Peter's dad was busy so was his mother. So Peter went to ask Mary to play but first he got all his toys. Then He went over to Mary who was in her garden he said to her "Will you come and play with please." Mary wanted very much but she knew that tomorrow Peter was turning nine so she said No. A few mintures later Mary went out with her mother to buy a persent for Peter. She got all her pocket money she brought him a skatebroad. and they could play with it.

Figure 18. Example of a pupil's aural story recall.

Key Episodic Category	Idea Statement	Recall
Event:	Peter's parents were busy.	Peter's dad was busy and so was his Mother.
	Peter had nothing to do.	
	Peter got out his toys.	..first he got out all his toys
	Peter asked Mary to play.	Peter went to ask Mary to play.
Internal Response	Mary wanted to say she would play.	Mary wanted very much
	She knew tomorrow was Peter's birthday.	but she knew that tomorrow Peter was turning nine.
	And now was her only chance to buy a present for him.	
Attempt	Mary told Peter she was sick and couldn't play.	
Consequence	Mary and her mother went shopping.	Mary went out with her mother to buy a persent for Peter.
	Mary searched for a present for Peter.	she looked and looked
	She bought a skateboard.	she brought him a skatebroad.

Figure 19. Pilot study example of an aural story recall protocol scored for story structure recall.

b. Obtaining a Story Structure Recall Score

From the initial analysis of the pilot data a criterion list of well recalled idea statements in key categories has been developed. These are shown in Figure 20 and will be used to obtain a Story Structure Recall Score for each pupil.

Key Episodic Category	Idea Statement
Event:	Peter asked Mary to play.
Internal Response	She knew tomorrow was Peter's birthday.
Attempt	Mary told Peter she was sick and couldn't play.
Consequence	Mary and her mother went shopping. Mary bought a skateboard.

Figure 20. Criterion list for determining story structure recall score.

The recalls must include at least one statement from the consequence category. If the recall does not include one of the two criterion statements from this category it is automatically given an overall score of zero. If either one or both of these statements are included a score of one point is awarded and then an additional point for the presence of each criterion statement from the other three categories. Thus a maximum of four points is possible.

The recall protocol previously scored in Figure 19 is shown again in Figure 21 rescored according to the revised criteria.

Key Episodic Category	Idea Statement	Recall	Score
Event	Peter asked Mary to play.	Peter went to ask Mary to play.	1
Internal Response	She knew tomorrow was Peter's birthday.	but she knew that tomorrow Peter was turning nine.	1
Attempt	Mary told Peter she was sick and couldn't play.		0
Consequence	Mary and her mother went shopping. She bought a skateboard.	Mary went out with her mother to buy a persent for Peter she brought him a skatebroad.	1

Story Structure Recall Score = 3.

Figure 21. Example of story structure recall scoring.

A second example of a pupil recall is shown in Figure 22 and scored for Story Structure Recall in Figure 23.

Pupil: Pauline
Story Recall: The Secret Trip.
Peter and Mary play together. Peter lives on one side of the street and Mary on the other. They go to different schools and after school in the afternoons or weekends they play togethe. Today Peter went out to play he asked Mary to Play and she said she can not play because she is sick.

Figure 22. Second example of a pupil's aural story recall protocol.

Key Episodic Category	Idea Statement	Recall	Score
Event:	Peter asked Mary to play.	...he asked Mary to play.	
Internal Response	She knew tomorrow was Peter's birthday.		
Attempt	Mary told Peter she was sick and couldn't play.	... she said she can not play because she is sick.	
Con-sequence	Mary and her mother went shopping.		0
	She bought a skateboard.		

Story Structure Recall Score = 0.

Figure 23. Second example of story structure recall scoring.

3. Microrecall

a. Propositional Analysis

Microrecall is a measure of the extent to which the reader recalls each detail of the text. The relationship among detailed ideas of the text is referred to as microstructure and is expressed in the form of micropropositions. These propositions are groups of word concepts, one serving as a relation and the others as arguments of the proposition. There are three classes of propositions corresponding to the types of relations they contain: predicate, modifier, or connective.

(i) Predicate propositions.

The relation of a predicate proposition is usually a verb and the propositions express actions or states eg.

Action: Anna created a disturbance.

(CREATE ANNA(agent)DISTURBANCE(goal))

State: Maria felt unhappy.

(FEEL MARIA(agent)UNHAPPY(experience))

The arguments are classified, using Fillmore's (1969) case grammar, according to the relationship they have to the relation of the proposition:

Agent - the initiator of the action or state
Experience - experience of a psychological event
Instrument - the inanimate stimulus of an experience, a force or object causally involved in the state or action signified by the verb.
Object - the object of an action which undergoes change.
Source - the source of the state or action identified by the verb.
Goal - the result or goal of the state or action identified by the verb.

This sub propositional analysis however, is not relevant to the purposes of the present study and the roles of separate arguments will not be labelled within the propositional notation.

Predicate propositions also include nominal propositions that express set membership. eg.

Heinrich is a student.
(ISA, HEINRICH, STUDENT)

and referential propositions which state that the referent of one argument is the same as that of a second argument. eg.

Clark Kent is Superman.
(REFERENCE, CLARK KENT, SUPERMAN)

(ii) Modifier propositions.

There are four kinds of modifier propositions:

Qualifier propositions express a quality of attribute of a proposition.

Landolfo bought a large ship.
1.(BUY LANDOLFO SHIP)
2. (QUALITY OF SHIP, LARGE)

Quantifier propositions express either the extent of an entity, or a definite or indefinite quantity. eg.

Ten boys went home.
1.(GO BOYS HOME)
2. (NUMBER OF BOYS, TEN)

Partitive propositions indicate part of a collective whole. eg.

A neuron is part of a cell.
1. (EXIST CELL)
2. (PART OF 1, NEURON)

Negative propositions modify other propositions by negating them. eg.

The teachers did not go to the College.
1.(GO TEACHERS COLLEGE)
2. (NEGATE 1)

(iii) Connective propositions.

Connective propositions relate propositions in the text to each other. There are eight types of connective propositions:

1. Conjunctive expressing and, also, along with, in addition to.
2. Disjunction expressing or, and/or, either/or.
3. Causality expressing because, by, therefore, thus.
4. Purpose expressing in order to, to, for.
5. Concession expressing but, although, however.
6. Contrast expressing greater than, different from, equal to or same as, close to or similar to.
7. Condition expressing if...then.
8. Circumstance expressing a. Time: a temporal reference point
   : another event
   b. Location
   c. Manner

The form in which these propositions are expressed can be seen in the representation of the following sentence illustrating the purpose relation.

Tom went to Bathurst to race a motorcycle.

1. (GO TOM BATHURST)
2. (RACE TOM MOTORCYCLE)
3. (PURPOSE 1,2)

b. Obtaining a Microrecall Score

The texts of the base versions of the experimental stories are included in Appendix 1. The corresponding microproposition lists are found in Appendix 2. Recall protocols are to be scored for the presence of each microproposition. An example of a pupil's recall is given in Figure 24 and a sample of it is scored for microrecall in Figure 25.

Pupil: Margaret
Story Recall: Friends

Tom and Mary were enemies and they went to the same school and Mary's house burnt down, no first of all Tom went to another country then one summer's day Mary's house burnt down and she decided to go to a resort on an island and she wanted to make friends with Tom she got her friends to help her get this thing over to the island from where they lived and they got it and gave it to Tom and Tom and Mary were friends again and they used it for doctors and that.

Figure 24. Example of a pupil's story recall protocol after oral reading.

No.	Micropropositions	Recall	Score
1	CONJUNCTION AND TOM, MARY	Tom and Mary	1
2	ATTEND 1 SCHOOL		1
3	QUALIFY SCHOOL, SAME	went to the same school	1
4	LOCATION IN 3, SYDNEY		
5	POSSESS SYDNEY CONURBATION		
6	QUALITY OF 5, GROWING		
7	REFERENCE CONURBATION, PLACES		
8	POSSESS 7 PURPOSE		
9	QUALITY OF PURPOSE, DORMITORY		
10	QUALIFY 9, PRINCIPALLY		
11	ISA 1 ANTAGONISTS	were enemies	1
12	HAVE 1 ALTERCATIONS		
13	QUANTITY OF ALTERCATIONS, LOTS		
14	LEAVE 1 SCHOOL		
15	EMIGRATE TOM	Tom went to another country	1
16	TIME AFTER 14, 15		
17	INCLINE MARY 18		
18	SURRENDER MARY DOMICILE		
19	NEGATE 17		
20	PART OF DOMICILE, INSIDE		
21	POSSESS 20 APPOINTMENTS		
22	QUANTITY OF APPOINTMENTS, MANY		
23	QUALITY OF APPOINTMENTS, CONTEMPORARY		
24	QUALITY OF APPOINTMENTS, VOGUISH		
25	POSSESS MARY BUNGALOW	Then one summer's day Mary's house burned down.	1
26	INCINERATE 25,$		1
27	TIME WHEN 26, SUMMER		1
28	QUALIFY 27, ONE		1

Figure 25. Example of microrecall scoring procedure.

4. Macrorecall

a. Guidelines for Initial Scoring of Adult Recall Data

Macrorecall is a measure of the reader's recall of the gist of the story. The idea statements corresponding to the gist of the experimental stories are expressed as macropropositions. Macroproposition lists for the base versions of the experimental stories are included in Appendix 3. Recall protocols are scored for the presence of each macroproposition. An example of one adult recall is shown in Figure 26 and is scored for macrorecall in Figure 27.

Subject: Enid
Story Recall: Friends

Tom and Mary lived in the same suburb and went to the same school. They were enemies - could not get along together and were always fighting.

One day Tom left the neighbourhood but Mary did not want to leave because she liked the house where she lived. It had many rooms.

One summer the house was burnt down and to get over this incident Mary went to an island which was a pleasure resort.

When she arrived on the island she discovered to her horror, that the island belonged to Tom. There was no way of leaving the island and sadly she watched the ferry, a very fragile conveyance, as it went further away from the island.

She decided to bury the hatchet and make friends with Tom. To effect this she bought him a gift which she purchased on the island and one which suggested she was sorry.

After she had given Tom the gift, they became friendly and he explained that the island had been bought by a group of doctors who never actually used the island.

It was now used to help people who were in need of a break from work. Mary wanted to tell all her friends about the island and get them to come there.

Figure 26. Example of an adult story recall.

No.	Macropropositions	Recall	Score
1	CONJUNCTION AND TOM, MARY	Tom and Mary	1
2	ATTEND 1 SCHOOL	went to the same school	1
3	QUALIFY SCHOOL, SAME		1
4	ISA 1 ANTAGONISTS	They were enemies	1
5	LEAVE 1 SCHOOL		
6	EMIGRATE TOM		
7	TIME AFTER 5,6		
8	POSSESS MARY 9	She liked the house where she lived	1
9	QUALITY OF BUNGALOW, MODERN		
10	SATISFY 8 MARY	(see number 8)	1
11	INCINERATE $ 8	the house was burnt down	1
12	FEEL MARY DISCONSOLATE		
13	TAKE MARY HOLIDAY	Mary went to an island	1
14	LOCATION ON 13, ISLAND	which was a pleasure resort	1
15	FEEL MARY INCENSED	to her horror	1
16	FIND MARY	she discovered	1
17	REFERENCE TOM PROPRIETER	that the island belonged to Tom	1
18	CAUSE 16,15		
19	FEEL MARY APPREHENSIVE		
20	(INF) CAUSE 2,19		
21	MISS MARY 22	There was no way of	1
22	RETURN CRAFT MAINLAND	leaving and ...she watched the ferry as it went further away	1
23	OFFER MARY 24	She decided to bury the	1
24	RECONCILE 1	hatchet and make friends	1
25	GIVE MARY TOM GIFT	She bought him a gift	1
26	PURPOSE 25,23	to effect this	1
27	WANT TOM 24		
28	DISCUSS 1 RESORT	He explained that the island.... Mary wanted to tell ... about the island	1
29	ISA 1 FRIENDS	they became friendly	1
30	FEEL MARY REJUVENATED		

Figure 27. Example of an adult story recall protocol scored for macrorecall.

b. Obtaining a Macrorecall Score

From the analysis of the adult recall data criterion lists of macropropositions with high recall frequency have been developed for the "Friends" and "Willy" stories. These are shown in Figures 28 and 29 respectively.

No.	Macropropositions
1	CONJUNCTION AND TOM, MARY
2	ATTEND 1 SCHOOL
3	QUALIFY SCHOOL, SAME
4	ISA 1 ANTAGONISTS
5	LEAVE 1 SCHOOL
6	EMIGRATE TOM
7	TIME AFTER 5,6
8	POSSESS MARY BUNGALOW
9	SATISFY 8 MARY
10	INCINERATE $ 8
11	TAKE MARY HOLIDAY
12	LOCATION ON 11, ISLAND
13	FIND MARY 14
14	REFERENCE TOM PROPRIETER
15	MISS MARY 16
16	RETURN CRAFT MAINLAND
17	RECONCILE 1
18	GIVE MARY TOM GIFT
19	PURPOSE 18,17
20	DISCUSS 1 RESORT
21	ISA 1 FRIENDS

Figure 28. Criterion list of macropropositions for recall of the "Friends" story.

No.	Macropropositions
1	POSSESS SPEAKER SIBLING
2	REFERENCE 1 WILLY
3	OBSESS 4 WILLY
4	EXCAVATE WILLY INVERTEBRATES
5	RETRIEVE I WILLY
6	PURPOSE 5,8
7	CLEAN UP SPEAKER WILLY
8	GO WE SHOPPING
9	GIVE MUM CHILDREN ALLOWANCE
10	INSPECT WILLY MODEL ANIMALS
11	WANT WILLY 12
12	SAUNTER WILLY
13	LOCATION 12, OUTSIDE HOME
14	SAY SPEAKER 15
15	MEAN 13 ABLUTIONS
16	QUANTITY OF ABLUTIONS, FURTHER
17	PREPARE MUM DINNER
18	GO I BED
19	FRIGHTEN SILHOUETTE SPEAKER
20	DISCERN SPEAKER PERAMBULATION
21	POSSESS SPEAKER ARM
22	LOCATION OVER 20,21
23	MAKE SPEAKER WAIL
24	CONJUNCTION AND MUM, DAD
25	BRING 23, 24
26	KILL SPEAKER ANIMAL
27	HEAR SPEAKER 28
28	LAUGH WILLY
29	LOCATION TO 28, HIMSELF

Figure 29. Criterion list of macropropositions for recall of "Willy" story.

Recall protocols are scored for the presence of each macroproposition in the criterion list. An example of one pupil's recall is shown in Figure 30 and scored for macrorecall in Figure 31.

Pupil: Margaret
Story Recall: Friends

Tom and Mary were enemies and they went to the same school and Mary's house burnt down, no first of all Tom went to another country then one summer's day Mary's house burnt down and she decided to go to a resort on an island and she wanted to make friends with Tom she got her friends to help her get this thing over to the island from where they lived and they got it and gave it to Tom and Tom and Mary were friends again and they used it for doctors and that.

Figure 30. Second example of a pupil's story recall protocol after oral reading.

No.	Macropropositions	Recall	Score
1	CONJUNCTION AND TOM, MARY	Tom and Mary	1
2	ATTEND 1 SCHOOL		1
3	QUALIFY SCHOOL, SAME	went to the same school	1
4	ISA 1 ANTAGONISTS	were enemies	1
5	LEAVE 1 SCHOOL		
6	EMIGRATE TOM	Tom went to another country	
7	TIME AFTER 5,6		
8	POSSESS MARY 9	Mary's house	1
9	SATISFY 8 MARY		
10	INCINERATE $ 8	burned down	1
11	TAKE MARY HOLIDAY	She decided to go to a resort	1
12	LOCATION ON 13, ISLAND	on an island	1
13	FIND MARY	she found out	1
14	REFERENCE TOM PROPRIETER	Tom was the owner	1
15	MISS MARY 16		
16	RETURN CRAFT MAINLAND		
17	RECONCILE 1	she wanted to make friends with Tom	1
18	GIVE MARY TOM GIFT		
19	PURPOSE 18,17		
20	DISCUSS 1 RESORT		
21	ISA 1 FRIENDS	Tom and Mary were friends again	1

Figure 31. Example of a recall scored for macrorecall.

APPENDIX 5

Multiple Choice Tests of the Meanings of Target Words

"Willy" - Salient
"Willy" - Peripheral
"Friends" - Salient
"Friends" - Peripheral

S

Willy

1. Your sibling is ------------
   (a) a sister or brother
   (b) a stranger
   (c) someone who looks like you

2. He was incorrigible because ------------
   (a) he could be easily stopped
   (b) he was very brave
   (c) it was impossible to stop him

3. A delinquent is a young person who ------------
   (a) gets hurt very easily
   (b) gets into serious trouble
   (c) always does the right thing

4. If you are obsessed with something then ------------
   (a) you can never think of it
   (b) you have owned it for a long time
   (c) you think about it all the time

5. If you were excavating something you would be ------------
   (a) burying it in the ground
   (b) working out its value
   (c) digging it up

6. Invertebrates are ------------
   (a) creatures like worms
   (b) animals like rats and mice
   (c) animals that are hard to find

7. To retrieve something is to ------------
   (a) find something again
   (b) throw something away
   (c) do something again

8. If you are characteristically busy, this means ------------
   (a) being busy is not normal for you
   (b) you are normally very busy
   (c) you are working for other people

9. The boy was dishevelled and looked ------------
   (a) very neat
   (b) very untidy
   (c) very unhappy

10. Willy procured something. This means ------------
    (a) he found something
    (b) he lost something
    (c) he fixed something

11. A repulsive thing is ------------
    (a) very attractive
    (b) not very nice
    (c) very strong

12. A specimen refers to ------------
    (a) the whole population of a species
    (b) one example of the species
    (c) a special kind of person

13. I confronted the animal means ------------
    (a) I looked straight at it
    (b) I kept away from it
    (c) I pushed it to the front

14. If I induced Willy to do something, this means ------------
    (a) I tried to stop him from doing it
    (b) I talked him into doing it
    (c) I wished Willy would do it

15. If you were given some respite then ------------
    (a) you would get punished straight away
    (b) you would try to pay the person back
    (c) you would get a second chance

16. To usher people around means ------------
    (a) to keep their movement very quiet
    (b) to let them find their own way around
    (c) to lead them where you want them to go

17. If your appearance had respectability then you would look ------------
    (a) clean and well dressed
    (b) different from other children
    (c) untidy and suspicious

18. If Willy inspected some of the things then he ------------
    (a) hadn't noticed they were there
    (b) looked at them very closely
    (c) already knew they would be there

19. The little imitation animals were ------------
    (a) real animals that had been caught
    (b) animals that didn't look very healthy
    (c) copies made to look like real animals

20. Willy liked to saunter around. This means he liked to ------------
    (a) sit around in his room
    (b) just walk around the place
    (c) clean up around the house

21. Willy's ablutions were ------------
    (a) attempts to wash him clean
    (b) often noticed by strangers
    (c) dirty stains all over him

22. Willy unleashed his feelings. This means ------------
    (a) he let everyone know how he felt
    (b) he kept his feelings to himself
    (c) he felt he had been set free

23. Your protestations would show you felt ------------
    (a) happy about something
    (b) annoyed about something
    (c) confused about something

24. If you were confined to a place, then you ------------
    (a) can come and go whenever you want
    (b) have never been there before
    (c) must stay in that place

25. If I apprehended that someone was in my room then ------------
    (a) I was not aware he was there
    (b) I had invited him into my room
    (c) I felt that he was in my room

26. A grotesque face would look -----------
    (a) very ugly
    (b) very pretty
    (c) very large

27. A person's silhouette is ------------
    (a) the shape of a person when looked at side on.
    (b) a full front picture of someone
    (c) a very small image of someone

28. You might feel petrified because ------------
    (a) you were very calm and relaxed
    (b) you were very frightened
    (c) you were mistaken about something

29. If you deduced what it was then ------------
    (a) you were puzzled by what it was
    (b) you figured out what it was
    (c) you didn't care what it was

30. A replica is ------------
    (a) a copy of something
    (b) the real thing
    (c) the best thing you can get

31. If you extinguish the light then you ------------
    (a) turn it on
    (b) turn it off
    (c) take it away

32. If I discerned something then ------------
    (a) I didn't notice it
    (b) it wasn't worth worrying about
    (c) I became aware of it

33. The animal's perambulation was the way it ------------
    (a) moved around from place to place
    (b) drew attention to itself
    (c) sat still to eat its food

34. If you were hysterical you would feel ------------
    (a) very sure and in control of yourself
    (b) so upset that you were almost crazy
    (c) that other people were just watching you

35. An excruciating feeling might occur when you are ------------
    (a) very happy
    (b) quite alone
    (c) very worried

36. A wail would sound ------------
    (a) very loud
    (b) very soft
    (c) very far away

37. The intruder was ------------
    (a) an invited visitor
    (b) an unwanted visitor
    (c) an important visitor

38. I despatched the creature. Then it ------------
    (a) felt much better
    (b) looked very peaceful
    (c) was dead

39. An animate visitor would be ------------
    (a) friendly
    (b) mechanical
    (c) alive

40. If things happen instantaneously ------------
    (a) you have to wait a long time
    (b) people become confused
    (c) they happen straight away

****

P

Willy

1. To be indulgent is to buy -----------
   (a) just what you need
   (b) without telling anyone
   (c) more than is needed

2. If something is extortionately priced -----------
   (a) it costs a lot of money
   (b) there is a mistake in the price
   (c) it doesn't cost very much

3. If you played with something addictively then -----------
   (a) you would not want to stop
   (b) you would not really be interested
   (c) you would not be very good at it

4. Unconventional toys are -----------
   (a) different from most other toys
   (b) not easy to play with
   (c) the normal kinds of toys

5. An exhaustive list -----------
   (a) only has a few items on it
   (b) has everything you can think of
   (c) is hard to read

6. If something was happening increasingly then -----------
   (a) it was not happening as often
   (b) it got much bigger
   (c) it happened more and more

7. If a few things dominate a list -----------
   (a) they are not very important
   (b) they are hard things to get
   (c) they take up most of the list

8. A nondescript shop -----------
   (a) stands out from the rest
   (b) is smaller than the others
   (c) looks very plain

9. A shop which primarily sells games would have ---------
   (a) only a few games
   (b) lots of games
   (c) games for little children

10. Inexpensive games -----------
    (a) are cheap
    (b) cost a lot
    (c) don't last long

11. A miscellany of toys is -----------
    - (a) a mixture of different toys
    - (b) a large collection of one type of toy
    - (c) toys that are not for sale

12. An allowance is ------------
    - (a) the money you owe your parents
    - (b) money that is paid to your bank
    - (c) money your parents give to you

13. If you get your money by installment -----------
    - (a) you get your money all at once
    - (b) you get payments at regular times
    - (c) you know how much you can spend

14. If a toy was prohibitively dear -----------
    - (a) it was slightly dearer than the other toys
    - (b) it wasn't worth the price
    - (c) it was so dear you could never buy it

15. The amount was so miniscule that -----------
    - (a) there was too much to put in your pocket
    - (b) there was hardly any at all
    - (c) you thought about giving it back

16. If you can finance something -----------
    - (a) you know how to get it free
    - (b) you can get the money to buy it
    - (c) you can save a lot of money on it

17. The purchase was exorbitant.
    - (a) It was unusually cheap.
    - (b) It was something you only bought once.
    - (c) It cost a great deal of money.

18. If a game is intriguingly presented most people would --------------
    - (a) not want to bother with it
    - (b) find it hard to open
    - (c) want to look at it

19. An innovative game is -----------
    - (a) copied from other games like it
    - (b) one you play on your T.V. set
    - (c) different from any other game

20. The miniature model was -----------
    - (a) the same size as the real thing
    - (b) much smaller than the real thing
    - (c) more interesting than the real thing

21. The dilapidated room ------------
    (a) looked very new and modern
    (b) was the smallest in the house
    (c) was almost falling down

22. An adjunct is ------------
    (a) the main part of the building
    (b) the back end of a building
    (c) something that has been built on

23. The extremity of the building is ------------
    (a) the central part of the building
    (b) the far end of the building
    (c) the newest part of the building

24. Our domicile is ------------
    (a) the place where we live
    (b) the place we often visit
    (c) the place where we meet our friends

25. Willy's room was isolated because ------------
    (a) it was very close to the other rooms
    (b) it was a very cold room
    (c) it was far away from the other rooms

26. Contemporary building is ------------
    (a) a style that is being built now
    (b) a style that is not meant to last
    (c) a style that was built a long time ago

27. The renovations were ------------
    (a) where the house was falling down
    (b) where the house had been fixed up
    (c) where part of the house had been moved

28. Mum's antiquated books were ------------
    (a) very old books
    (b) very thick books
    (c) brand new books

29. The fragmenting paper was ------------
    (a) crisp and new
    (b) old and torn
    (c) only half the normal size

30. Deteriorated paper ------------
    (a) is in very good condition
    (b) has highly decorated edges
    (c) is in very poor condition

31. Indecipherable writing is -----------
    (a) very neat and easy to read
    (b) not able to be read
    (c) not able to be rubbed out

32. If a book delineated something then -----------
    (a) it listed all the details about the thing
    (b) that thing was left out of the book
    (c) it showed a picture of the thing

33. The food was appetizing because ----------
    (a) we didn't want to eat much
    (b) we looked forward to eating it
    (c) it took a long time to cook

34. If we were having a good repast -----------
    (a) we would not get any food for a long time
    (b) everyone would find it easy to relax
    (c) there would be plenty of food

35. If you were awake extraordinarily late then this would be -----------
    (a) a very unusual time for you to be awake
    (b) the normal time for you to be awake
    (c) a good way to do extra things at night

36. If the light stood perilously on your desk then ----------
    (a) it was fixed to part of your desk
    (b) it was with many other things on your desk
    (c) it could easily fall off

37. The periphery of a table is ------------
    (a) the height
    (b) the width
    (c) the edge

38. If something happens fortuitously then -----------
    (a) it happens by chance
    (b) it is planned to happen
    (c) it will happen again in the future

39. If something was in a strategic position ------------
    (a) it would be hard to use
    (b) it would be hard to see
    (c) it would be very useful

40. A precarious position is ------------
    (a) very safe
    (b) important
    (c) dangerous

****

S

Friends

1. Antagonists are ----------
   (a) neighbours
   (b) enemies
   (c) friends

2. Altercations are ----------
   (a) arguments
   (b) agreements
   (c) changes

3. Tom emigrated ----------
   (a) because he wanted to live overseas
   (b) because he wanted to stay in his own country
   (c) because the school was very modern

4. Mary was disinclined to go and ----------
   (a) looked forward to leaving
   (b) liked her new school
   (c) wanted to stay where she was

5. Mary would surrender what she owned and ----------
   (a) make sure she kept everything
   (b) give it all away if necessary
   (c) it would look very attractive

6. Mary's domicile is ----------
   (a) the place she goes out to visit
   (b) something fitted inside her
   (c) the place where she lives

7. Mary's bungalow ----------
   (a) seemed to be a very modern home
   (b) was the only place she could afford to sleep
   (c) was a place she hardly ever visited

8. The place was incinerated ----------
   (a) and gave the new owners a nice place to live
   (b) and nothing was left but ashes
   (c) and looked lovely the next day

9. Mary was disconsolate because ----------
   (a) wonderful things were beginning to happen
   (b) everything made her unhappy
   (c) it was very popular

10. If Mary was to recuperate she would ----------
    (a) become very sick
    (b) know how much money she had
    (c) feel much better

11. Mary's long sojourn was ----------
    - (a) her normal routine at home
    - (b) something she didn't plan carefully
    - (c) the period of time she would spend away

12. Mary was incensed ----------
    - (a) and her anger showed in her face
    - (b) so she was very calm and pleased
    - (c) and would not feel any pain at all

13. The proprietor was ----------
    - (a) a rich resident of the resort
    - (b) the owner of the resort
    - (c) a doctor who wanted to buy the resort

14. Mary was apprehensive because ----------
    - (a) all of her fears were gone
    - (b) Tom had always said so
    - (c) she had fears about what might happen

15. The times they spent together were not harmonious because ---------
    - (a) they both liked the same things
    - (b) there was always some kind of problem
    - (c) they didn't harm anyone else

16. Your relationship with someone would show ----------
    - (a) how well you knew the person
    - (b) that the person was part of your family
    - (c) you hadn't met the person yet

17. If Mary acknowledged something to Tom, this means she ----------
    - (a) denied something
    - (b) admitted something
    - (c) lost something

18. Mary's culpability was ----------
    - (a) the reason she was more clever than Tom
    - (b) her part of the blame for what happened
    - (c) her blaming Tom for what happened

19. Mary entreated Tom because ----------
    - (a) she felt entitled to make demands
    - (b) he still didn't have any money
    - (c) she decided to plead with him

20. A reconciliation between Mary and Tom would mean ----------
    - (a) both would need a lot of money
    - (b) they could never be friends
    - (c) they would be nicer to each other

21. If Mary wanted to emphasize something to Tom, she would ---------
    (a) wrap it carefully
    (b) make it very clear to him
    (c) just leave the matter alone

22. Mary wanted Tom to see her sincerity. She wanted him to see ---------
    (a) that she was honest
    (b) that she had money
    (c) that she was not serious

23. Mary procured something. This means she ---------
    (a) lost something
    (b) found something
    (c) fixed something

24. Mary's token was ----------
    (a) an idea in her mind
    (b) something she wanted herself
    (c) a small present

25. To demonstrate her feelings Mary tried to ---------
    (a) hide the way she felt
    (b) wear warmer clothes
    (c) show the way she felt

26. Mary was conciliatory. She was ----------
    (a) looking for a way to help
    (b) trying to get over her illness
    (c) determined to get her own way

27. Mary's intentions were clear. They were ---------
    (a) what she had already done
    (b) signs she was given by the natives
    (c) what she was going to do

28. Tom was amicable because he ---------
    (a) needed money
    (b) acted friendly
    (c) seemed annoyed

29. Mary confronted Tom outside. She ----------
    (a) locked him outside
    (b) met him outside
    (c) avoided him outside

30. Tom was appreciative and showed ----------
    (a) his thanks
    (b) his anger
    (c) his age

31. Mary's gesture was -----------
    (a) a joke she made with Tom
    (b) a sign she gave to Tom
    (c) a complaint she made to Tom

32. Tom was elated because ----------
    (a) something had made him happy
    (b) life on the island was so slow
    (c) everything was going wrong

33. If something happens fortuitously then ------------
    (a) it happens by chance
    (b) it is planned to happen
    (c) it will happen again in the future

34. As children Tom and Mary had been adversaries because ----------
    (a) they got on so well together
    (b) they never had any money
    (c) they didn't like each other

35. Mary wanted to instigate a plan. She wanted to ----------
    (a) put the plan into operation
    (b) carry out an investigation
    (c) prevent the plan from proceeding

36. Island peregrinations are -----------
    (a) trips to the island
    (b) chances to eat island food
    (c) discussions about the island

37. Mary's colleagues were ----------
    (a) people she had just met on the island
    (b) things she brought from home
    (c) people she worked with at home

38. Mary was rejuvenated -----------
    (a) and felt very depressed
    (b) and felt very well
    (c) and lost her temper easily

39. An early inauspicious event in Mary's life ---------
    (a) suggested a very happy future
    (b) did not make the future look good
    (c) happened without Tom's knowing

40. Things turned out positively so ---------
    (a) it still looked bad for Mary
    (b) Tom couldn't go ahead with his plan
    (c) Mary felt good about the result

*****

P

Friends

1. Sydney's growing conurbation is ---------
    (a) new housing areas separated from the city
    (b) new schools being built in the city
    (c) new housing areas joined to the city

2. The area was principally known for some reason means that ---------
    (a) it was mainly known for some reason
    (b) it was hardly known for some reason
    (c) the principals knew it well for some reason

3. Places that have a dormitory purpose are made up of ---------
    (a) factories and offices
    (b) buildings that can't be locked
    (c) houses and blocks of flats

4. Voguish things ---------
    (a) are not very attractive
    (b) are very modern
    (c) are very old fashioned

5. A contemporary type of house is ---------
    (a) like the ones that are being built now
    (b) one that was built a long time ago
    (c) one that is not meant to last

6. Mary liked the appointments of her house. These were ---------
    (a) meetings with people
    (b) the things inside the house
    (c) the shape of the house

7. A nondescript place is ---------
    (a) not easily described
    (b) very important
    (c) very ordinary

8. An insignificant island is ---------
    (a) not very well known
    (b) important for tourists
    (c) well known in other countries

9. The island's inhabitants were ---------
    (a) visitors to the island
    (b) the people who lived there
    (c) the people who owned the resort

10. The people were primarily workers because ---------
    (a) hardly anyone worked
    (b) farm work was all they could do
    (c) nearly everybody worked

11. Insolvent people ----------
    - (a) do not have enough money
    - (b) cannot solve problems
    - (c) can pay for their needs

12. The business people were a minority because ----------
    - (a) there were a lot of them on the island
    - (b) they visited the mainland
    - (c) there were not many business people on the island

13. The business people were influential because ----------
    - (a) they thought they were right
    - (b) they had most of the power
    - (c) they didn't have any control

14. It was a solitary craft because ----------
    - (a) it was the only one
    - (b) it was one of many such craft
    - (c) it was very quiet

15. The commuter craft ----------
    - (a) visited the island daily
    - (b) had a very large memory
    - (c) was not often seen on the island

16. The craft was important to the islanders because ----------
    - (a) it could not go as far as the mainland
    - (b) they were always selling it to tourists
    - (c) it kept them in contact with the mainland

17. The boat moved indefatigably away ----------
    - (a) as if nobody was taking any notice
    - (b) as if nothing would stop it leaving
    - (c) as if it didn't want to leave

18. The boat looked decrepit because ----------
    - (a) it looked like it was falling apart
    - (b) it was very solid and well built
    - (c) this was its first trip

19. If the boat did not have reliability then ----------
    - (a) it could not be relied upon
    - (b) it was quite safe
    - (c) it did not have any beds

20. Mary was dubious about the boat because ----------
    (a) she was very worried about its performance
    (b) she thought it was very interesting
    (c) she was confident it would perform well

21. Mary thought the objects were decorative because ----------
    (a) there seemed to be so many of them
    (b) they looked so plain
    (c) they looked very beautiful

22. The artefacts were ----------
    (a) artificial factory made souvenirs
    (b) things made by the natives
    (c) true facts about the island

23. The indigenes were ----------
    (a) natives of the island
    (b) people who visited the island
    (c) special gifts for visitors

24. Ceremonies were ----------
    (a) the everyday routines of the people
    (b) times to get needles to stop sickness
    (c) times to dress up and celebrate

25. If something happens at a juncture in the ceremony then ----------
    (a) you wouldn't know when it started
    (b) it hurts more than usual
    (c) it would start at a certain time

26. The natives commemorate some visitors ----------
    (a) because they like to remember them
    (b) instead of burying them
    (c) to forget they ever came to the island

27. Munificent visitors ----------
    (a) look very rich
    (b) are generous to the natives
    (c) are selfish with their money

28. He envisaged his buildings on the island. ----------
    (a) He couldn't imagine what they might look like.
    (b) He thought he could use the money.
    (c) He dreamt about what they would look like.

29. The island was secluded because ----------
    (a) it was popular and had many tourists
    (b) few people ever came to it
    (c) it had lovely beaches

30. Eminent doctors ----------
    (a) were not very successful
    (b) were the top men at their job
    (c) were very religious

31. They contemplated the problem because ----------
    (a) it needed careful thought
    (b) nobody was interested in it
    (c) everyone would be able to see it

32. The insoluble problems ----------
    (a) were easy to answer
    (b) had double answers
    (c) couldn't be answered

33. They abandoned the idea ----------
    (a) and sold the music
    (b) and kept it going for a long time
    (c) and didn't think about it any more

34. The island was inaccessible and ----------
    (a) people could travel there easily
    (b) no one knew how much it was worth
    (c) the island was hard to get to

35. The resort was extraordinarily beautiful. This meant ----------
    (a) it was not at all beautiful
    (b) it was unusually beautiful
    (c) the beautiful parts cost extra

36. The resort's cuisine was ----------
    (a) simple food
    (b) an old boat
    (c) the doctor

37. What the resort offered was not pretentious. It was ----------
    (a) plain
    (b) special
    (c) healthy

38. The island people were convivial. ----------
    (a) They didn't care much for strangers.
    (b) They were easy to get along with.
    (c) They had been revived.

39. Some things compensated for the hard times and ----------
    (a) they made up for the bad things
    (b) they made the bad things worse
    (c) they caused the bad things

40. There were innumerable good things about the island. This means -----------
    (a) there were not many good things
    (b) the good things were very unusual
    (c) there were lots of good things

*****

APPENDIX 6

Pupils' Scores on all Experimental Measures

Pupil	Gap Reading Comprehension Test Score	Aural Story Recall Score
01	36	4
02	37	4
03	40	4
04	36	4
05	36	4
06	39	4
07	37	4
08	35	4
09	18	3
10	18	3
11	11	1
12	18	3
13	14	0
14	15	3
15	13	3
16	16	0
17	37	4
18	36	3
19	38	4
20	39	4
21	38	4
22	37	4
23	40	3
24	38	3
25	19	4
26	16	4
27	18	3
28	16	3
29	19	0
30	10	0
31	18	4
32	18	2
33	40	4
34	39	4
35	36	4
36	37	4
37	39	3
38	35	4
39	36	4
40	35	4
41	18	4
42	19	3
43	17	4
44	16	4
45	19	3
46	18	2
47	16	4
48	19	0
49	36	4
50	38	3

Pupil	Gap Reading Comprehension Test Score	Aural Story Recall Score
51	36	4
52	37	3
53	37	2
54	36	4
55	35	4
56	41	4
57	15	0
58	19	0
59	15	4
60	16	2
61	13	3
62	18	0
63	18	3
64	9	3

Pupil	Reading Ability	Willy Story					Friends Story				
		Redundant	Tests of Meanings of Target Words		Recall		Redundant	Tests of Meanings of Target Words		Recall	
			S	P	micro	macro		S	P	micro	macro
01	G	R	33		22.7	55.2	N	28		03.4	04.8
02	G	R	27		15.0	27.5	N	21		03.6	09.5
03	G	R	24		29.7	58.6	N		21	17.7	57.0
04	G	R	20		10.0	17.0	N		19	18.0	61.9
05	G	R	32		14.1	37.9	N	22		04.1	00.0
06	G	R	28		25.3	72.4	N		19	16.3	52.4
07	G	R	32		06.5	24.0	N		33	13.6	52.4
08	G	R	26		18.4	41.4	N	21		06.8	04.8
09	P	R	14		16.8	41.4	N		14	04.0	14.3
10	P	R	15		13.5	13.7	N		12	06.0	19.0
11	P	R	19		00.0	00.0	N		13	02.7	09.5
12	P	R	26		02.7	14.3	N	17		02.7	06.9
13	P	R	15		04.3	10.3	N		16	04.1	14.3
14	P	R	17		00.0	00.0	N	16		00.0	00.0
15	P	R	19		01.4	09.5	N	12		00.0	00.0
16	P	R	20		02.2	00.0	N	17		03.4	14.3
17	G	N	30		13.5	20.7	R	28		06.8	19.0
18	G	N	15		04.9	06.9	R		21	12.0	47.6
19	G	N	31		17.8	41.4	R	30		17.7	52.4
20	G	N	35		18.9	37.9	R	34		23.8	57.1
21	G	N	31		14.0	37.9	R		29	19.7	52.4
22	G	N	28		23.8	27.6	R		28	25.9	61.9
23	G	N	33		22.7	55.2	R	33		23.8	66.6
24	G	N	32		27.0	44.8	R		31	17.7	57.1
25	P	N	17		00.5	00.0	R	17		04.8	14.3
26	P	N	13		08.0	10.0	R		21	17.7	47.6
27	P	N	17		02.2	00.0	R	17		02.7	09.5
28	P	N	16		00.0	00.0	R		27	07.5	33.3
29	P	N	20		05.9	00.0	R		23	05.4	28.5
30	P	N	09		00.0	00.0	R	15		01.4	00.0
31	P	N	19		04.9	10.3	R		21	13.6	66.6
32	P	N	17		10.3	13.8	R	23		06.1	19.0

G - Good Reader R - Redundant P - Peripheral
P - Poor Reader N - Not Redundant S - Salient

Pupil	Reading Ability	Willy Story					Friends Story				
		Redundant	Tests of Meanings of Target Words		Recall		Redundant	Tests of Meanings of Target Words		Recall	
			S	P	micro	macro		S	P	micro	macro
33	G	R		28	18.9	37.9	N	25		09.5	19.0
34	G	R		28	19.5	48.3	N		28	14.3	42.9
35	G	R		22	09.2	20.7	N		22	21.0	52.0
36	G	R		25	24.0	62.0	N	21		08.0	14.0
37	G	R		26	22.0	37.9	N	23		15.6	23.8
38	G	R		32	23.8	62.1	N		21	12.9	52.4
39	G	R		28	07.0	10.3	N	23		13.6	19.0
40	G	R		28	14.6	17.2	N		22	19.0	61.9
41	P	R		14	07.6	34.5	N	13		02.7	04.7
42	P	R		16	02.0	00.0	N		12	08.8	33.3
43	P	R		15	08.6	17.0	N		11	04.0	23.8
44	P	R		18	08.6	10.0	N	09		00.0	00.0
45	P	R		15	11.9	20.7	N		16	06.8	23.8
46	P	R		14	00.0	00.0	N	14		00.0	00.0
47	P	R		29	17.3	58.6	N	15		06.8	09.5
48	P	R		14	03.2	13.8	R		10	01.4	09.5
49	G	N		16	28.6	89.7	R	28		15.0	42.9
50	G	N		26	33.5	65.5	R		35	25.9	61.9
51	G	N		27	33.0	72.4	R	31		15.0	38.0
52	G	N		22	11.0	48.0	R		34	18.4	47.6
53	G	N		25	27.5	58.6	R		31	11.6	28.6
54	G	N		22	08.6	27.6	R	26		15.6	42.9
55	G	N		28	17.3	48.3	R		29	13.6	47.6
56	G	N		27	20.5	55.2	R	31		24.5	61.9
57	P	N		16	13.0	37.9	R		12	04.0	19.0
58	P	N		17	01.1	00.0	R	23		04.1	19.0
59	P	N		19	06.5	24.0	R	18		06.0	14.3
60	P	N		14	04.9	20.7	R		12	04.8	14.3
61	P	N		13	04.3	10.3	R		18	05.4	38.0
62	P	N		09	02.2	03.4	R	11		02.7	04.8
63	P	N		12	09.0	24.0	R	13		11.6	38.0
64	P	N		23	03.2	10.0	R	17		00.7	00.0

G - Good Reader
P - Poor Reader

R - Redundant
N - Not Redundant

P - Peripheral
S - Salient

BIBLIOGRAPHY

Anderson, T.H. Study Skills and Learning Strategies (Technical Report No. 104) Urbana: University of Illinois, Centre for the Study of Reading, 1978.

Arrington, R.E. Interrelations in the Behaviour of Young Children (Child Development Monograph No.8). New York: Teachers' College, Columbia University, 1932.

Au, Hu-Pei K. Analysing oral reading errors to improve instruction. The Reading Teacher 1977, 31, 46-49.

Bartlett, B.J. Top level structure as an organizational strategy for recall of classroom text. Doctoral dissertation, Arizona State University, 1978.

Bartlett, B.J. So this is the main idea: where use of an author's top level structure helps a reader. Paper presented at the Eighth World Congress in Reading, Manilla, 1980.

Beck, I.L., Perfetti, C.A., and McKeown, M.G. The effects of long term vocabulary instruction on lexical access and reading comprehension. Journal of Educational Psychology 1982, 74, 506-521.

Becker, W.C. Teaching reading and language to the disadvantaged - what we have learned from the field research. Harvard Educational Review 1977, 47, 518-543.

Beebe, M. The effect of different types of substitution miscues on reading. Reading Research Quarterly 1980, 15, 324-336.

Cambourne, B.L. How important is theory to the reading teacher? Australian Journal of Reading 1979, 2, 78-90.

Cambourne, B.L. and Rousch, P.D. A Psycholinguistic Model of the Reading Process as it Relates to Proficient, Average and Low Ability Readers Wagga Wagga, N.S.W.: Riverina College of Advanced Education, 1979.

Cambourne, B. and Brennan, R. Coping with cloze: A study of how pupils of different levels of reading proficiency process incomplete texts. Paper presented to the First South Pacific Conference on Reading. Auckland, New Zealand, 1983.

Carnine, D., Kameenui, E.J. and Coyle, G. Utilization of contextual information in determining the meaning of unfamiliar words. Reading Research Quarterly 1984, 19, 188-204.

Clark, M.L. Hierarchical Structure of Comprehension Skills Hawthorn, Victoria, Australaian Council for Educational Research, 1972.

Clay, M.M. A syntactic analysis of reading errors. Journal of Verbal Learning and Verbal Behaviour 1968, 7, 434-438.

Clay, M.M. Reading errors and self correctional behaviour. British Journal of Educational Psychology 1969, 39, 455-460.

Clements, P. Effects of staging on recall of prose. Doctoral dissertation, Cornell University, 1976.

Davis, F.B. Fundamental factors of comprehension in reading. Psychometrika 1944, 9, 185-197.

Davis, F.B. Research in comprehension in reading. Reading Research Quarterly 1968, 3, 499-545.

Deakin University Open Campus Program. Reading, Skilled Reading Victoria, Deakin University, 1979.

Dreher, M.J. and Singer, H. Story grammar instruction unnecessary for intermediate grade students. The Reading Teacher 1980, 34, 261-268.

Eamon, D.B. Selection and recall of topical information in prose by better and poorer readers. Reading Research Quarterly 1978-79, 14, 244-258.

Englert, C. and Semmel, M. The relationship of oral reading substitution miscues to comprehension. The Reading Teacher 1981, 35, 273-279.

Frederiksen, C. Representing logical and semantic structure of knowledge acquired from discourse. Cognitive Psychology 1975, 7, 371-458.

Freebody, P. and Anderson R.C. Effects of differing proportions and locations of difficult vocabulary on text comprehension. Technical Report No. 202. Champaign: University of Illinois, Center for the Study of Reading, 1981.

Freebody, P. and Anderson, R.C. Effects of vocabulary difficulty, text cohesion and schema availability on reading comprehension. Reading Research Quarterly 1983, 18, 277-294.

Furniss, E.H. Schemas for reading and recall of story narrative and descriptive informational texts: a study of sixth grade proficient readers. Doctoral dissertation, University of Alberta, 1979.

Glenn, C. The role of episodic structure and of story length in children's recall of stories. Journal of Verbal Learning and Verbal Behaviour 1978, 17, 229-247.

Graybeal, C. Memory for stories in language impaired children. Doctoral dissertation, Boston University, 1981.

Gollinkoff, R.M. A comparison of reading comprehension processes in good and poor comprehenders. Reading Research Quarterly 1975-76, 11, 623-659.

Goodman, K.S. Reading: a psycholinguistic guessing game. Journal of the Reading Specialist 1967, 4, 126-135.

Goodman, K.S. Psycholinguistic universals in the reading process. In Smith, F. (ed.), Psycholinguistics and Reading New York: Holt, Rinehart and Winston, 1973.

Goodman, K.S. Behind the eye: what happens in reading? In Singer, H. and Ruddell, R. (eds), Theoretical Models and Processes of Reading Newark, Delaware: International Reading Association, 1976.

Goodman, K.S. and Burke, C. Theoretically based studies of patterns of miscues in oral reading performance Final Report. United States Office of Education, 1973.

Goodman, K.S. and Gollasch, F. Word Omissions: deliberate and non deliberate. Reading Research Quarterly 1980, 16, 6-31.

Gough, P.B. One second of reading. In Kavanaugh, J. and Mattingly, I. (eds), Language by Ear and by Eye: The Relationship Between Speech and Writing Cambridge, Mass.: M.I.T. Press, 1972.

Halliday, M.A.K. and Hasan, R. Cohesion in English London: Longman, 1976.

Harris, L.A. and Smith, C.B. Reading Instruction - Diagnostic Teaching in the Classroom (3rd ed.). New York: Holt, Rinehart and Winston, 1980.

Hittleman, D.R. Developmental Reading, K-8 - Teaching from a Psycholinguistic Perspective (2nd ed.). Boston: Houghton Mifflin, 1983.

Hood, J. The relationship of selected text variables to miscue scores of second graders. Journal of Reading Behaviour 1982, 14, 141-158.

Isakson, R.L. and Miller, J.W. Sensitivity to syntactic and semantic cues in good and poor comprehenders. Journal of Educational Psychology 1976, 68, 787-792.

Jenkins, J.R., Pany, O. and Schreck, J. Vocabulary and Reading Comprehension: Instructional Effects Technical Report No. 100. Urbana: University of Illinois, Centre for the Study of Reading, 1978.

Jenkins, J.R. and Dixon, R. Vocabulary learning. Contemporary Educational Psychology 1983, 8, 237-260.

Kahneman, D. Attention and Effort Englewood Cliffs, N.J.: Prentice Hall, 1973.

Kameenui, E.J., Carnine, D. and Freschi, R. Effects of text construction and instructional procedures for teaching word meanings on comprehension and recall. Reading Research Quarterly 1982, 17, 367-388.

Kemp, M. Making sense out of nonsense in the testing of reading. In Unsworth, L. (ed.), Tests, Assessment and Evaluation in Reading Proceedings of the Second Milperra C.A.E. Reading Centre Symposium, Sydney, 1981.

Kendall, J. and Hood, J. Investigating the relationship between comprehension and word recognition: oral reading analysis of children with comprehension or word recognition difficulties. Journal of Reading Behaviour 1979, 11, 41-48.

Kintsch, W. The Representation of Meaning in Memory Hillsdale, New Jersey.: Lawrence Erlbaum Associates, 1974.

Kintsch, W. and Keenan, J. Reading rate and retention as a function of the number of propositions in the base structure of sentences. Cognitive Psychology 1973, 5, 257-274.

Kintsch, W., Kozminsky, E., Streby, W., McKoon, G. and Keenan, J. Comprehension and recall of text as a function of content variables. Journal of Verbal Learning and Verbal Behaviour 1975, 14, 196-214.

Kintsch, W. and Miller, J. Readability and recall of short prose passages: a theoretical analysis. Journal of Experimental Psychology: Human Learning and Memory 1980, 6, 335-354.

Kintsch, W. and Van Dijk, T. Toward a model of text comprehension and production. Psychological Review 1978, 85, 363-393.

Kintsch, W. and Vipond, D. Reading comprehension and readability in educational practice and psychological theory. In Nilsson, L. (ed.) Perspectives on Memory Research New Jersey: Erlbaum, 1979.

LaBerge, D. and Samuels, S.J. Toward a theory of automatic information processing in reading. Cognitive Psychology 1974, 6, 293-323.

Lesgold, A.M. and Perfetti, C.M. Interactive processes in reading comprehension. Discourse Processes 1978, 1, 323-336.

Lesgold, A.M. and Perfetti, C.M. Interactive processes in reading: where do we stand? In Lesgold, A.M. and Perfetti, C.M. (eds.) Interactive Processes in Reading New Jersey: Erlbaum, 1981.

Leslie, L. The use of graphic and contextual information by average and below average readers. Journal of Reading Behaviour 1980, 12, 139-149.

Mandler, J.M. A code in the node: the use of a story schema in retrieval. Discourse Processes 1978, 1, 14-35.

Mandler, J.M. and Johnson, N.S. Remembrance of things parsed: story structure and recall. Cognitive Psychology 1977, 9, 111-151.

Mandler, J.M., Scribner, S., Cole, M. and DeForest, M. Cross cultural invariance in story recall. Child Development 1980, 51, 19-26.

Marks, C.B., Doctorow, M.J. and Wittrock, M.C. Word frequency and reading comprehension. Journal of Educational Research 1974, 67, 254-262.

Marshall, N. and Glock, M. Comprehension of connected discourse: a study into the relationships between the structure of text and information recalled. Reading Research Quarterly 1978-79, 14, 10-56.

McCullough, C. The recognition of context clues in reading. Elementary English Review 1945, 1, 1-5.

McGee, L. Awareness of text structure: effects on children's recall of expository text. Reading Research Quarterly 1982, 17, 581-590.

McKeown, M., Beck, I., Omanson, R.C. and Perfetti, C.A. The effects of long term vocabulary instruction on reading comprehension: a replication. Journal of Reading Behaviour 1983, 15, 3-18.

McLeod, J. Gap Reading Comprehension Test Richmond, Victoria: Heinemann Educational Australia, 1977.

Meyer, B.J.F. The Organization of Prose and Its Effect on Memory Amsterdam: North Holland, 1975.

Meyer, B.J.F. and McConkie, G.W. What is recalled after reading a passage? Journal of Educational Pschology 1973, 65, 109-117.

Meyer, B.J.F., Brandt, D.M. and Bluth, G.J. Use of top level structure in text: key for reading comprehension of ninth grade students. Reading Research Quarterly 1980, 16, 72-103.

Morris, A. and Stewart-Dore, N. Learning to Learn from Text - Effective Reading in the Content Areas Sydney: Addison-Wesley, 1984.

Nezworski, T., Stein, N.L. and Trabasso, T. Story Structure Versus Content Effects on Children's Recall and Evaluative Inferences Technical Report No.129. Urbana: University of Illinois, Center for the Study of Reading, 1979.

Nicholson, T., Pearson, P.D. and Dykstra, R. Effects of Embedded Anomalies and Oral Reading Errors on Children's Understanding of Stories Technical Report No. 118. Urbana: University of Illinois, Center for the Study of Reading, 1979.

Omanson, R.C. An analysis of narratives: identifying central, supportive and distracting content. Discourse Processes 1982, 5, 195-224.

Paris, S.G. and Meyers, M. Comprehension monitoring, memory and study strategies of good and poor readers. Journal of Reading Behaviour 1981, 13, 5-22.

Pearson, P.D. and Studt, A. Effects of word frequency and contextual richness on children's word identification abilities. Journal of Educational Psychology 1975, 67, 89-95.

Perfetti, C.A., Goldman, S.R. and Hogaboam, T.W. Reading skill and the identification of words in discourse context. Memory and Cognition 1979, 7, 273-282.

Perfetti, C.A. and Lesgold, A.M. Coding and comprehension in skilled reading and its implications for reading instruction. In Resnick, L.B. and Weaver, P.A. (eds.) Theory and Practice of Early Reading Vol.1. Hillsdale, New Jersey.: Erlbaum, 1979.

Perfetti, C.A. and Roth, S. Some of the Interactive Processes in Reading and Their Role in Reading Skill Pittsburg University Learning Research and Development Center, 1980.

Pflaum, S.W. The predictability of oral reading behaviours on comprehension in learning disabled and normal readers. Journal of Reading Behaviour 1980, 12, 231-236.

Posner, M.I. and Snyder, C.R.R. Facilitation and inhibition in the processing of signals. In Rabbitt, P.M.A. and Dornic, S. (eds.) Attention and Performance New York: Academic Press, 1975(a).

Posner, M.I. and Snyder, C.R.R. Attention and cognition control. In Solso, R. (ed.) Information Processing and Cognition: The Loyola Symposium Hillsdale, New Jersey: Erlbaum, 1975(b).

Powell, J.S. and Sternberg, R.J. Acquisition of vocabulary from context Manuscript in preparation, 1983.

Ratcliffe, R. and McKoon, G. Priming in item recognition: evidence for the propositional structure of sentences. Journal of Verbal Learning and Verbal Behaviour 1978, 17, 403-417.

Ratcliffe, R. and McKoon, G. Priming in item recognition: the organization of propositions in memory for text. Journal of Verbal Learning and Verbal Behaviour 1980, 19, 369-386.

Reder, L. The role of elaboration in the comprehension and retention of prose. Review of Educational Research 1980, 50, 5-53.

Rumelhart, D.E. Notes on a schema for stories. In Bobrow, D.G. and Collins, A. (eds.) Representation and Understanding: Studies in Cognitive Science New York: Academic Press, 1975.

Rumelhart, D.E. Toward an interactive model of reading. In Dornic, S. (ed.) Attention and Performance Hillsdale, New Jersey: Erlbaum, 1977.

Schlesinger, I.M. and Weiser, Z. A facet design for tests of reading comprehension. Reading Research Quarterly 1970, 5, 566-580.

Schwartz, R.M. Levels of processing: the strategic demands of reading comprehension. Reading Research Quarterly 1980, 15, 433-450.

Schwartz, R.M. Resource allocation and context utilization in the reading process. Journal of Educational Psychology 1980a, 72, 841-849.

Schwartz, R.M. and Stanovich, K. Strategy availability and use by good and poor readers. Paper presented at the Annual Meeting of the American Educational Research Association. Boston, Mass., 1980.

Sloan, P. and Latham, R. Teaching Reading Is ... Nelson: Melbourne, 1981.

Smiley, S., Oakley, D., Worthen, D., Campione, J. and Brown, A. Recall of Thematically Relevant Materials by Adolescent Good and Poor Readers as a Function of Written Versus Oral Presentation. Technical Report No. 23. Urbana: University of Illinois, Center for the Study of Reading, 1977.

Smith, F. Understanding Reading: A Psycholinguistic Analysis of Reading and Learning to Read New York: Holt, Rinehart and Winston, 1971.

Smith, F. Decoding: the great fallacy. In Smith, F. (ed.) Psycholinguistics and Reading New York: Holt, Rinehart and Winston, 1973.

Smith, F. Comprehension and Learning: A Conceptual Framework for Teachers New York: Holt, Rinehart and Winston, 1975.

Smith, N.B. and Robinson, H.A. Reading Instruction for Today's Children (2nd ed.). New Jersey: Prentice Hall, 1980.

Spearritt, D. Measuring Reading Comprehension in the Upper Primary School E.R.D.C. Report No.11. Canberra: Australian Government Publishing Service, 1977.

Stanovich, K. Toward an interactive - compensatory model of individual differences in the development of reading fluency. Reading Research Quarterly 1980, 16, 32-71.

Stanovich, K. Attentional and automatic context effects in reading. In Lesgold, A. and Perfetti, C. (eds.) Interactive Processes in Reading Hillsdale, New Jersey, Erlbaum, 1981.

Stanovich, K. and West, R. Mechanisms of sentence context effects in reading: automatic activation and conscious attention. Memory and Cognition 1979, 7, 77-85.

Stein, N.L. How children understand stories: a developmental analysis. In Katz, L.G. (ed.) Current Topics in Early Childhood Education Vol.2 Norwood, New Jersey: Ablex, 1979.

Stein, N.L. and Glenn, C.G. An analysis of story comprehension in elementary school children. In Freedle, R.O. (ed.) Discourse Processing: Multidisciplinary Perspectives Hillsdale, New Jersey: Ablex, 1979.

Sternberg, R. and Powell, W. Comprehending verbal comprehension. American Psychologist 1983, 38, 878-893.

Summerfield, G. Tales Two London: Ward Lock Educational, 1978.

Summers, P.F. The relationship between demonstrated story grammar usage by third graders and their scores on selected reading comprehension tests. Doctoral dissertation, Boston University, 1980.

Taylor, B.M. Children's memory for expository text after reading. Reading Research Quarterly 1980, 15, 399-411.

Thorndike, R.L. Reading Comprehension in Fifteen Countries New York: Wiley, 1973.

Thorndike, E.L. A Teachers' Word Book of the 20,000 Words Found Most Frequently and Widely in General Reading for Children and Young People Detroit: Gale Research Company, 1975.

Thorndyke, P.W. Cognitive structures in comprehension and memory of narrative discourse. Cognitive Psychology 1977, 9, 77-110.

Thurstone, L.L. A note on reanalysis of Davis' reading tests. Psychometrika 1946, 11, 185-88.

Tierney, R., Bridge, C. and Cera, M. The discourse processing operations of children. Reading Research Quarterly 1978-79, 14, 539-574.

Tierney, R. and Mosenthal, J. Discourse Comprehension and Production: Analysing Text Structure and Cohesion Technical Report No. 152. Urbana: University of Illinois, Center for the Study of Reading, 1980.

Tuinman, J. Jaap. Determining the passage dependency of comprehension questions in five major tests. Reading Research Quarterly 1973-74, 9, 206-223.

Tuinman, J. Jaap and Brady, M.E. How does vocabulary account for variance on reading comprehension tests? In Nacke, P. (ed.) Interaction: Research and Practice for College- Adult Reading 23rd Yearbook of the National Reading Conference. Clemson, U.S.A., 1974.

Turner, A. and Greene, E. The Construction and Use of a Propositional Text Base Technical Report No.63. Boulder: University of Colorado, Institute for the Study of Intellectual Behaviour, 1977.

Van Dijk, T. Macrostructures, knowledge frames and discourse comprehension. In Just, M.A. and Carpenter, P. (eds.) Cognitive Processes in Comprehension Hillsdale, New Jersey: Erlbaum, 1977.

Van Dijk, T. Macrostructures - An Interdisciplinary Study of Global Structures in Discourse, Interaction and Cognition Hillsdale, New Jersey: Erlbaum, 1980.

Vipond, D. Micro and macroprocesses in text comprehension. Journal of Verbal Learning and Verbal Behaviour 1980, 19, 276-296.

Waters, H.S. Superordinate - subordinate structure in semantic memory: the roles of comprehension and retrieval processes. Journal of Verbal Learning and Verbal Behaviour 1978, 17, 587-597.

Weaver, P.A. and Dickinson, D.K. Story comprehension and recall in dyslexic students. Bulletin of the Orton Society 1979, 29, 157-171.

Weber, R. The study of oral reading errors: a review of the literature. Reading Research Quarterly 1968, 4, 96-119.

West, R.F. and Stanovich, K.E. Automatic contextual facilitation in readers of three ages. Child Development 1978, 49, 717-727.

Whaley, J.F. Readers' expectations for story structures. Reading Research Quarterly 1981, 17, 90-114.

Wilkinson, A.C., Guminski, M., Stanovich, K. and West, .F. Variable interaction between visual recognition and memory in oral reading. Journal of Experimental Psychology: Human Learning and Memory 1981, 7, 111-119.

Wilkinson, I.A.G. Story comprehension and recall in poor readers: everyone a schemer? Paper presented at the 8th Australian Reading Conference, Adelaide, 1982.

Willows, D.M. and Ryan, E.B. Differential utilization of syntactic and semantic information by skilled and less skilled readers in the intermediate grades. Journal of Educational Psychology 1981, 73, 607-615.

Wittrock, M.C., Marks, C.B. and Doctorow, M.J. Reading as a generative process. Journal of Educational Psychology 1975, 67, 484-489.

Wixson, K.L. Miscue analysis: a critical review. Journal of Reading Behaviour 1979, 11, 163-175.