AN INVESTIGATION OF THE RELATIONSHIP BETWEEN SYNTACTIC COMPETENCE AND READING COMPREHENSION

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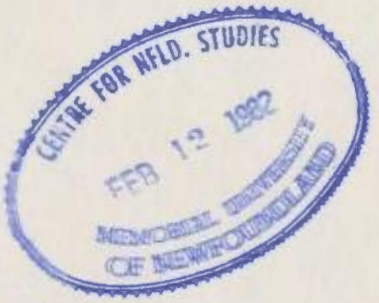
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AN INVESTIGATION OF THE RELATIONSHIP BETWEEN SYNTACTIC COMPETENCE AND READING COMPREHENSION

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Submitted to

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ABSTRACT

The purpose of this study was to examine the relationship between syntactic competence and reading comprehension in Grade Two children. The strictly linguistic definition of syntactic competence, which is represented in this study by oral syntactic maturity, has been broadened to encompass the psycholinguistic notion of syntactic competence which refers to the reader's ability to uncover the meaning of print through strategic attention to the cue systems of language. In particular, this study investigated overattention to grapho-phonic and orthographic cues, which was referred to as the utilization of an "identification strategy" and the flexible use of all cue systems to derive and monitor meaning, which was referred to as the use of a "comprehension strategy."

The Comprehension subtest of the Gates-MacGinitie Reading Test (Canadian edition) Level B, Form 1 was administered to 109 students of four Grade Two classrooms from two schools, one from the Avalon Consolidated School Board and the other from the Roman Catholic School Board for St. John's. Using the median score to divide the group into High and Low achievement groups, students were

randomly selected from both sides of the median to insure equal representation from both schools of all ability groups by matching the number of the smallest achievement group which was 16. In this manner, 64 students were selected for further study. Two students were dropped from the study due to illness on the part of one and excessive anxiety on the other.

The 62 students who completed the study were tested individually and their responses tape-recorded for later in-depth analysis. Individual testing occurred during the three-week period following group testing. Each student was administered the Sentence Imitation subtest of the Test of Language Development to obtain a measure of oral syntactic maturity. The student was then asked to read aloud from a story selected from the Reading Miscue Inventory. The substitution errors made on this instrument were later coded and evaluated to determine whether the use of an "identification strategy," as evidenced by high proportions of syntactically-semantically unacceptable substitutions which were not subsequently corrected, or the use of a "comprehension strategy," as evidenced by combined high proportions of corrections and syntactically-semantically acceptable substitutions which were not subsequently corrected, had a significant effect on reading comprehension.

The results obtained were submitted to stepwise multiple regression, cross-break and correlational analysis to determine the effect of the variables selected for investigation on reading comprehension and the relationships between these variables. The presence of two oral reading strategies inferred from qualitative evaluation of substitution miscues was validated and their effect on reading comprehension determined using stepwise multiple regression analysis supported by correlational techniques. Cross-break analysis was used to specify the relationship between oral syntactic maturity and reading comprehension and to eliminate the place of school attendance as an important variable for any of the results obtained.

At the .01 level of confidence, statistical analysis revealed that the use of an "identification strategy" adversely affected reading comprehension, whereas the use of a "comprehension strategy" enhanced reading comprehension. Oral syntactic maturity was found to relate significantly to reading comprehension and was significant as an independent simultaneous predictor along with either the "identification strategy" or the "comprehension strategy." Place of school attendance was not found to be significant in explaining the variance in any of the results obtained.

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CHAPTER I

THE PROBLEM

Background of the Study

The development of transformational-generative linguistic theory by Chomsky (1957, 1965) had led to dramatic shifts of emphasis in both educational psychology and linguistics. Psycholinguistics, which has evolved from an intersection of interests in both these fields, has profoundly affected recent research and practices in reading. By utilizing advances made in cognitive psychology and linguistics, psycholinguistics has made important contributions to educators' views of both the reader and the reading process.

In the past, the reading process has been identified with single component basic skills, such as word recognition, phonics or visual perception. Such a unidimensional orientation has been largely discredited by psycholinguistic research which suggests a broader multidimensional perspective in which basic skills play a subsidiary role to comprehension (Smith, 1978). The emphasis on meaning in psycholinguistic models shows a recognition of the deep interrelationships between language and thought. Developmentally there may be some debate as to which comes first, but there is little

dispute about their mutual interdependence once language is acquired (Piaget, 1959; Vygotsky, 1962).

One important intersection of language and thought is reading comprehension. Some researchers have gone so far as to suggest that reading is comprehension in order to emphasize the inadequacy of basic skill models (Thorndike, 1974; Perfetti, 1976). Furth (1978) suggests that, "decoding by itself is a thinking activity even though it may not be reading." By viewing reading in the wider context of language and thought rather than as a succession of accurate perceptions or word identifications, concepts such as reading comprehension and listening comprehension may be more properly considered to be "subclasses of a larger class of human behaviour-language processing" (Walker, 1976). Indeed, Athey (1971) suggests that, "reading cannot be viewed apart from total language development." Though the precise nature of the relationship between language competence and reading success is not well known (Wingfield, 1979), research suggests that a significant relationship exists (Strickland, 1962; Loban, 1963; Ruddell, 1965; O'Donnell, Griffin & Norris, 1967).

Though written and spoken language share many important features, they are not typically the same (Smith, 1978). Written language has more formal constraints, grammatically and semantically, and is dependent upon visual perception. Spontaneous speech, on the other hand, relies

upon many extralinguistic cues and shared context references as well as auditory perception in order for comprehension to occur. Such differences imply that children need to become familiar with the special conventions of written language through hearing it read aloud before being faced with the task of reading. Wilkinson (1969) feels that such preparation allows the child to use the prediction and recognition strategies already well developed in his oral language competence. In addition, control of reading materials to compensate for immaturity in language processing is implied in the recognition of the differences between oral and written representations of meaning.

The attention focused on language skills developed prior to reading acquisition in the psycholinguistic approach has renewed interest in the process of language acquisition and its relationship to reading. Language development is characterized as a lifelong, continuous process, which is, however, most rapid in the preschool years. Recent research (Chomsky, 1969) suggests that although the most basic syntactic structures may have been acquired by the time a child reaches school age, the frequency of usage, degree of mastery and comprehension of the more complex structures are by no means secure until much later, perhaps, as Carroll (1977) argues, not even by the end of high school.

Although psycholinguistic models of the reading process vary in the amount of emphasis placed on the linguistic and cognitive foundations of their models, there are substantial areas of agreement among them, such as the recognition that reading is a language process, the importance accorded to the child's developmental status, and the use of a cognitive framework (Williams, 1971). Williams (1971) has identified three important contributions to the theory and practice of reading instruction from linguistics. She cites the notion that language is composed of two layers; a deep structure, specified by a syntactic component and a surface structure, which determines its phonological interpretation, and the notion that language competence underlies, but may differ from, language performance. Thirdly, she suggests that the concept of language universals which are represented by at least some of the categories postulated by transformational grammar and are the basis of language development has been a significant contribution to reading theory.

As Smith (1973) pointed out, the crucial implication of the notion that language consists of two layers is that children do not learn language through imitation, since the surface structure is devoid of meaning. Rather, children understand language through the application of syntactic rules which they have never been formally or systematically taught. The ability of children to deduce

rules from the vast resevoir of language around them is one of the primary tasks of the pre-school years as they become increasingly sophisticated in approximating adult language through continual testing and application of these rules. The implications for the investigation of children's language is that researchers must uncover the child's rule generating strategies to determine the level of linguistic development rather than obtaining simple measures of the surface structures of their speech. Athey (1971) noted that in recent studies of reading, "the concept of deep structure has given rise to an increased and welcome emphasis on the process of reading for meaning." Smith (1971) suggests that reading for meaning entails utilization of information simultaneously from both the surface and deep structure levels and that proficient readers transform surface structure representations into their own deep structure, retaining the meaning and not the actual words and forms in long-term memory.

Chomsky (1965) stresses that there is a fundamental distinction between "competence," the speaker/hearer's knowledge of his language and "performance," the actual use of language in concrete situations. Linguistic competence is extremely difficult to measure directly since it is, as Carroll (1971) explains, "the inferred capacity of language users, developed in language acquisition, to generate and understand novel but grammatical sentences."

Competence, however, is the proper focus for investigation, as performance is affected by nonlinguistic variables such as "fatigue (sometimes leading to the production of ungrammatical sentences) or mental indecision (sometimes leading to hesitation, rephrasing and other phenomena)" (Carroll, 1971). Griffin (1968) includes in the list of limitations of performance measures "memory span, distractions, notions of what is expected. judgement of what is acceptable, and the individual's physical and emotional state."

One diagnostic instrument which attempts to assess linguistic competence through carefully designed measures of performance is the Test of Language Development (TOLD) (Newcomer & Hamill, 1977). What the child produces is not necessarily what he can produce and since not all structures may appear in spontaneous language samples (although some may appear which are only at the edge of competence) it is necessary to find methods of probing beyond surface structure appearances (Bloom, 1974: Bohannon, 1975). Similarly, in reading diagnosis, the need to examine the processes or strategies behind reading rather than its products has prompted the design of instruments such as the Reading Miscue Inventory (RMI) (Goodman & Burke, 1972) which focus on the effect of various types of errors on comprehension.

That all the languages of the world share common features called linguistic universals is a theoretical position taken by transformational-generative linguists which has been incorporated into psycholinguistic models. Its significance is two-fold: firstly, the emphasis is shifted from product to process, and secondly, a developmental linguistic basis for instruction is provided. Smith (1973) contends that:

> There is more than theoretical interest attached to the matter of universals because it would seem a reasonable assumption that any universal in human behaviour must reflect something fundamental about the way in which the human organism, and particularly the brain is constructed (p. 21).

Support for the notion of a biological basis for language learning and development comes from the work of Lenneburg (1967), whose investigations of brain morphology and language development found a close and invariable relationship between the sequencing of both.

Knowledge that there are specific developmental sequences in language acquisition places a different perspective on the utterances of children than the formerly held belief that children were simply inferior miniature adults. Since the language of reading materials is within the power of instructors to manipulate, particularly if they are using the language experience approach, knowledge of such sequences is essential. The study of children's language is the study of the formal and substantive universals of language, since, as Chomsky (1965) states,

"it attributes tacit knowledge of these universals to the child." Furthermore, he suggests that language learning would be an insurmountable task for a child if there were not innate schema or a ready-made internal grammar with which to approach the language of his community.

Although it may be argued that linguistic theory is essential for describing what is being learned in language acquisition and reading, it is evident that cognitive theory is necessary to describe how it is being learned (Sachs, 1971; Wardaugh, 1971). In particular, cognitive theory has introduced into reading models important emphases on the role of memory, perception, organizational processes and an overarching attention to meaning.

Psycholinguistic models have been succinctly described, using computer terminology in recent theoretical articles as being top-down, bottom-up, or interactive, which combine aspects of the other two (Danks, 1978; Stanovich, 1980). These capsule descriptions refer to the direction in which information is hypothetically being processed.

As the term implies, top-down processing assumes that information flows from and through higher level processes and interacts with lower level processes. An example of this type of model is Goodman's (1967) analysis by synthesis model, in which the reader is said to generate

predictions about the text from his expectations and his knowledge of language and the world. These hypotheses or "psycholinguistic guesses" are tested against the reader's developing meaning for confirmation or disconfirmation. Disconfirmation activates the necessity to regress and form new hypotheses.

Support for the notion of top-down effects and the interaction of components of the comprehension process can be found in Pillsbury's (1897) work of nearly a century ago. His experiments demonstrated that proficient readers miss errors of substitution, transposition, omission, and addition as well as the repetition or omission of function words in reading long discourses. More recently, Kolers (1970) has shown that reading is slowed down to one-tenth the normal rate if a reader is forced to adopt a letter by letter strategy. Context, therefore, assists the reader to guess a sentence's meaning and allows him, at times, to by-pass individual word identification from its distinctive features completely (Luria, 1970). Top-down models are, however, unable to deal adequately with the beginning of discourses, or unfamiliar material (Lesgold & Perfetti, 1978) or individual differences (Stanovich, 1980).

Bottom-up reading models are serially ordered, beginning with decoding of print into the auditory code, followed by lexical identification, then semantic and syntactic interpretation and integration, followed by

integration of the sentence with prior text and the reader's knowledge of the world. Examples of bottom-up models include most information-processing models (Geyer, 1970; Gough, 1972; LaBerge & Samuels, 1974). Danks (1978) suggests that bottom-up models seem natural since they correspond to "the peripheral to central direction of neural processing." However, such models are seriously deficient in failing to provide some mechanism which would allow higher processes to affect lower processes (Stanovich, 1980). Marsh (1978) criticizes the information-processing models as appearing "to be a restricted formalism which, although heuristic in producing a narrow research literature, is in no immediate danger of accounting for normal reading even in proficient readers."

Stevens and Rumelhart (1975) argue persuasively that a model which accounts for the reading process must contain a dynamic component which reflects the fact that reading context is continually changing. They suggest that the interactive model is just such a model, which they summarize as follows:

> Information flow goes in all directions. While the visual and perceptual system is passing up the results of their analyses to higher-level processes, semantic and syntactic systems are passing their information down to bias the perceptual systems. The eventual process of textual reading requires the integration of the bottom-up analyses (working up from the physical features) and the top-down analyses (working down from the semantic and syntactic considerations) (p. 136).

Danks (1978) notes that bottom-up analyses predominate when the input is inconsistent with prior information and that top-down analyses are best able to function when the comprehender has prior knowledge that is related to the input. As Lesgold and Perfetti (1978) suggest, "like all cognitive processes, what actually happens must involve some combination of assimilative and constructive processes."

The interactive model has been important in focusing attention on readers' strategies in comprehending (Sullivan, 1978; Schwartz, 1977). Stanovich (1980) uses the interactive model to refute the use of context to facilitate ongoing word recognition in good readers but does maintain with other researchers that the comprehension strategies of good readers are superior to those of the poor and the novice reader (Cromer, 1970; Oaken et al., 1971; Schwartz, 1977, Di Vesta et al., 1979).

In particular, investigations of strategic processing have consistently found that good comprehenders are able to use syntax in a more flexible manner to extract meaning (Kolers, 1975; Gibson & Levin, 1976; Golinkoff, 1975-76). The ability to utilize syntax has been shown to account for more than half the variance in comprehension (Vogel, 1975; Beebe, 1980) and has been found to account for two of the three comprehension factors described by Spache (1962) in research by Miller and Hosticka (1978). Athey (1977) concludes that the relationship between

syntactic competence and reading,

> . . . may have something to do with the fact as Thorndike (1917) pointed out many years ago, reading is largely a process of the correct selection and synthesis of key elements in the sentence. . . . The syntax of the sentence may be the best single cue for the student as to what these key elements are and how the author intended them to be related (p. 84).

Introduction to the Problem

The relationship between syntactic competence and reading has received increased attention with the further development of psycholinguistic models of reading. In strictly linguistic terms, syntactic competence is the inferred ability of the speaker/hearer to recognize and generate grammatical utterances (Chomsky, 1965). However, as it is commonly used in psycholinguistic literature, the term refers both to the reader's oral syntactic maturity and his ability to recover deep structures from surface structure representations (Simons, 1971; Wardaugh, 1972).

The relationship of reading comprehension to children's understanding of syntax in written text, and to the level of syntactic complexity exhibited in their oral and written productions, is accepted according to Athey (1977). However, some researchers stress the need to examine the dependency upon oral language of reading behaviour and the interaction between syntactic competence and reading acquisition, since the components of language

maturity which are related to reading success have not been intensively studied (Weaver & Kingston, 1971; Entwistle, 1971).

Investigators of language development, using the technique of elicited imitation have found significant developmental gains in children's ability to utilize syntax with increasing age (McNeill, 1970; Weener, 1971; Frasure & Entwistle, 1973; Bohannon, 1975). Through examination of the errors made in repetition of increasingly complex model sentences, this technique has been instrumental in revealing children's theory of syntax, since children tend to reduce sentences in imitation to the level of their ability (Smith, 1970), regularize ungrammatical utterances (Menyuk, 1963; Smith, 1970) and make numerous substitutions which display comprehension of forms which exceed their competence to produce (Slobin & Welsh, 1968).

Implied in the successful imitations of complex sentences is the ability to chunk information, thus reducing the burden on the short-term memory that might be imposed if the sentences were perceived as an unrelated series of words (Fodor & Bever, 1965; Miller, 1967; Frasure & Entwistle, 1973; Vogel, 1975). Though successful imitation does not guarantee mastery of syntactic forms, the inability to imitate, "strongly indicates an absence of syntactic ability and the existence of a significant deficit in the

area" (Newcomer & Hamill, 1977). Pike (1976) also found that while the ability to imitate successfully was not a guarantee of reading proficiency, the absence of such ability is a performance-limiting factor in reading.

The degree of syntactic competence attained has significant consequences for reading achievement. The emphasis of recent work in comprehension suggests that pre-reading oracy, particularly the extent to which a child can predict and recognize sounds, structures, collocations of words and context, determines, in large measure, the meaning which he can later bring to print (Smith, 1975, 1978; Wilkinson, 1969). It is suggested that fluent readers are able to minimize their attention to visual symbols through effective sampling strategies in which the reader contributes his knowledge of syntax and semantics to the reading task (Goodman, 1970; Smith, 1973). Stark (1975) states that children with reading failure "need to develop strategies for processing morphophonemic and syntactic units and learn the logic of the language system."

The inability to structure written material has been suggested by many researchers to be the basis of certain types of reading problems (Denner, 1970; Cromer, 1970; Weinstein & Rabinovitch, 1971; Stark, 1975; Pike, 1976; Wiig & Semel, 1977; Di Vesta et al., 1979). Such problems are revealed in readers using a word by word approach, behaving as if the sentence meaning were a product of

individual word meanings, at the expense of monitoring comprehension and deriving meaning from the sentence context (Schwartz, 1977; Di Vesta et al., 1979). Novice and poor readers, overburdened with the task of unlocking the graphic code and the absence of extralinguistic markers to segment language syntactically may not be able to utilize their intuitive knowledge of syntax (Goodman & Greene, 1977). Since utilization of syntax reduces the number of ideas the reader needs to process, speed and comprehension are enhanced by efficient recovery of deep structures (Wisher, 1976).

A number of studies have revealed a significant relationship between the frequency of syntactic structures in oral language and those present in written materials to reading comprehension (Ruddell, 1965; Tatham, 1970; Sauer, 1970; Reid, 1972). The importance of the notion that syntactic competence and the complexity of reading materials are related to reading comprehension is echoed in socio-linguistic research (Bernstein, 1971; Frasure & Entwistle, 1973) as well as readability research (Botel & Granowsky, 1974; Dawkins, 1975). Christie (1978), using an oral reading task, found that there were more meaning-disruptive miscues made in written material which contained unfamiliar syntax. It may be that syntactic congruence acts as a facilitative factor for fluent readers who are able to subordinate grapho-phonic cues to a higher organizational

strategy of monitoring information for any disparity of meaning or structure.

Di Vesta et al. (1979) found that an important transitional developmental trend to monitoring comprehension was accompanied by an overall increase in reading ability. They suggest that it is a process in which the reader becomes aware that he or she "need not rely exclusively on the precise order of words printed to understand the text, and that on occasion the reader may find it necessary to sample other portions of the text as dictated by his or her needs" and have gained the idea of the purpose of reading with this discovery.

Statement of the Problem

This study is an attempt to explore the relationships between syntactic competence and reading comprehension in Grade Two children.

Rationale for the Study

The need for this study is suggested by the recognized importance of the relationship between syntactic competence and reading comprehension (Cunningham, 1976;

Franke & Rankin, 1976; Vogel, 1977; Hall & Ramig, 1978) and by our relative ignorance of it (Vogel, 1974; Goodman & Greene, 1977). In particular, Wardaugh (1971) suggests that little is known of the extent of the overlap between language acquisition and learning to read. Kinsbourne (1976) maintains that the literature does not contain an experimentally validated model of beginning reading. Furthermore, Goodman and Greene (1977) note that little is known about the steps involved in the acquisition of fluency or what actually happens in the mind of proficient readers as they read.

Cromer (1970) specifically calls for the "point in the sequence of learning to read at which the meaningful grouping of words becomes important" to be specified. Rystrom (1972) suggests that research on the specific ways that syntax influences the processes through which children learn to read is needed. Indeed, a number of researchers have identified fundamental differences in the way that novice and fluent readers utilize the cueing systems of language described by Goodman (1970) as being grapho-phonic, syntactic and semantic (Gibson, 1965; Weiner & Cromer, 1967; Goodman, 1970; Athey, 1977; Schwartz, 1977; Di Vesta et al., 1979). Guthrie (1978) points out, however, that no single variable has been found to differentiate among readers of varying ability but rather that the interaction or simultaneous retardation of many operations may be implicated.

Language organization ability has been cited as an important multiple factor in the literature on reading disability (Cromer, 1970; Steiner et al., 1971; Vogel, 1974; Stark, 1975; Wallach & Goldsmith, 1977; Roadhouse, 1978). Particularly in developmental terms, the strategic processing of syntax appears to be an important area for further study (Kinsbourne, 1976). Siler (1974) has called for research on the different ability to utilize cueing systems at all grade levels.

The recent literature on the interactive model of reading has focused attention on the need to examine the strategies of readers (Danks, 1978; Rumelhart, 1977; Schwartz, 1977; Stanovich, 1980). Hall and Ramig (1978) suggest that assessment of reading proficiency requires examination of the "relative effectiveness of the reader's use of reading strategies to obtain meaning." In particular, DiVesta et al. (1979) have suggested that the use of monitoring strategies, which develop once children have reached the developmental stage in which they become aware of the purpose of reading, demonstrates the importance of identifying specifically for each student what stage he is at, for instructional as well as remedial purposes. Bottom-up, word by word approaches have been identified as being characteristic of poor readers (Weber, 1970; Flavell, 1970; Franham-Diggory & Gregg, 1975; Goodman & Greene, 1977) so that it becomes especially important to

identify students who are persisting with an "identification strategy" with its emphasis on word recognition, having been unable to make the transition to a "comprehension or monitoring strategy" (Cromer, 1970; Schwartz, 1977).

Research in comprehension has been criticized for its lack of consensus and failure to specify the abilities involved (Simons, 1971; Chester, 1976). Simons (1971) suggests that by basing comprehension research on linguistic theory and psycholinguistic research to determine the strategies used by children to recover deep structures, a beginning may be made in the investigation of the deficiencies in children's use of these strategies. This study is based on linguistic theory in the assessment of syntactic competence and psycholinguistic research in relating the effect of oral reading strategies on reading comprehension.

Significance of the Study

Detailed studies of the relationship of syntactic competence and reading comprehension are needed to specify the relationship between oracy and literacy which underlies the psycholinguistic approach to reading. Both aspects of syntactic competence, oral syntactic maturity and the ability to utilize syntax to recover deep structures,

require examination as separate but interacting processes in order to understand the relationship between them and to reading comprehension. Such an analysis can provide insight for instructional and remedial techniques and emphases.

In order to determine the needs of an individual, instruments which measure competence rather than performance must be developed to reveal linguistic and cognitive processes underlying achievement or lack of it. Most reading diagnostic tools are measures of performance providing a one-time assessment of achievement, in an operationalized reading task, which may not provide insight into the student's processing ability or stage of development. A widely used instrument which attempts to address this deficiency is the Reading Miscue Inventory (RMI) (Goodman & Burke, 1972) which examines a student's oral reading "errors" as "windows to his competence" rather than as indications of inaccurate perceptions to be corrected through instruction. The recent emphasis of psycholinguistic models on reader's strategies to recover deep structures require the development of diagnostic tools to translate theoretical concerns into practice. As Hall and Ramig (1978) suggest "from a language processing perspective, reading assessment can only occur when one examines what reading strategies a reader uses and how he makes use of the cue systems of written language."

The processing of syntax is the focus of this study since semantic acceptability is thereby revealed because, as Siler (1974) has shown, sentences violated syntactically were also violated semantically though the reverse was not always true. Using the Reading Miscue Inventory, abbreviated on the basis of empirical research (Beebe, 1978; 1980) to determine strategic processing levels in students, this study explored an efficient and reliable technique which may provide an important diagnostic aid for the classroom teacher and for clinicians who are surveying large groups.

Elicited imitation was used in this study to measure oral syntactic maturity and may prove especially useful as a diagnostic tool for the first years of school when the potential for remediation is greatest. Since it has been found (Wilkinson, 1969; Cromer, 1970) that language deficiencies may underlie some types of reading problems it is necessary to include measures of language development in screening programs. In particular, such information would allow teachers to determine the instructional method most suited to each pupil, suggesting the use of language experience methods for children with low syntactic competence and high exposure to literature being read aloud and perhaps more flexible approaches using individualized reading schemes for those with high syntactic competence.

General Hypotheses

The following hypotheses were examined by this study:

1. There will be no significant effect on reading comprehension, as measured by raw scores obtained on the Comprehension subtest of the Gates-MacGinitie Reading Test (Canadian edition), Level B, Form 1 (GATES) of the use of an "identification strategy" as evidenced by high proportions of UNACCEPTABLE miscues.

2. There will be no significant effect on reading comprehension, as measured by raw score achievement on the GATES Comprehension subtest of the use of a "comprehensive strategy" as evidenced by high proportions of MEANING PRESERVING miscues.

3. There will be no significant relationship between oral syntactic maturity as measured by scaled scores obtained on the Sentence Imitation subtest of TOLD and reading comprehension, as measured by raw score achievement on the GATES Comprehension subtest.

4. There will be no significant simultaneous independent effects on reading comprehension as measured by raw scores obtained on the Comprehension subtest of GATES of oral syntactic maturity as measured by scaled score achievement on the Sentence Imitation subtest of TOLD and oral reading strategies, as evidenced by high proportions of either

UNACCEPTABLE or MEANING PRESERVING miscues.

5. There will be no significant differences in any of the results obtained attributable to place of school attendance.

Definition of Terms

Certain terms used in this study are operationally defined for the purposes of this study and are listed below.

Substitution Miscues--An error made in oral reading was judged to be a substitution miscue if it was an incorrect word, partial word or non-word offered in place of the correct word in the text. In the event that a reader made more than one attempt to decode the word in the text, the first complete word was counted as the substitution and if this was subsequently corrected it was then coded as a correction. Dialect differences were not counted as substitution miscues. Repeated miscues on the same word, unless a change in function was made, were counted only once. Categorization of substitution miscues were made on the basis of criteria described in the RMI (Goodman & Burke, 1972).

Proportions of Corrected Substitution Miscues (CORRECTIONS)--Corrected substitution miscues were those substitution miscues which caused the reader to regress and reread the text to provide the word which appeared on the page as it was

written. Unsuccessful attempts to correct were coded as substitution miscues and, as such, were coded as being either syntactically-semantically acceptable or unacceptable for the following and preceding text.

Proportions of Syntactically-Semantically Acceptable Substitution Miscues (ACCEPTABLE)--Substitution miscues which were not corrected but which were both syntactically and semantically parallel with the expected response were referred to as ACCEPTABLE miscues. Such responses were meaningful and therefore caused no sense of incongruence within the reader which would have necessitated regression to correct. The interrelationships of semantics and syntactics are too complicated to examine one without including the other, since, as Siler (1974) determined, sentences violated syntactically were also violated semantically but the reverse was not true, and sentences which were semantically meaningful were syntactically correct. Categorization of uncorrected miscues were determined through reference to Beebe's (1978) method of analysis.

Proportions of Syntactically-Semantically Unacceptable Substitution Miscues (UNACCEPTABLE)--Substitution miscues which were not corrected but were left as unacceptable miscues which were syntactically and semantically incongruent with preceding and following text were referred to as UNACCEPTABLE miscues. It may be that a reader has corrected such errors silently and proceeded to read subsequent parts

of the sentence with understanding. However, when proportions of unacceptable substitutions are high and uncorrected, comprehension suffers since large numbers of such errors interfere with the developing meaning.

Meaning-Preserving Substitutions (MEANING PRESERVING)--The proportions of CORRECTIONS plus ACCEPTABLE miscues made on a selected story from the Reading Miscue Inventory were combined as a single measure, MEANING PRESERVING miscues, high proportions of which represented the utilization of a "comprehension strategy" in this study. Since both measures reflect the reader's understanding that what has been read must make sense, necessitating at times regressions to correct or the provision of parallel or congruent substitutions to sustain the meaning of the passage, there is a strong case for presenting them as one variable for the purposes of this study.

Identification Strategy--For the purposes of this study, an "identification strategy" was said to predominate in readers with high uncorrected syntactically-semantically unacceptable substitution rates and correspondingly low meaning-preserving substitutions in the oral reading of a selected story from the Reading Miscue Inventory. This analysis is based upon the interactive model of reading which suggests that novice readers, like fluent readers, process information from all cueing systems. However, lack of automaticity in word recognition forces novice readers

to attend to lower level bottom-up analyses with subsequent loss of context and comprehension due to the excessive burden on the short-term memory (Rumelhart, 1977; Danks, 1978; Stanovich, 1980).

Comprehension Strategy--A "comprehension strategy" was determined to be operative, in this study, when high proportions of meaning-preserving substitutions and correspondingly low rates of syntactically-semantically uncorrected unacceptable substitution miscues were made in the oral reading of selected stories from the Reading Miscue Inventory. This analysis was based upon widespread findings in literature on reading disability (Weinstein & Rabinovitch, 1971; Stark, 1975; Kinsbourne & Caplan, 1979), miscue research (Goodman & Greene, 1977; Beebe, 1976, 1980) and theoretical articles (Cromer, 1970; Schwartz, 1978; Danks, 1978; Stanovich, 1980), that good readers have superior strategies for reading which include monitoring comprehension (DiVesta et al., 1979) and more flexible use of top-down and bottom-up analyses as required by the changing context (Stevens & Rumelhart, 1975).

Oral Syntactic Maturity--Linguistic competence is the ability to recognize and generate grammatical utterances (Chomsky, 1965) and though the most rapid growth in the development of oral syntactic competence occurs in the preschool years, it is by no means complete until much later (Carroll, 1971; Palermo & Molfese, 1972). The Sentence

Imitation subtest of the Test of Language Development (TOLD) which was designed as a test of syntactic maturity provides scaled scores based on six-month divisions of the range of four years zero months to eight years eleven months. The test has a scaled mean of ten with plus or minus three representing the standard deviation.

Limitations of the Study

The following limiting factors of this study suggest that the results may not be generalized to the total student population:

1. Subjects were selected from schools which were chosen to represent a cross-section of socioeconomic status, religious affiliation and urban and suburban populations. Since random sampling techniques could not be applied, the results may be valid only for students of similar backgrounds and experiences.

2. Comprehension was tested by the administration of the Comprehension subtest of the Gates-MacGinitie Reading Test (Canadian edition) Level B, Form 1, whose definition at this level is determined by the ratio of 80% literal and 20% inferential comprehension questions. Burke (1975) has suggested that this test only measures the products of comprehension rather than the process and that some items are more properly conceived of as tests of word meaning.

The brevity of the test items, particularly the initial ones, may have adversely affected the performance of some students who were unable to exploit the semantic and syntactic redundancy inherent in extended connected discourse.

3. The scoring technique for the Sentence Imitation subtest of the Test of Language Development which is used in this study as a measure for oral syntactic maturity does not provide for qualitative analyses which may be significant since the range of scaled scores is so narrow. Researchers do not agree as yet on the best method of scoring to determine whether an imitation preserves the meaning of the original (Dale, 1976; Fisher, 1976; Pike, 1976).

4. Reading strategies are being determined by a technique of substitution miscue analysis developed by Beebe (1978, 1980) based on the Goodman and Burke (1972) Reading Miscue Inventory which has not been widely used or operationalized in the manner adopted in the present study which may limit the generalizability of its results.

5. Since only Grade Two children were tested, a wider generalizability to other age groups can not be assumed.

6. Though classroom teachers were present for group testing, the children were only briefly acquainted with the investigator prior to individual testing which may have affected the performance of some children.

7. A tape recorder was used to provide a means of

later in-depth analysis of the data which may have affected the performance of some children.

8. The stories selected for oral reading were chosen on the basis of performance on the Gates-MacGinitie Reading Test (Canadian edition) Level B, Form 1, Comprehension subtest to approximate an instructional level of difficulty but for the poorest students, it seems that the first Reading Miscue Inventory story may have provided a frustration level experience. Although this study was concerned with readers' reactions to their oral reading errors and not the quantity of such errors, it seems likely that the strategies evidenced may have been influenced by the relative difficulty of the materials being read.

9. The results obtained may have been affected by emotional and physical factors relating to each individual tested and to the testing situation itself.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

This chapter will deal with the research literature representing pertinent areas of concern for this study. The first section will examine the relationship of syntactical competence to reading comprehension. The second section is concerned with syntactical development in school age children. Section three will explore the techniques of elicited imitation which is used to measure syntactical development. Section four will discuss the technique of miscue analysis which is used to determine reader's processing strategies.

Syntactical Competence and Reading Comprehension

Entwistle and Frasure (1974) suggest that maturation in the processing of syntactic information facilitates vocabulary expansion and reading. Syntax facilitates comprehension by helping the reader to narrow down the alternatives of subsequent parts of the text through prediction and recognition strategies already developed through oral language (Wilkinson, 1969, 1971; Athey, 1977).

Much of the support for the use of prediction in reading has come from studies of eye fixations and eye-voice spans (Wanat, 1968; 1971; Levett, 1970). The eye-voice span, or EVS, is the number of words which intervene between the word spoken and the word fixated and has been used to measure age variability in reading behaviour and the relative complexity of textual material and grammatical structures which affect the organizing behaviour of readers. The EVS is speculated to be three words long, typically, one word being "acquired" by the eyes, one being held in store for processing and one being spoken (Geyer, 1966).

Research using EVS (Levin & Kaplan, 1971) has found that subjects utilize phrase-structure and that this ability to cluster information increases with age. Wanat and Levin (1968, 1970) in two related studies have shown that when reader expectations are confirmed, the EVS increases in length. Morton (1964) found that use of contextual constraints was more efficient among good readers as evidenced by increased eye-voice span.

Although some psycholinguistic models (Goodman, 1967; Smith, 1971) suggest that context is generally better utilized by good readers for text comprehension and ongoing word recognition, recent research suggests that the difference between good and poor readers does not lie in attention to context, but rather in the purpose for which it is used (Biemiller, 1970; Weber, 1970; Golinkoff & Rosinski, 1976;

Stanovich, 1980). Good readers, it has been found, utilize contextual information, including syntactical constraints to monitor comprehension and develop overall textual understanding (Di Vesta et al., 1979; Stanovich, 1980). Novice and poor readers, on the other hand, tend to rely on context to facilitate word recognition (Oaken, Weiner, & Cromer, 1971; Perfetti & Hogabaum, 1975; Schwartz, 1977; Stanovich, 1980).

Di Vesta et al. (1979) have identified three stages of reading behaviour in which students develop from almost exclusive attention to word recognition, to a transition stage in which increased attention to context is evident, followed by the full understanding of the purpose of reading in which readers sample flexibly using all sources of information from the text to gain its meaning. However, Cromer (1970) suggests that some readers fail to make the transition to fluency and strategic use of context despite adequate word recognition skills and intelligence. Several researchers have suggested that the difficulty for such readers lies in the inability to exploit linguistic cues (Weinstein & Rabinovitch, 1971; Vogel, 1974; Stark, 1975; Pike, 1976; Kinsbourne & Caplan, 1979). As Wisher (1976) states:

> The ability to anticipate structure and meaning is vital to reading especially to the young reader burdened with the rules of identification. For reading to be efficient the reader must profit from all the cues the language offers (p. 601).

Syntax, as a cueing system, has received attention recently in comprehension research (Cromer, 1970; Isakson & Miller, 1976; Pike, 1976; Hall & Ramig, 1978) and the suggestion that syntactical development and the ability to exploit syntactical information is more important than word recognition (Miller & Hosticka, 1976) or vocabulary (Guthrie, 1973) has been made. Gibson and Levin (1975) suggest that good readers are more adept at utilising syntax to simplify the task of reading and that this ability improves with age.

Readability research has also focused attention on syntax as an important determinant of complexity for readers (Ruddell, 1965; Sauer, 1970; Tatham, 1970; Reid, 1972; Christie, 1973). Bormuth et al. (1970) contends that reading success depends upon the ability to comprehend the particular structures found in instructional materials and suggests that syntactically complex question types are a source of particular difficulty for novice readers.

This research, as well as that which has focused on the acquisition of particular syntactical structures, such as embedding of one deep structure into another (Gaer, 1969; Malmstrom & Weaver, 1973; Botel & Granowsky, 1974) and sentence combining transformations (Strickland, 1962, O'Donnell, Griffin & Norris, 1967; Fagan, 1971, Tremaine, 1972), demonstrate the importance of syntactical development for reading comprehension. Since the results of linguistic

research have shown that syntactical competence continues to mature long after school entry, it is clear that these processes must interact (Clarke, 1975; Goodman & Greene, 1977; Wingfield et al., 1979).

Syntactical Development in School Age Children

Research in the areas of language acquisition and linguistics have produced some detailed and well documented sequences of syntactical development in children under the age of five. Until recently, little attention was focused on the school age child since it was assumed that syntactical development was complete at this time. However, as Palermo and Molfese (1972) point out:

> A review of the literature indicates that the 5 year old is far from having the equivalent of an adult native speaker's facility with the language. Scattered throughout the literature is evidence that at the phonological, syntactic and semantic levels a good deal more facility needs to be acquired before the adult level is reached (p. 409).

Wood (1976) contends that school age children have acquired most of the syntactic rules of their language, and she suggests that they learn the more complex structures and more complicated syntactical rules during the elementary school years in a step-by-step fashion. Carroll (1971) feels that complete competence in the grammatical rules of language is not reached until adolescence and

> . . . even this statement must be qualified to apply only to the competence assumed as a basis

> for spoken performance since a substantial number of adolescents do not seem to be able to manifest adequate grammatical competence in written performance (p. 148).

Results of research by Carol Chomsky (1969) suggest that though the rate of development may vary for individuals the order of acquisition of syntactic structures may be invariable. There is general agreement among researchers that there is some overlap between stages (Major, 1974; Butler, 1976; Wood, 1976). They contend that the process flows from,

1) no usage of a particular syntactic form, to
2) occasional productions with no errors or overgeneralizations, to
3) increased production with errors and overgeneralizations, to finally
4) correct usage.

(Butler, 1976, p. 1123)

Such a general sequence of development is supported by more detailed longitudinal research by Loban (1963, 1967) and O'Donnell, Griffin, and Norris (1967) who found gradual consolidations of language structures from kindergarten to grade seven. However, abrupt shifts in performance occurred at two different stages, when it has been hypothesized (Palermo & Molfese, 1972) that acquisition of new structures cause disruption in those previously handled with competence. These two periods of instability occur between the ages of five and eight and between ten and thirteen, which Palermo and Molfese (1972) note,

> . . . may not be coincidental [in] that these are precisely the periods in cognitive development

> marked by Piaget (1970) as transition points from preoperational thought to concrete operations in the first case and from concrete operations to formal operations in the second case (p. 422).

The Derivational Theory of Complexity (DTC) which posits a direct relationship between psychological and grammatical complexity is implicit in most studies of child language. Although Fodor, Garett, and Bever (1968) reject this theory, DTC is supported by the studies of Mehler (1963), Gough (1965), Savin and Perchonok (1965), Coleman (1964, 1965), Bormuth, Manning, Carr, and Pearson (1970), Menyuk (1963, 1971) and Bell (1976). Brown and Hanlon (1970) state:

> The fact that there is a sequence, among well formed constructions, from those that are derivationally simple, in terms of adult grammar, toward those that are derivationally complex, suggests that the adult grammar does, at least roughly represent what it is that the child is learning (p. 50).

However, the complexity of language mitigates against any easy translation from transformational to psychological reality (Fodor & Bever, 1965). Some researchers argue that it is the type of transformation rather than the number of rules needed to generate them which accounts for this complexity (Fagan, 1971). Others posit a cumulative derivational complexity rather than simply the number of rules used (Brown & Hanlon, 1970). Gaer (1969) suggests that the relationship is more obvious in tests of production of sentences rather than tests of sentence comprehension. Attempts to reduce

language to a small set of psychologically significant rules have been stymied by the sheer weight of language to be analysed which may account for inability of programmers to generate a computer program which can adequately resemble actual production.

Elicited Imitation

Studies of child language employ either of two basic methods of data gathering; samples taken from spontaneous language or samples taken under experimental conditions. The former method was favoured in the last decade and provided much important data about the language of very young children as well as developmental trends across age groups. However, such studies have been criticised as being incomplete in only examining certain aspects of performance since not all structures within the child's competence would be present in spontaneous samples (Menyuk, 1963). Fisher (1975) notes that such methods are time-consuming, extremely difficult to obtain from large groups, and require very large samples from each subject to find certain less common structures. Of particular importance to the examination of syntactical development in children over five, Dale (1976) asserts, is that differences between the child's grammar and that of adults is not obvious from spontaneous language samples.

One experimental method which has been widely used to examine syntactical development in children is that of elicited imitation. Slobin and Welsh (1968) define it as follows:

> By elicited imitations we refer to the child's repetition of model sentences presented in a context calling for imitation as opposed to a child's spontaneous imitation of adult utterances (p. 486).

The advantages of this method are the degree of control over the stimuli available to the researcher and the generalizability to diverse populations. A major difficulty posed by this method is the problem of determining whether or not a particular imitation preserves the meaning of the original (Dale, 1976). Some researchers have identified key elements which must be repeated correctly in scoring their instruments (Fisher, 1976) whereas others have used the percent of words-in-the-right-order correct. However, Pike (1976) describes the standard technique for recall experiments as being the scoring of all correct when in the correct ordinal position or if present after a substitution but all items incorrect if they follow an omission or intrusion. Unfortunately, there does not seem to be a standard scoring procedure developed for elicited imitation experiments and this does represent a drawback in using the method.

One of the key issues surrounding this technique is whether imitation works through comprehension or occurs

as a purely physical effect of short-term memory. Fraser, Bellugi and Brown (1963) contend that imitation can occur without comprehension but their instrument has been criticised as being too difficult (Ferguson & Slobin, 1973). Smith (1973) found that if children comprehend most of a sentence, they can imitate the part beyond their comprehension but if the entire sentence was beyond their comprehension, it would be ignored. The idea that comprehension is essential for imitation has been supported by the work of Menyuk (1963) whose subjects regularised ungrammatical sentences and deviated in their imitations when the model was beyond their linguistic competence, and by Slobin and Welsh (1968) whose subject's numerous recodings demonstrated comprehension beyond her productive competence. Furthermore, Menyuk (1963) found a significant correlation between the number of syntactic structures each child used in his samples of spontaneous speech and the number of structures he could accurately repeat.

Francis (1975) states:

> It seems that provided sentences are long enough or difficult enough to test subjects beyond the 'echoic' level, recalled forms provide a basis for a description of linguistic abilities (p. 134).

The length of model sentences would appear to be crucial since short-term memory plays an important role in imitation. However, the ability to use structure is perhaps as important as Menyuk (1963) contends:

> The differences in the ability of children to repeat various sentences seems to be dependent on the particular rules used to generate these sentences rather than sentence length (p. 436)

To ensure that model sentences are beyond the subject's 'echoic' level, memory span and time allowed for repetition must be taken into account. Since the subject's ability to structure material facilitates recall (Neisser, 1967; Miller & Selfridge, 1950) model sentences should be chosen which strain the immediate memory capacity of the child either through length or difficulty so that accurate imitation will necessitate reformulation and comprehension.

The main problem, however, in the use of elicited imitation to assess syntactical development lies in the definition of the task. It may be as Brown (1973) suspects, "that there are multiple 'levels' of knowledge of structure, as revealed by various kinds of performance" and that accurate repetition may not demonstrate the same competence as spontaneous emission of the same structures. It may be misleading to draw a fine line between competence and performance if competence is understood to be a composite of various types of performances.

Miscue Analysis

Studies using oral reading errors to analyze reading performance fall logically into two historically different groups as Weber (1968) pointed out in a review of 30 studies.

Prior to the Goodman-Burke-Goodman reading miscue analysis research, few studies had taken linguistic competence into account and few were based upon a conceptual framework from which results could be generalized. Such research was based on quantitative analysis and perpetuated the belief that errors were evidence of weakness in various basic skills.

Once Goodman and others began to publish their findings (Goodman, 1965, 1967, 1969, 1970; Burke & Goodman, 1970; Burke, 1972) many articles which followed on oral reading errors used the miscue model by either adopting or adapting the psycholinguistically-based taxonomy of errors to uncover oral reading strategies and analyze the processes of comprehension, in an attempt Shafer (1976) suggests to relate reading comprehension to the use of the rules of language (Clay, 1968; Weber, 1968, 1970; Biemiller, 1970; Beebe, 1976, 1980; Beebe & Bulcock, 1978; Christie, 1978).

The miscue model suggests that readers do not make random errors nor are their errors to be counted equally (Burke & Goodman, 1970). Rather, such errors provide valuable information on the strategies employed by the reader and the extent to which he is utilizing the grapho-phonic, syntactic, and semantic cues available.

The most frequent category of miscues found in children's oral reading is the substitution miscue which

accounts for roughly half the total miscues made (Goodman & Burke, 1968; Weber, 1970; Stevens & Rumelhart, 1975; Beebe, 1976; Clay, 1977). Good readers tend to do a better job of substituting appropriate structures (Weber, 1968; Goodman, 1970) and tend to spontaneously correct disparity of meaning or structure (Clay, 1969; Burke & Goodman, 1970; Beebe, 1978).

Clay (1977) suggests that self-correction rate is a better indicator of reading progress in the first three years of instruction than either intelligence or reading readiness scores. Self-corrections are especially indicative of good reading performance when a semantically and/or syntactically unacceptable error occurs in relation to the following text (Burke & Goodman, 1970; Clay, 1977; Beebe, 1978, 1980). It may be as Clay (1977) suggests, that self-correction involves the courage to err, the "ear" to detect the error and the patience to search out alternate sources of confirmation which are all characteristic of readers who are making good progress.

The miscue analysis technique has been used to characterize the stages of development in reading fluency. Biemiller (1970) examined the miscues of Grade One readers and found that in the initial phase, children tend to overuse context cues by relying on information acquired aurally as well as other non-graphic cues. The next stage occurs with the realization that a specific word is

associated with each graphic stimulus and is characterized by overattention to grapho-phonic and orthographic constraints. In the third phase, which applies only to readers who are progressing well, the reader pays attention to all sources of information using graphemic analyses to supplement attention to content and comprehension. Poor readers, Clay (1977) suggests have developed inefficient strategies, such as rigid attention to visual cues and exaggerated emphasis on word recognition, remaining in the second word identification phase at the expense of monitoring comprehension.

This chapter has attempted to review the literature related to areas of research pertinent to the present study. Based on the psycholinguistic and linguistic models and research, this study has been designed to incorporate the theories and practices which recent research has determined to be productive in the search for understanding the processes involved in reading comprehension.

CHAPTER III

METHODOLOGY

Introduction

The purpose of this study was to investigate the relationship of syntactical competence to reading comprehension in Grade Two children. This chapter will present the design of the study and the procedures employed in the implementation of its research. It will be divided into the following sub-headings:

1. Design and Hypotheses
2. The Sample
3. Instrumentation
4. Methods and Procedures
5. Statistical Procedures

Design and Hypotheses

This study attempted to determine the relationship between syntactic competence and reading comprehension in Grade Two students. Four intact Grade Two classes from two schools were administered the Comprehension subtest of the Gates-MacGinitie Reading Test (Canadian edition) Level B, Form 1 (MacGinitie et al., 1978) in the second week of

October, 1980. Sixty-four students were selected for further study, using random sampling techniques, of which sixty-two completed the second phase of the study, which involved individual testing sessions, held in the following three weeks in both schools. Individual testing sessions consisted of the administration and tape-recording of the Sentence Imitation subtest of the Test of Language Development (TOLD) (Newcomer & Hamill, 1977) and oral reading of a story selected from the Reading Miscue Inventory (RMI) (Goodman & Burke, 1972) selected to roughly approximate the student's instructional level. Data obtained were submitted to various statistical analyses to provide information on the interaction and dependence of each of the variables.

The dependent variable in this study was the raw score achievement on the Comprehension subtest of the Gates-MacGinitie Reading Test (Canadian edition) Level B, Form 1 (GATES), which was used as the criterion variable in regression analysis, as well as being related as a continuous variable in correlation and cross-break analysis. The independent variables, which were entered as predictor variables in regression analysis as well as being continuous variables in correlation and cross-break analysis, were the following:

1. Scaled scores obtained on the Sentence Imitation subtest of TOLD.

2. Proportion of Corrected substitution miscues made in the oral reading of a selected story from the Reading Miscue Inventory (RMI) (Goodman & Burke, 1972) (CORRECTIONS).

3. Proportions of uncorrected syntactically-semantically unacceptable substitution miscues (UNACCEPTABLE).

4. Proportions of uncorrected syntactically-semantically acceptable substitution miscues (ACCEPTABLE).

5. Combined total proportion of substitution miscues which were CORRECTIONS and ACCEPTABLE (MEANING PRESERVING).

6. Place of school attendance (SCHOOL).

All variables were entered into the STAT II (Digital Equipment Corporation, 1974) computer program which calculated basic statistics (Table 1), a correlation matrix (Table 2) and stepwise multiple regression analyses (Tables 3 and 4). Cross-break analysis (Tables 5 and 6) was performed by entry of selected variables into the Hewlett-Packard (1976) computer program, STAT PAC I.

Hypotheses

The following hypotheses were examined by this study:

1. There will be no significant effect on reading comprehension, as measured by raw scores obtained on the Comprehension subtest of GATES of the use of an "identification strategy" as evidenced by high proportions of

UNACCEPTABLE miscues.

2. There will be no significant effect on reading comprehension, as measured by raw score achievement on the GATES Comprehension subtest of the use of a "comprehensive strategy" as evidenced by high proportions of MEANING PRESERVING miscues.

3. There will be no significant relationship between oral syntactic maturity as measured by scaled scores obtained on the Sentence Imitation subtest of TOLD and reading comprehension, as measured by raw score achievement on the GATES Comprehension subtest.

4. There will be no significant simultaneous independent effects on reading comprehension, as measured by raw scores obtained on the Comprehension subtest of GATES of oral syntactic maturity, as measured by scaled score achievement on the Sentence Imitation subtest of TOLD and oral reading strategies, as evidenced by high proportions of either UNACCEPTABLE or MEANING PRESERVING miscues.

5. There will be no significant differences in any of the results obtained attributable to place of school attendance.

The Sample

The sample selected for this study was drawn from the total population of Grade Two students enrolled in four

classrooms in two schools representing the two largest St. John's School Boards: the Roman Catholic School Board for St. John's and the Avalon Consolidated School Board. The schools were selected by the investigator in consultation with supervisors from each School Board to represent urban and suburban school populations, coeducational student enrollments, and a cross-section of socioeconomic status and religious affiliation.

The number in the sample was determined after all the students (109) in the population were administered the GATES Comprehension subtest. To ensure equal representation from each school of all ability levels, the investigator determined the median score for the population and randomly selected students from each school who scored above and below this halfway point to equal the smallest achievement group which was 16. A total of 64 children were thereby selected for further study in individual testing sessions to represent a high group (above the median) and a low group (below the median) for analytical purposes. Two students did not complete the individual testing sessions, due to illness on the part of one and excessive anxiety on the part of the other and were therefore dropped from the study.

Instrumentation

The instruments used in this study included the Comprehension subtest of the Gates-MacGinitie Reading Test (Canadian edition) Level B, Form 1 (MacGinitie, 1978), the Sentence Imitation subtest of the Test of Language Development (TOLD) (Newcomer & Hamill, 1977) and an Oral Reading Strategies Assessment which was based on Beebe's (1978, 1980) abbreviation of the Reading Miscue Inventory (RMI) (Goodman & Burke, 1972) (Appendix A).

Gates-MacGinitie Reading Test (GATES)

The Comprehension subtest of the Gates-MacGinitie Reading Test (Canadian edition) Level B, Form 1, was administered to all students enrolled in the four classrooms from which the final sample was drawn. This test was chosen because of its extensive standardization which Van Roeckel (1975) suggests has been rather carefully done, as well as its widespread use as an indicator of development in reading. In addition, Level B does not require any written responses as the student is asked merely to mark the appropriate one of four pictures presented above each of the forty 'paragraphs' the student was asked to read silently, which removed the interference of writing ability as a source of variance among students. A practice session to ensure that all students understood the instructions

was held with the classroom teacher and the investigator prior to the test administration. Directions from the Teacher's Manual (Canadian edition, MacGinitie et al., 1978) were adhered to rigidly so that a limit of 35 minutes was allowed to complete the test. Those students who finished early were asked to check over their answers and were then provided with quiet activities until the allowed time had elapsed.

The Comprehension subtest has been criticized by Burke (1975) for some of its items, which she suggests are more appropriate measures of vocabulary rather than comprehension. Though admittedly some questions depend entirely on the knowledge of one word, it is in reality a fine line between comprehension of a word in context and vocabulary knowledge especially in items used for the lower levels which consist of only one sentence. The Comprehension subtest at this level mainly measures literal comprehension which the authors suggest is represented in 80% of the items. In a timed situation, literal comprehension questions seem the most appropriate for novice readers who are still struggling with the decoding aspect of reading. The GATES is concerned with measuring performance against a normed population and as such may be viewed as measure of the products of comprehension rather than the processes which were evaluated in the second phase of this study.

The test items were screened by minority consultants as well as Canadian educators to check content appropriateness. The authors (MacGinitie et al., 1978) report that the Kuder-Richardson Formula 20 reliability coefficient for the Level B, Comprehension subtest is .92.

Results obtained on the subtest may be reported as raw scores, or derived scores such as percentile ranks, T-scores, stanines, grade equivalents and extended scale scores. The raw score achievement was chosen as the most appropriate measure for the statistical analyses used in this study, though grade equivalent scores were provided by the investigator for the benefit of the teachers involved.

The credentials of the GATES appear to be substantial and well researched. The Teacher's Manual (Canadian edition), (MacGinitie, et al., 1978) provides information on test administration, standardization, validity, reliability and test-scoring. The norming group of 46,000 students, between 3,000 and 4,500 students per grade level, was chosen as a proportional representation of English-speaking students living in different parts of Canada, in urban and non-urban settings, from both public and separate school systems. The test items were chosen to maintain children's interest and provide a range of difficulty suited to each grade level.

Sentence Imitation Subtest of the Test of Language Development (TOLD)

This subtest was administered during the individual testing sessions and tape-recorded for later analysis. The Sentence Imitation subtest requires that the student repeat increasingly complex sentences which are presented singly to him by the examiner. A total of 30 sentences may be presented to the student but the examination is to be terminated after five consecutive failures. Each sentence is scored correct (1) or incorrect (0) depending upon exact repetition with words in the same order, preserving the same endings as the original with no substitutions, additions, or omissions. Misarticulations are not counted as errors. The raw scores obtained are converted into scaled scores which are tabulated for each of 10 age groups into which the test range of 4 years 0 months to 8 years 11 months is divided. The scaled scores have a mean set at 10 with the standard deviation fixed at 3.

The authors, Newcomer and Hamill (1977) report that the Sentence Imitation subtest correlates highly (.92) with the Auditory Attention Span for Related Syllables subtest of the Detroit Tests of Learning Apptitude (Baker & Leland, 1935) and that TOLD has a moderately high correlation (.62, .72, .73 for ages 4, 6, and 8, respectively) with the Test for Auditory Comprehension of Language (Carrow, 1973). The results of two separate factor analyses

(Newcomer & Hamill, 1977) demonstrate that the test measures are highly related but nevertheless measure discrete abilities. TOLD has been found to have diagnostic validity by the authors (Hamill & Newcomer, 1977) and by Roadhouse (1978) in studies which compare the language abilities of normal (control) groups and diagnosed language or speech disabled children.

Split-half reliability coefficients using the Spearman-Brown correction formula were found to be above .90 for the Sentence Imitation subtest across five age levels. The test-retest reliability coefficient for ages four to eight was found to be .98. The authors (Newcomer & Hamill, 1977) report low standard error measurements for both raw and scaled scores as further evidence of the excellent reliability of this test.

The TOLD Sentence Imitation subtest was chosen as a measure of oral syntactic maturity because of its ability to discriminate amongst readers of varying abilities and because it was found to be a better predictor of reading ability than the other six subtests of TOLD (Roadhouse, 1978). Vogel (1975) notes that the ability to hold a string of words in proper sequence which is tested by the Sentence Imitation subtest is prerequisite to comprehension of spoken language and basic to the mastery of syntax in oral production. Using a similar test, the Sentence Repetition Test (Vogel, 1975) the use of elicited imitation to measure

syntactic competence was given further support as it was found to discriminate in favour of normal children amongst the sample groups.

Oral Reading Strategies Assessment

Beebe (1978, 1980) has developed an abbreviated technique of miscue analysis (Goodman & Burke, 1972) which focuses attention on the substitution miscue to gain information about the effect of such errors on reading comprehension. Since her technique involves the examination of substitution miscues in terms of what the reader does once he has made the miscue (i.e., has he corrected it, or left it as either a syntactically-semantically acceptable miscue or as a syntactically-semantically unacceptable miscue) it therefore allows generalizations to be inferred about the strategy being employed by the reader.

Good readers have been characterized as having superior reading strategies, but the details of this ability and the means to assess it have not yet evolved (Cromer, 1970; Oaken et al., 1971; Schwartz, 1977; Di Vesta et al., 1979). Recent research suggests that at least two strategies can be clearly inferred from oral reading behaviour which discriminate between novice or poor readers and good readers (Goodman & Greene, 1977; Schwartz, 1977). These two strategies have been labelled for the purpose of this study as the "identification strategy" and the "comprehension

strategy" to emphasize the focus of the reader's attention.

An "identification strategy" may be inferred if a reader has very low proportions of CORRECTIONS and very high proportions of UNACCEPTABLE miscues since meaning-disrupting errors would cause regression to correct if the reader were confirming hypotheses and monitoring comprehension. A reader with an "identification strategy" would be expected to have a high proportion of syntactically-semantically unacceptable substitution miscues, being burdened by the lack of automaticity of word recognition (LaBerge & Samuels, 1974) and over-attention to graphic and orthographic cues (Clay, 1977).

A reader who evidences a "comprehension strategy" on the other hand, would be likely to have low proportions of UNACCEPTABLE miscues and high proportions of MEANING PRESERVING miscues since his attention to the developing meaning would cause regression to correct or the substitution of parallel forms if a disparity in meaning or structure resulted from his substitutions. Good readers demonstrate their use of higher organizational skills in making a high proportion of their substitutions as MEANING PRESERVING miscues reflecting well developed recognition and prediction strategies (Wilkinson, 1971). It has been suggested by Clay (1977) and Beebe (1980) that CORRECTION and ACCEPTABLE miscues do not impair comprehension and in fact are characteristic of good progress in reading.

An example of a non-disruptive ACCEPTABLE miscue would be the substitution of the word "Andrew" for "Andre" in the following example taken from the RMI (p. 63):

> Andre didn't say a word, but it seemed that everyone else was talking.

This substitution is of the same grammatical class and reflects similar semantic content to the original and is therefore classified as being both syntactically and semantically acceptable (Goodman & Burke, 1972).

An example of a meaning disruptive, UNACCEPTABLE miscue would be the substitution of the word 'suddenly' for 'sliding' as in the following example from the RMI (p. 74):

> Suddenly his fingers along the gate, he felt the lock.

In this case the substitution does not fit grammatically with the following text and therefore the semantic content is also unacceptable. Siler (1974) has found that sentences violated syntactically were always violated semantically though the reverse was not always true. This finding as well as that of recent research (Beebe, 1978, 1980) which has used a combined syntactic-semantic test of acceptability underlies its use in this study.

Each student was given a selected story to read aloud from the RMI to roughly approximate his instructional level, which is to say that the material would be neither too difficult to frustrate his efforts to read completely

nor too easy to reveal which strategy would be used to cope in the presence of unknown material. The examiner's selection of each story was made with reference to the scores obtained on the GATES Comprehension subtest but these scores were used only as a rough guideline since oral reading levels would be expected to be higher than those achieved through a timed test of silent reading comprehension in most cases. All students were informed that no help would be given and that they were to do the best job they could of reading the selection aloud.

During individual testing sessions, the oral reading of each student was tape-recorded for later in-depth analysis. Miscues were coded by the examiner as they occurred, on a separate copy of the selection. In a few cases, this coding was discontinued as the students evidenced some anxiety that they were being graded. The substitution miscues of each student were determined using the criteria described in the RMI (Goodman & Burke, 1972, pp. 42-48). A substitution miscue refers to any incorrect word, partial word or non-word offered in place of the correct word in the text. Repetitions of the same miscue and reported miscues on the same word were only counted once unless the function of the word was changed. Dialect differences in pronunciation were not counted as miscues.

Only the last 10 substitution miscues were chosen for statistical analysis, as being the most representative

of the student's usual performance as many students appeared anxious at the onset of the task but were visibly relaxed by the end of the session. The decision to select 10 such errors was based on the literature finding that substitution errors usually account for roughly half the total miscues made (Goodman, 1969; Stevens & Rumelhart, 1975; Beebe, 1980) and that at least 25 total miscues are needed from each student for accurate analysis (Goodman & Burke, 1972). Furthermore, in choosing the number 10, the categories of substitution miscues used could be readily converted to percentages which it was felt would encourage the adoption of this method of analysis by teachers wishing to screen large groups.

Each substitution miscue was categorized as being a correction or a non-correction which was determined to be either syntactically-semantically acceptable or unacceptable on a form designed by Beebe (1978) (Appendix A). The following information was thereby obtained for each student and tabulated for the entire sample as variables used in the study:

1. The proportion of substitution miscues which were successfully corrected (CORRECTIONS).

2. The proportion of substitution miscues which were not corrected and left as syntactically-semantically acceptable substitutions (ACCEPTABLE).

3. The proportion of substitution miscues which

were not corrected and left as syntactically-semantically unacceptable substitutions (UNACCEPTABLE).

4. The combined proportion of corrected miscues and those left as ACCEPTABLE (MEANING PRESERVING).

The combined totals of CORRECTIONS, ACCEPTABLE and UNACCEPTABLE result in 100% of all the miscues as does the combined totals of UNACCEPTABLE and MEANING PRESERVING high rates of which, for the purposes of this study, reflect the "identification" and "comprehension" strategies, respectively.

Methods and Procedures

Testing Procedures

The methods and procedures described in the teacher's manuals for both the GATES Comprehension subtest and the Sentence Imitation subtest of TOLD were strictly adhered to, including the date of testing which was chosen to conform to Fall norms developed for the GATES. Testing was carried out from October 14, 1980 to November 5, 1980 and consisted of group testing of the GATES Comprehension subtest of intact classrooms with the aid of the classroom teacher to insure proper test administration and individual testing sessions by the investigator for students selected for further study.

A quiet room in each school was provided in which to administer and tape-record the responses to the Sentence Imitation subtest of TOLD and the oral reading of a selected story from the RMI. To insure that each student was familiar with the notion of being tape-recorded, each student was asked to state their name and was given the opportunity to listen to it played back. The story selected from the RMI was chosen to approximate the student's instructional level based on his performance on the GATES Comprehension subtest and confirmation of this score by his teacher. The investigator followed the text being read by the student on a protocol, marking miscues as they occurred, to aid later analysis, except in a few cases when students demonstrated anxiety that such marking represented poor performance.

In analyzing each substitution miscue, obvious dialect differences in pronunciation were not counted. Repeated miscues on the same word were only counted once unless a change in function occurred. If a student made several attempts to decode a word, it was coded by reference to the student's final attempt as an unsuccessful correction, which was either syntactically and semantically acceptable or unacceptable, or as a successful correction.

Each sentence of the Sentence Imitation subtest was scored as being completely correct (1) or incorrect (0) if any substitutions, omissions, additions or changes in words or word order were made in the student's repetition.

No attempt was made to exclude dialect differences from the scoring since no procedure presently exists for such adaptations. Since the examiner could not score and administer the test at the same time, responses were tape-recorded and as a result most students had more than the five consecutive failures suggested as a termination point before testing was completed. Each raw score obtained was converted to a scaled score based on the student's chronological age, by using conversion tables provided in the Test Manual (Newcomer & Hamill, 1977).

Statistical Procedures

The primary objective of this study was to examine the relationship between reading comprehension and syntactical competence. All students involved in the completed study were treated with the same standardized test materials, namely, the Comprehension subtest of GATES and the Sentence Imitation subtest of TOLD as well as the oral reading of a story selected from the RMI to approximate each student's instructional level such that sufficient miscues were made to demonstrate strategic processes but not so many that the student became frustrated with the task.

Seven variables based on the resultant scores were tabulated for statistical purposes as follows:

1. GATES--Raw score achievement on the Comprehension subtest of the Gates-MacGinitie Reading Test (Canadian edition) Level B, Form 1.

2. TOLD--Scaled scores obtained on the Sentence Imitation subtest of the Test of Language Development.

3. CORRECTIONS--Percentage of substitution miscues which were subsequently corrected successfully by the reader.

4. ACCEPTABLE--Percentage of substitution miscues which were both semantically and syntactically congruent with the following text.

5. UNACCEPTABLE--Percentage of substitution miscues which were either syntactically and/or semantically incongruent with the following text.

6. MEANING PRESERVING--The combined proportions of CORRECTIONS and ACCEPTABLE miscues made by a reader.

7. SCHOOL--Place of attendance at school was entered as an independent variable in order to properly exclude it as a source of variance in any of the results obtained.

The GATES scores were entered as the outcome variable in two separate stepwise multiple regression analyses (Tables 3 and 4) with the other six variables entered on both occasions as predictor variables using the STAT II (Digital Equipment Corp., 1974) computer program to aid computations. Stepwise multiple regression analysis was chosen for use in this study to determine

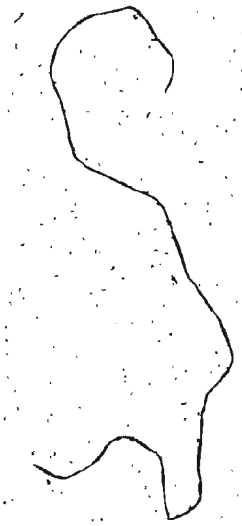
the effect of the independent variables on reading comprehension in recognition of the multivariate nature of the problem under investigation. It was used as a descriptive tool by which the linear dependence of reading comprehension could be specified for each oral reading strategy and for both oral syntactic competence and oral reading strategies as simultaneous and independent predictors. In addition, this mode of analysis provided confirmation of the choice of high proportions of UNACCEPTABLE and MEANING PRESERVING miscues being representative of the "identification strategy" and "comprehension strategy", respectively.

Cross-break Analysis

Cross-break analysis allows the researcher to determine the nature of the relationships between variables through tabular presentation of frequencies. The results obtained are tested for significance by the chi-square statistic. Cross-break partitions were determined from examination of the distributions of each variable and from the literature search. Cross-break analysis was used in this study to determine whether the SCHOOL variable (Table 5) contributed significantly to any of the results obtained and to specify the relationship between GATES and TOLD (Table 6). The .01 level of significance was chosen to reject or accept the hypotheses for which this analysis was used.

Correlational Analysis

The Pearson Product Moment correlation coefficient provides a single number which summarizes the relationship between two variables. This number, which may be positive or negative, ranges from -1 to +1 and indicates the degree to which the variation in one variable may be related to the variation in another. All variables used in this study were submitted to correlational analysis to provide further information on the relationships being studied. The STAT II (Digital Equipment Corp., 1974) computer program was used to compute a correlation matrix which presents the correlations of all variables used in the study (Table 2) with each other.



CHAPTER IV

RESULTS OF THE STUDY

Introduction

The purpose of this chapter is to report the results of the procedures used to test the hypotheses posed by this study and to discuss these results in terms of these hypotheses. Two main statistical procedures, stepwise multiple regression and cross-break analyses, were employed to analyze the data using two different computer programs to compute the results. The Stat II computer program (Digital Equipment Corp., 1974) was used to compute basic statistics (Table 1), a correlation matrix (Table 2) and stepwise multiple regression analyses (Tables 3 and 4). The STAT PAC I (Hewlett-Packard, 1976) computer program was used to compute cross-break analyses (Tables 5 and 6) which were tested by the chi-square test statistic. The .01 level of confidence was selected as the point at which the hypotheses of the study would be either accepted or rejected for all statistical procedures used.

The hypotheses examined by this study were the following:

1. There will be no significant effect on reading comprehension, as measured by raw scores obtained on the

TABLE 1

Mean, Standard Deviation, Minimum, Maximum, Range, Standard Error for the Study Sample (N = 62)

	Mean	Standard Deviation	Standard Error	Maximum	Minimum	Range
GATES	18.29	8.67	1.099	38	5	33
TOLD	9.59	2.16	.27	16	4	12
ACCEPT	26.45	16.21	2.06	70	0	70
UNACCEPT	49.68	25.54	3.24	100	0	100
CORR	23.87	19.86	2.52	80	0	80
MEAN PRES	50.32	25.35	3.21	100	0	100
SCHOOL				1	0	

Note: GATES = reading comprehension scores; TOLD = oral language scores; ACCEPT = percentage of acceptable miscues; UNACCEPT = percentage of unacceptable miscues; CORR = percentage of corrections; MEAN PRES = combined proportion of ACCEPT plus CORR; SCHOOL = place of school attendance.

TABLE 2

Zero-Order Correlations of Variables in the Psycholinguistic Study of Reading Comprehension (N = 62)

Variable	GATES	TOLD	ACCEPT	UNACCEPT	CORR	MEAN PRES	SCHOOL
GATES	1.00						
TOLD	.467	1.00					
ACCEPT	.483	.450	1.00				
UNACCEPT	-.657	-.412	-.621	1.00			
CORR	.431	.152	-.023	-.766	1.00		
MEAN PRES	.647	.406	.621	-.997	.769	1.00	
SCHOOL	-.214	-.308	-.181	.115	.016	-.103	1.00

Note: GATES = reading comprehension scores; TOLD = oral language scores; ACCEPT = percentage of acceptable miscues; UNACCEPT = percentage of unacceptable miscues; CORR = percentage of corrections; MEAN PRES = combined proportion of ACCEPT and CORR: SCHOOL = place of school attendance.

TABLE 3

Stepwise Multiple Regression Analysis Using GATES as Criterion Variable to Determine Best Predictor and Proportion of Variance Reduced by the Independent Variables of the Study (N=62)

Step 1.	UNACCEPTABLE	
	Proportion of the variance in GATES reduced by this step	.4310
	Partial F (df = 1,60)	45.4515*
	Regression coefficient	-.223
	Standard error of coefficient	.330
Step 2.	TOLD	
	Proportion of the variance in GATES reduced by this step	.0466
	Partial F (df = 1,60)	5.2615**
	Cumulative proportion reduced by Steps 1 and 2	.4776
	F for analysis of variance (df = 2,59)	26.9706*
Step 3.	The remaining independent variables contributed insignificantly to the regression.	

Note: *Significant at .001 level
**Significant at .05 level

TABLE 4

Stepwise Multiple Regression Analysis Omitting UNACCEPTABLE Miscues to Determine Second Best Predictor and Proportion of the Variance in GATES Reduced by Independent Variables in the Study (N = 62)

Step 1.	MEANING PRESERVING	
	Proportion of the variance in GATES reduced in this step	.4181
	Partial F (df = 1,60)	43.1052*
	Regression coefficient	.221
	Standard error of coefficient	.0336
Step 2.	TOLD	
	Proportion of the variance in GATES reduced by this step	.051
	Partial F (df = 1,60)	5.558**
	Cumulative proportion of variance reduced by Steps 1 and 2	.4682
	F for analysis of variance (df = 2,59)	25.97*
Step 3.	Remaining variables contributed insignificantly to the regression	

Note: *Significant at .001 level
**Significant at .05 level

TABLE 5

Cross-break Analyses for SCHOOL variable (N = 62)

		0	1
GATES	High	14	11
	Low	17	20

SCHOOL

$X^2 = .60$
df = 1

		0	1
TOLD	High	18	10
	Low	13	21

SCHOOL

$X^2 = 4.16$
df = 1

		0	1
ACCEPT	High	1	1
	Med	10	5
	Low	20	25

SCHOOL

$X^2 = 2.22$
df = 4

		0	1
UNACCEPT	High	9	8
	Med	12	16
	Low	10	7

SCHOOL

$X^2 = 1.16$
df = 4

		0	1
CORR	High	15	19
	Low	16	12

SCHOOL

$X^2 = 1.04$
df = 1

		0	1
MEAN PRES	High	10	7
	Med	12	16
	Low	9	8

SCHOOL

$X^2 = 1.16$
df = 4

Note: All chi-square statistics fell below the .01 level of confidence chosen as a criterion for rejection or acceptance of study hypotheses.
GATES = reading comprehension scores; TOLD = oral syntactic maturity scaled scores; ACCEPT = percentage of acceptable miscues; UNACCEPT = percentage of unacceptable miscues; CORR = percentage of substitutions corrected; MEAN PRES = proportion of substitutions which were CORRECTIONS and ACCEPTABLE; SCHOOL = place of school attendance.

TABLE 6

Cross-break Analysis for GATES and TOLD (N = 62)

GATES	TOLD High		TOLD Low	
High	17	68%	8	32%
Low	11	30%	26	70%

$X^2 = 8.82^*$
df = 1

Note: *Significant at the .01 level of confidence

GATES = reading comprehension scores, TOLD = scaled oral syntactic maturity scores

Comprehension subtest of GATES, of the use of an "identification strategy" as evidenced by high proportions of UNACCEPTABLE miscues.

2. There will be no significant effect on reading comprehension, as measured by raw score achievement on the GATES Comprehension subtest, of the use of a "comprehension strategy" as evidenced by high proportions of MEANING PRESERVING miscues.

3. There will be no significant relationship between oral syntactic maturity as measured by scaled scores obtained on the Sentence Imitation subtest of TOLD and raw score achievement on the Comprehension subtest of GATES.

4. There will be no significant simultaneous effects on reading comprehension as measured by the raw scores obtained on the GATES Comprehension subtest, of oral syntactic maturity, as measured by scaled scores achieved on the Sentence Imitation subtest of TOLD and oral reading strategies, as evidenced by either high proportions of UNACCEPTABLE or MEANING PRESERVING miscues.

5. There will be no significant differences in any of the results obtained attributable to place of school attendance.

Analysis of the Data

Hypothesis One: There will be no significant effect on reading comprehension as measured by the raw scores obtained on the Comprehension subtest of GATES of the use of an "identification strategy" as evidenced by high proportions of UNACCEPTABLE miscues.

Findings: The proportion of UNACCEPTABLE miscues was selected in stepwise multiple regression analysis to be the most significant predictor of the outcome variable, raw score achievement on the GATES Comprehension subtest, of all the independent variables entered into the analysis. The proportion of UNACCEPTABLE miscues was found to account for .4310 of the variance in reading comprehension scores. An F ratio was calculated to be 45.45 for 1, 60 degrees of freedom, which is significant at the .01 level. A correlation coefficient of -.657 significant at the .01 level was found using Pearson Product Moment correlational analysis between GATES Comprehension subtest achievement and UNACCEPTABLE miscues suggesting that the two variables are highly negatively related. These findings suggest that the null hypothesis must be rejected since a significant relationship exists between them and there is a significant effect of the proportion of UNACCEPTABLE miscues on raw scores obtained on the Comprehension subtest of GATES.

Hypothesis Two: There will be no significant effect on reading comprehension as measured by raw score achievement on the GATES Comprehension subtest of the use of a "comprehension strategy" as evidenced by high proportions of MEANING PRESERVING miscues.

Findings: By omitting the most significant predictor, UNACCEPTABLE miscues from stepwise multiple regression analysis, the next most significant predictor of reading comprehension scores was found to be the proportion of MEANING PRESERVING miscues which accounted for .4181 of the variance when UNACCEPTABLE miscues were partialled out. The obtained F ratio of 43.10 with 1, 60 degrees of freedom was found to be significant at the .01 level. A correlation coefficient of .647 was found between GATES Comprehension subtest scores and the proportion of MEANING PRESERVING miscues suggesting that the two variables are highly positively related.

The composite variable, MEANING PRESERVING, was found to be more highly related to reading comprehension than either of its parts, CORRECTIONS ($r = .431$) and ACCEPTABLE ($r = .483$) which are virtually uncorrelated ($r = -.023$) suggesting that its use as a measure of the "comprehension strategy" is supported. The null hypothesis must be rejected since there are significant effects attributable to the proportions of MEANING PRESERVING

miscues on reading comprehension scores.

Hypothesis Three: There will be no significant relationship between oral syntactic maturity as measured by scaled scores obtained on the Sentence Imitation subtest of TOLD and raw score achievement on the Comprehension subtest of GATES.

Findings: Using Pearson Product Moment correlational analysis a correlation coefficient of .467 was obtained between oral language development and reading comprehension which was significant at the .01 level of confidence suggesting that the null hypothesis may be rejected. This relationship was also examined using cross-break analysis. Both GATES Comprehension raw scores and TOLD Sentence Imitation subtest scaled scores were divided into HIGH and LOW groups at the sample mean for each variable. A chi-square statistic of 8.82 with 1 degree of freedom was found to be significant at the .01 level suggesting that frequencies obtained were not the result of chance. It was found through this analysis that 68% of those with HIGH GATES also had HIGH TOLD scores and that 70% of LOW GATES achievers had LOW TOLD scores. A summary of these results is listed in Table 6.

Hypothesis Four: There will be no significant simultaneous effects on reading comprehension as measured by raw scores

obtained on the GATES Comprehension subtest of oral syntactic maturity as measured by scaled scores achieved on the Sentence Imitation subtest of TOLD and oral reading strategies, evidenced by either high proportions of UNACCEPTABLE or MEANING PRESERVING miscues.

Findings: The cumulative proportion of the variance reduced in reading comprehension scores by oral syntactic maturity and UNACCEPTABLE miscues was determined through the use of stepwise multiple regression analysis to be .4776. An F ratio of 26.97 with 2, 59 degrees of freedom was found to be significant at the .001 level. Similarly, the cumulative proportion of the variance in reading comprehension scores by oral syntactic maturity and MEANING PRESERVING miscues was found to be .4682 which was also significant at the .001 level since an F fatio of 25.97 with 2, 59 degrees of freedom was calculated. These findings suggest that the null hypothesis is not accepted since there are significant effects of oral syntactic maturity and oral reading strategies on reading comprehension achievement.

Hypothesis Five: There will be no significant differences in any of the results obtained attributable to place of school attendance.

Findings: In order to determine whether place of school attendance contributed significantly to any of the results obtained, both cross-break and correlational techniques of analysis were performed with each variable being measured against the SCHOOL variable. The results of both these analyses are summarized in Tables 2 and 3, which demonstrates at the .01 level of significance that none of the results obtained were significantly related to place of school attendance. Therefore, the null hypothesis may be accepted.

Summary

The data were mainly analyzed through the use of stepwise multiple regression and cross-break analysis techniques with the aid of two different computer programs. A level of .01 was designated as the criterion level at which to accept or reject the hypotheses. Pearson Product Moment correlation coefficients were calculated between each variable to illustrate the measure of association between them. Frequency tables (Table 7) were plotted for each variable to ensure that they were normally distributed as this assumption underlies the use of non-parametric statistics. Basic statistics, including means, standard deviations, standard errors, and ranges for each variable were calculated to provide further specification.

From the results of the statistical analysis of the accumulated data, the following findings may be reported:

1. There is a significant negative effect on reading comprehension of the use of an "identification strategy" as evidenced by high proportions of UNACCEPTABLE miscues.

2. There is a significant positive effect on reading comprehension of the use of a "comprehension strategy" as evidenced by high proportions of MEANING PRESERVING miscues.

3. There is a significant relationship between oral syntactic maturity and reading comprehension.

4. There are significant simultaneous independent effects of oral syntactic maturity and oral reading strategies on reading comprehension.

5. There are no significant differences found in any of the results attributable to place of school attendance.

TABLE 7

Frequency Tables for Variables Tested in this Study
(N = 62)

GATES

Raw Scores	Frequency
0-4	0
5-8	6
9-12	12
13-16	17
17-20	5
21-24	6
25-28	6
29-32	1
33-36	7
37-40	1

TOLD

Scaled Scores	Frequency
0	0
1	0
2	0
3	0
4	1
5	0
6	1
7	9
8	6
9	17
10	8
11	10
12	4
13	3
14	2
15	0
16	1
17	0

(cont'd.)

Table 7 (cont'd.)

ACCEPTABLE	
Percentage	Frequency
0	3
10	11
20	22
30	9
40	9
50	4
60	2
70	2
80+	0

UNACCEPTABLE	
Percentage	Frequency
0	3
10	3
20	5
30	6
40	9
50	11
60	8
70	8
80	2
90	4
100	3

(cont'd.)

Table 7 (cont'd.)

CORRECTIONS	
Percentage	Frequency
0	12
10	15
20	7
30	10
40	8
50	5
60	4
70	0
80	1
90+	0

MEANING PRESERVING	
Percentage	Frequency
0	3
10	3
20	3
30	8
40	9
50	10
60	9
70	6
80	5
90	3
100	3

Note: GATES = reading comprehension scores; TOLD = scaled scores on test of syntactic maturity; ACCEPTABLE = percentage of substitutions which were syntactically-semantically acceptable; UNACCEPTABLE = percentage of substitutions which were syntactically-semantically unacceptable; CORRECTIONS = percentage of substitutions which were corrected; MEANING PRESERVING = percentage of ACCEPTABLE plus CORRECTIONS.

CHAPTER V

SUMMARY, CONCLUSIONS AND IMPLICATIONS

This chapter summarizes the purposes of this study, draws conclusions based on the analyses of the accumulated data, states implications related to these findings and makes recommendations regarding potential areas of future research which arise from the study.

Summary

The main objective of this study was to examine the effects of syntactic competence, represented by oral reading strategies and oral syntactic maturity, on reading comprehension. Stemming from the main objective were the following two supplemental purposes: 1) the verification of the notion of two distinct oral reading strategies through the use of an experimental method of coding substitution miscues (Beebe, 1978, 1980) and the specification of these strategies for high and low comprehension achievers, and 2) an investigation of the role of oral language maturity in reading comprehension achievement.

The Comprehension subtest of the Gates-MacGinitie Reading Test (Canadian edition) Level B, Form 1 which was

chosen to measure comprehension achievement was administered to 109 students of four intact classrooms from two schools in the greater St. John's area, under the jurisdiction of the Roman Catholic School Board for St. John's and the Avalon Consolidated School Board. Results were tabulated and used to draw a representative sample of 64 students from all ability groups. Since two students were dropped from the study (due to illness in one case and excessive anxiety in the other) the final sample consisted of 62 students who were individually tested and tape-recorded on the two other measures used in the study, namely, the Sentence Imitation subtest of the Test of Language Development (TOLD) and the oral reading of a selected story from the Reading Miscue Inventory (RMI) during the three-week period following group testing (October 14 and 15, 1980). Testing sessions were scheduled to avoid conflict with individual teacher's and school programs and to insure random order within schools.

The Sentence Imitation subtest of TOLD was administered first in each session in order to build confidence by providing a simple non-threatening task. It was scored following the instructions provided in the Test Manual (Newcomer & Hamill, 1977) using the tape-recorded responses of the student. These results were then converted to scaled scores which were determined through the use of tables supplied in the Test Manual to account for

chronological age differences amongst the individuals taking the test.

The oral reading samples were scored as the student read, using a protocol of the passage and tape-recorded for later in-depth analysis. The samples were coded for substitution errors using the criteria suggested by Goodman and Burke (1972) in the manner described by Beebe (1978, 1980). Only the last ten substitution miscues were used for statistical analysis, as being the most representative of the student's usual performance and being readily converted to percentages when examined according to type.

The following hypotheses were formulated for testing in this study:

1. There will be no significant effect on reading comprehension, as measured by raw scores obtained on the Comprehension subtest of GATES of the use of an "identification strategy" as evidenced by high proportions of UNACCEPTABLE miscues.

2. There will be no significant effect on reading comprehension, as measured by raw score achievement on the GATES Comprehension subtest of the use of a "comprehension strategy" as evidenced by high proportions of MEANING PRESERVING miscues.

3. There will be no significant relationship between oral syntactic maturity as measured by scaled scores obtained on the Sentence Imitation subtest of TOLD and

reading comprehension, as measured by raw score achievement on the GATES Comprehension subtest.

4. There will be no significant simultaneous independent effects on reading comprehension, as measured by raw scores obtained on the Comprehension subtest of GATES of oral syntactic maturity, as measured by scaled score achievement on the Sentence Imitation subtest of TOLD and oral reading strategies, as evidenced by high proportions of either UNACCEPTABLE or MEANING PRESERVING miscues.

5. There will be no significant differences in any of the results obtained attributable to place of school attendance.

Three types of statistical analyses were used to test the hypotheses in the manner which was most appropriate. Multiple regression analysis was selected to determine the effect of the "identification" and "comprehension" strategies on reading comprehension and to determine the simultaneous independent effects of reading strategies and oral syntactic maturity on comprehension achievement. The statistical test method used for this analysis was the F test which was considered significant for this study at the .01 level of confidence. Cross-break analysis was used to specify in tabular form, the relationships between oral syntactic maturity and reading comprehension at two levels and to specify the relationship of place of school attendance to the results obtained in the study. The chi-square test

statistic at the .01 level of significance was used for this analysis. The Pearson Product Moment correlation coefficient was used to test the strength of certain relationships between the selected variables used in this study, with .01 designated as the level of confidence at which rejection or acceptance of the hypotheses would be made.

Summary of Findings

Hypothesis One

The results of correlational analysis, significant at the .01 level, revealed a strong negative relationship ($r = -.657$) between the proportion of UNACCEPTABLE miscues and reading comprehension achievement. Stepwise multiple regression analysis demonstrated that the use of an "identification strategy" evidenced by high proportions of UNACCEPTABLE miscues was the most significant predictor of reading comprehension achievement of all the independent variables entered into the analysis, accounting for .4310 of the variance in reading comprehension scores. Application of the *F* test revealed that this result was significant at the .001 level. The null hypothesis must therefore be rejected since use of an "identification strategy" evidenced by high proportions of UNACCEPTABLE miscues resulted in lower reading comprehension scores.

Hypothesis Two

The use of a "comprehension strategy" as evidenced by high proportions of MEANING PRESERVING miscues was found to be highly positively related to reading comprehension achievement with a correlation coefficient of .6466 which was significant at the .01 level. Stepwise multiple regression analysis in which UNACCEPTABLE miscues were omitted revealed that MEANING PRESERVING miscues were the next most significant predictor of reading comprehension for which it accounted for .4181 of the variance. An F-test demonstrated that this result was significant at the .001 level. Therefore, the null hypothesis is not supported since students with high proportions of MEANING PRESERVING miscues, which is characteristic of a "comprehension strategy," have higher comprehension scores.

Hypothesis Three

A moderate relationship (r = .467) was found between reading comprehension and oral syntactic competence which was significant at the .01 level. Cross-break analysis, using the chi-square test statistic at the .01 level of significance demonstrated more clearly that high performance on the reading comprehension test was highly related to high performance on the syntactic development test as was low achievement on TOLD and low achievement on GATES. On the basis of these results the null hypothesis

must be rejected since a significant relationship does exist between reading comprehension and oral syntactic maturity.

Hypothesis Four

Application of the F-test, significant at the .001 level on two separate stepwise multiple regression analyses, revealed that there were simultaneous independent effects on reading comprehension of oral reading strategies and oral syntactic maturity using either the "identification strategy" (cumulative proportion = .4776) or the "comprehension strategy" (cumulative proportion = .4682) as the first predictor, since an F of 27.97 (df = 2, 59) and an F of 25.97 (df = 2, 59) were found, respectively. Therefore, the null hypothesis may be rejected since oral reading strategies and oral syntactic maturity exert simultaneous independent effects on reading comprehension accounting for nearly half the variance in the scores made on the GATES.

Hypothesis Five:

On the basis of correlational analysis in which SCHOOL was related to GATES (r = -.214), TOLD (r = -.308), ACCEPTABLE (r = -.181), UNACCEPTABLE (r = .115), CORRECTIONS (r = .016), and MEANING PRESERVING (r = -.103) none of the results were found to be significant at the .01 level.

Using the chi-square statistic to test the significance of the results of cross-break analyses with the other variables, none were found to be significant at the .01 level though the syntactic maturity variable (TOLD) was found to approach this level at .05. However, the null hypothesis is rejected at the .01 level that place of school attendance is a significant source of variance for any of the results obtained suggesting that these schools represent basically similar populations.

Conclusions

The data of this study provided information upon which the following conclusions are based:

1. Oral reading strategies and oral language development exert simultaneous independent effects on reading comprehension, accounting for nearly half the variance. Results of stepwise multiple regression analysis (summarized in Tables 3 and 4) using the F-test showed that these predictor variables were significant at the .001 level. It may be concluded therefore that these variables are both important in determining reading comprehension achievement.

2. The notion that there are two distinct reading strategies, namely the "identification strategy" and the "comprehension strategy" as measured by the technique of analyzing substitution miscues developed by Beebe (1978,

1980) was verified through two types of statistical tests applied to the data. The "identification strategy" was represented in the analysis by proportions of semantically-syntactically unacceptable substitution miscues which were not subsequently corrected (UNACCEPTABLE). The "comprehension strategy" was represented by the proportion of MEANING PRESERVING miscues which was a combination of the proportion of semantically-syntactically acceptable substitution miscues (ACCEPTABLE) which were not corrected and the proportion of corrected substitutions (CORRECTIONS). Using two separate stepwise multiple regression analyses, both strategies were found to be almost equally good predictors of reading comprehension accounting for .4310 ("identification strategy") and .4181 ("comprehension strategy") of the variance. High correlations for both strategies were found with reading comprehension with a correlation coefficient of -.657 for UNACCEPTABLE miscues and .647 for MEANING PRESERVING miscues, both results being significant at the .01 level. The component variables of MEANING PRESERVING variable (ACCEPTABLE and CORRECTIONS) were found to be virtually uncorrelated ($r = -.028$) which suggests that there is no problem of collinearity between them supporting the combination of these two distinct measures for statistical and descriptive purposes. The data appear, therefore, to confirm the notion that there are two separate oral reading strategies which can be

deduced from oral reading samples using Beebe's (1978) method of coding substitution miscues and that these strategy types can be appropriately used to specify general reading comprehension achievement levels.

3. Oral syntactic maturity is still an important factor in determining reading comprehension at the Grade Two level as evidenced by multiple regression analysis which found that it accounted for .05 of the variance after oral reading strategies had been entered in the regression. A moderate correlation of .467 between GATES and TOLD was found to be significant at the .01 level. Cross-break analysis, using the chi-square statistic to test the significance of the relationship, demonstrated that high TOLD performance was strongly related to high GATES performance and that on the other hand low results on TOLD was highly related to low results on GATES. These findings suggest that oral syntactic development is far from complete by Grade Two and that it must be taken into account in assessing comprehension performance.

4. The use of the abbreviated method of analysis suggested by Beebe (1978) could simplify the presently cumbersome methodology entailed by the complete application of the Reading Miscue Inventory techniques to oral reading samples. Results obtained from this study suggest that the examination of 10 substitution miscues to determine the proportions of corrections and of non-corrections which

are either syntactically-semantically acceptable or unacceptable substitutions can provide a fairly reliable screening device to determine which students are persisting with an inefficient "identification strategy" and which are progressing well with a "comprehension strategy." Such information would prove valuable for clinicians and teachers in planning programs of prevention, instruction and remediation.

General Conclusions and Implications

The emergence of the psycholinguistic viewpoint of the reading process places language acquisition and utilization in a position of importance. Receptive and productive aspects of language may be understood through the application of psycholinguistic theory to be interrelated faces of a multidimensional construct rather than as separate steps in a hierarchical linear process. Transformational-generative linguistics has contributed to this understanding through its focus on syntactical competence as an important aspect of language development. Such competence is reflected in the ability to recognize and generate grammatical utterances and the ability to uncover deep structures from surface structure representations. Since literacy is based upon oracy, well developed oral language competence has important implications for progress

in reading proficiency (Loban, 1963; Wilkinson, 1969).

Though written language differs from oral language, the syntactic structures of language are basic to both the receptive and productive aspects of language that is spoken or written. Since the ancilliary cues of pitch, stress, intonation and non-linguistic cues are absent in written material, phrase boundaries must be largely provided by the reader who, in the case of a novice, is not conversant with punctuation conventions of written text. For the beginning reader who is instructed using the language experience approach, the connection between oral and written language is intimate and the barrier of written language differences is reduced. The language experience method is particularly supported by the literature on syntax and readability which found that reading comprehension was facilitated by the use of written materials with syntax which was parallel to that of the reader's syntactic competence (Ruddell, 1965; Sauer, 1970; Tatham, 1970; Christie, 1973; Reid, 1973). Using a language experience approach, the instructor has the power to manipulate the syntax in reading materials through the use of the child's own language and the gradual introduction of more complex language patterns.

The attention to meaning which is stressed in the psycholinguistic model of reading is also most fully satisfied by the use of language experience techniques.

One of the most important purposes of reading is for communication and an understanding of the correspondence between thought and written symbols occurs when it is the child's own need to communicate which forms the basis of his reading material in this approach. The use of the language experience approach would be expected to enable a larger number of children to grasp the purpose of reading since the realization that written material ought to make sense is inherent in the methodology (Di Vesta et al., 1979).

The attention to the language processing aspect of reading necessitates a means of evaluation and diagnosis which also emphasizes the student's processes of extracting meaning rather than the products of this extraction. The development of the Reading Miscue Inventory (Goodman & Burke, 1972) has provided an approach to the problem of measuring strategic processing through the assessment of the strengths and weaknesses of the reader's attempts to comprehend written material.

The results of this study confirm earlier research (Goodman, 1969; Clay, 1977; Beebe, 1980) that not all miscues need to be treated equally. In particular, it appears that only uncorrected miscues which are syntactically-semantically unacceptable require a teacher's attention. Students with evidence of a "comprehension strategy" may have high proportions of syntactically-semantically

acceptable substitutions and corrections of substitutions but these do not detract from the meaning of the passage and require no remediation. Students persisting with an "identification strategy" may not require intensive grapho-phonic drill as much as lessons in strategic processing which would emphasize the importance of detecting semantic and/or syntactic anomalies.

Having determined through statistical analysis that two different strategies could be inferred from the reading miscues of Grade Two children and appropriately assigned to different comprehension levels of ability, the results of this study may provide teachers with important insights into the real nature of the errors made by their students. In particular, the tendency to quantify reading errors rather than to assess them qualitatively would be reduced if the tools to diagnose strategic processing in a reliable and simple fashion were available. By examining at least 10 substitution miscues for acceptability and rate of correction, a teacher may develop insight into an individual's instructional and remedial needs.

Recommendations

The following recommendations are proposed on the basis of the results of this study.

1. Syntactical development in school age children is an important area of further study particularly in its relationship to reading comprehension performance.

The results of this study suggest that oral syntactic maturity is an important variable in determining reading comprehension achievement even when measured by a scoring technique which was, in this investigator's opinion, insensitive to dialect and other types of meaning preserving recodings. Despite the grossness of the measurement, oral syntactic maturity related moderately ($r = .467$) to reading comprehension and was shown through cross-break analysis to be especially significant in characterizing achievement in the highest and lowest groups. This finding suggests that further investigation is warranted. Using refined scoring techniques which might adopt the qualitative categorization of the RMI or assign some weight to recodings which nevertheless retained the meaning of the original, the technique of elicited imitation could provide an efficient and simple means of screening children for language-based reading problems and provide a means of determining growth in syntactic competence.

2. The notion of two distinct oral reading strategies, referred to in this study as the "identification strategy" and the "comprehension strategy" should be examined more fully.

It may prove especially valuable to determine which students, identified in the study through cross-break analysis, were neither clearly evidencing an "identification strategy" or a "comprehension strategy." Such students might be either at the high end of the early phase and not actually progressing into the comprehension phase or might be at the low end of the comprehension phase, at the point of entering it more fully. This middle or transition stage is particularly difficult to specify. The further development of the Oral Strategies Assessment through testing on other populations and age groups would provide more detailed analyses of the oral reading strategies already characterized and demonstrate more clearly whether a third transitional stage is necessary for providing a complete analysis of the strategies of novice readers.

3. A study to specify the reading levels of the stories developed in the Reading Miscue Inventory is needed.

One of the difficulties encountered in this research was the lack of a beginning passage which was not at the frustration level of the poorest readers in the group being tested. Such a passage would also be useful as a warm-up for readers who were so anxious at the onset of testing that they would sit silently and be

unable to proceed when a word appeared which they could not unlock. Much time was spent with some students to determine the appropriate story since the stories provided uneven and sometimes overlapping levels of challenge. A study which could accurately identify the levels represented by these stories would provide useful guidelines for its use as a diagnostic tool which is presently missing.

4. The development of strategic processing lesson plans for teachers to encourage the emphasis on meaning in reading is needed.

The results of this study indicate that the transition to fluency is marked by the utilization of syntactic competence gained in the development of oracy and directed to written material. For those students who remain stuck at the level of grapho-phonic and orthographic cues it is necessary to provide lessons in the strategic processing of text. Though there is clearly a need for automaticity in word recognition skills, of greater importance to the student is the realization that what is read must make sense. Without a sample of the types of lessons which might be used to help students to this realization most teachers would find it difficult to develop such plans on their own through the constraints of time and inexperience in this area. The development of a

set of lessons stressing techniques such as paraphrasing, sentence combining and questioning would be helpful if teachers are interested in developing programs which include the diagnostic techniques tested in this study.

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APPENDIX A

ORAL READING STRATEGIES ASSESSMENT FORM

STUDENT'S NAME: _____

PASSAGE READ: _____

SUBSTITUTION	CORRECTED	NON-CORRECTED ACCEPTABLE	NON-CORRECTED UNACCEPTABLE
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Percentage of corrections _____

Percentage of syntactically-semantically unacceptable substitutions which were non-corrections _____

Percentage of corrections plus syntactically-semantically acceptable substitutions which were non-corrections _____

Note: This Assessment Form was adapted with permission from Beebe (1978).

APPENDIX B

THE SENTENCE IMITATION SUBTEST

OF THE

TEST OF LANGUAGE DEVELOPMENT (TOLD)

1. Her friends walked to school.
2. My new kitten is spotted.
3. After the party, the boys fixed the car.
4. Yesterday my aunt forgot her lunch.
5. Because he was tired, he had to leave the party.
6. Have the people been helped by the king?
7. Weren't the boys chased by the policeman?
8. Those ladies aren't baking cakes.
9. She didn't believe he liked her.
10. Before bed we drink from our special cups.
11. Here is a picture that you should see.
12. In the afternoon, there is no one home from school.
13. There are no children allowed, are there?
14. Our dog chased a cat a mile, didn't he?
15. Monkeys don't eat bananas by the dozen, do they?
16. Those children sold two friends a bicycle.
17. If you need money you must earn it at your job.
18. Because he misbehaved, his father gave him a beating.
19. Although we are happy, we are not going to stay.
20. Weren't the children taken to the zoo by their teacher?
21. Last week I sold Mrs. Thomas my best bicycle.
22. Although she won't play with him, he likes her.
23. Although you don't believe me, there's a good program on television.
24. Are those cats being given a bath by their owner?
25. The car which was in the accident was wrecked.

(cont'd.)

26. The train which hit the car fell from the tracks.

27. Yesterday, we were saved from the clutches of an angry teacher.

28. I would have been happy, if I'd have won.

29. The fun-loving children played a silly joke a day.

30. They gave the lion who had become very dangerous to the zoo.

SCORING:

Each item is scored 1 or 0. To obtain a score of 1, the student must imitate the exact order and endings used by the examiner. Misarticulations are disregarded.