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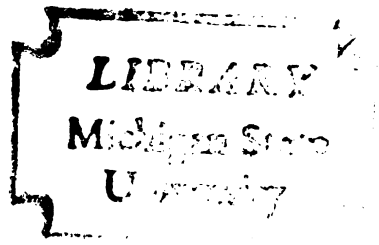

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AMONG FIRST GRADE CHILDREN

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THE RELATIONSHIP BETWEEN ORAL READING FLUENCY AND OTHER READING BEHAVIORS AMONG FIRST GRADE CHILDREN

By

Nancy Kilgore Rice

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ABSTRACT

THE RELATIONSHIP BETWEEN ORAL READING FLUENCY
AND OTHER READING BEHAVIORS
AMONG FIRST GRADE CHILDREN

By

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The study was undertaken to investigate the phenomenon of oral reading fluency among children in the beginning stages of reading instruction. Oral reading fluency was defined as the ability to read text with appropriate intonation patterns: pausing at punctuation, raising or lowering pitch at terminal juncture to indicate a statement or question, stressing contrastive elements, and reading a story with a minimal number of pauses. These four measures of fluency, plus a composite of the first three known as "Oral Reading Fluency," were correlated with measures of six other reading abilities and activities to see to what extent fluency skills and reading behaviors were related. The six independent variables were word recognition ability, silent reading comprehension, peer evaluation as a good reader, classroom practice time, amount of time the parent spends reading to the child, and amount of time the child spends reading orally at home.

The subjects were 106 first grade children from a mid-western, upper-middle socio-economic level suburban community. The children came from nine classrooms in three schools, and were those recommended by teachers as children who could read at Primer level or above. The measuring instruments used included a researcher-designed Oral Reading Fluency Test, the Slosson Oral Reading Test for word recognition, the Cooperative Primary Reading Test to assess comprehension, a student questionnaire for peer status rating, a classroom oral reading time questionnaire, and a parent questionnaire to gather data on the home variables.

Responses to the Oral Reading Fluency Test were scored twice, once by a group of four judges and once by the author, yielding two sets of data. Pearson product moment correlation coefficients were calculated for the five fluency measures with each of the six independent variables, and multiple regression equations were developed to assess the contribution of the independent variables to the oral fluency scores.

The major findings were that first grade subjects reading at least at Primer level used appropriate intonation 72% of the time in their oral reading of Primer level text, and were more likely to apply appropriate pause and pitch than to employ contrastive stress. Use of <u>appropriate</u> intonation was not highly correlated with word recognition or comprehension, but moderate negative correlations were found between total number of pauses and these two reading

subskills. Total pause was also negatively related to peer status as a "good reader." Fluent oral reading had a low negative or negligible relationship with classroom practice time, and a non-significant relationship with home practice time. Level of fluency was not related to age of child when parent first began reading to the child, nor was use of appropriate intonation related to amount of time the parent spent reading to the child. The six independent variables, functioning jointly, accounted for only a small percentage of the variance in oral reading fluency scores. With increased scoring reliability, a measurement of oral reading fluency may have a useful place in the field of reading research.

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Finally, I wish to express my appreciation to Professor Byron H. VanRoekel, who has provided guidance as an advisor, has shared his insights as a teacher of reading, and has taught by example how to search for a more complete understanding of the reading process.

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CHAPTER 1

PURPOSE OF THE STUDY

Considerable attention is currently being given to the nature of the relationship between reading and spoken language. Both are assumed to be communication processes, but the application of specific speech structure phenomenon to the reading process is just beginning to be investigated. For the educator, this means looking at the way in which the child brings to the reading task a vast experience with the world and with spoken language: the way in which the child applies phonological, syntactic and semantic information to get a meaningful message from printed text. Although the child's language skills are considerably advanced by the time school attendance begins, it is not yet clear the extent to which, or the exact manner in which, these skills influence progress in learning to read. While other researchers are concerned with the operation of syntactic and semantic structure in beginning reading, this study focuses on the so-called "suprasegmental phonemes," the features of intonation. These are features which have an important role in some theories of child language acquisition, but which have

received very little attention in theoretical discussions of reading acquisition.

Listening to the child read aloud is one means of assessing the child's reading performance. In addition to noting errors in the application of reading skills such as the use of phoneme-grapheme correspondences in word recognition, one can also judge the fluency of the reading act. In this study, oral reading fluency is defined as the ability to read text with appropriate intonation patterns; appropriate because they are the patterns used by adults when reading orally. Measuring fluency, therefore, means attending to intonation--the phrasing and the rise and fall of the voice that accompanies the decoding of printed symbols into oral language. Intonation patterns are largely unmarked in text, and, as has been repeatedly demonstrated (Harris & Sipay, 1975; Oakan, Wiener, & Cromer, 1971; Coady & Baldwin, 1977), the application of appropriate intonation is not automatically forthcoming for elementary school children. Reading with appropriate intonation seems to depend on some internal processing: a certain level of awareness and organizational sophistication seems necessary in order to reproduce a string of isolated words in a manner that suggests how the message might sound in oral language. One might speculate that the child who reads with appropriate intonation is the one who has grasped the idea of reading as a communication process.

In the early elementary classroom, oral reading fluency may be perceived, at least informally, as an important performance objective. Teachers of reading have often admonished their pupils to "read with expression" (Gibson & Levin, 1975, p. 105); in other words to utilize the stress and pitch variations of oral language. Many currently popular classroom teaching techniques (Cunningham, 1979), such as reading along with recorded books, repeated reading of one passage, and the impress method (having the teacher read along with the student), may also be viewed as strategies which promote expressive reading. In each of these approaches, the emphasis is on getting the child to use his "language sense"; to help him see that written text is rendered orally with the intonation contours of spoken English. Fluent oral reading, however, is virtually ignored in most basal reading programs (Coady & Baldwin, 1977), and a survey by this author of current texts on the teaching of reading (Harris & Sipay, 1975; Moffett & Wagner, 1976; Duffy & Sherman, 1977) yields further evidence that teachers receive little information about intonation features and few suggestions for fostering the use of appropriate intonational patterns. It appears then, that fluent oral reading is viewed as a desirable reading skill, but receives little formal recognition.

It was the purpose of this study to investigate the phenomenon of fluent oral reading among children in the beginning stages of reading instruction. In addition to examining correlations between fluency and other reading subskills, the

study was designed to note the relationship between fluency and classroom oral reading time-on-task, peer evaluations, experience listening to parents reading, and practicing reading in the home. The study was an attempt to see to what extent these variables are correlated with fluent oral reading.

The intonation features of oral language (pause, pitch and stress) have been defined and quantified by linguists, and many studies exist in which linguists describe the use of these features by infants and young children. On the other hand, very few researchers have actually analyzed intonation patterns in the oral reading performance of children. There is some early research evidence that use of appropriate intonation features is related to skill in comprehending reading material (Means, 1969). Other researchers (Ahlvers, 1970; Hantman, 1970; Martin & Meltzer, 1976; Ehri, 1976) have used a variety of techniques to "teach" intonation skill in an attempt to improve comprehension, but the results have been generally disappointing. A recent study by Clay and Imlach (1977), however, supports a hypothesis that good and poor readers have characteristically different intonation patterns when reading aloud. Thus, the research suggests that the ability to read with appropriate intonation is an indication that the child is reading at the phrase, sentence, and intersentence level, engaging in reading to get the intended message, but the research also illustrates how little we know about measuring this ability and the dearth of

our knowledge about how and when this ability develops in young children.

The research previously noted appears to have a number of shortcomings, particularly in terms of measurement procedures: no "test" of fluency has been developed, and linguistic descriptions have failed to yield useful scores for comparison purposes. Also, word recognition ability may have been confounded with fluency in some of the studies because the texts used were at various levels of reading difficulty. Where fluency has been correlated with comprehension scores, word recognition ability and general world knowledge may both have been confounded with comprehension because of the tests used. Another shortcoming seems to be the lack of a theoretical framework which might help to explain the function of intonation--a speech phenomenon--in the "learning-to-read" process.

Special provisions were included in the present project to alleviate some of these shortcomings. A method of assigning a score to oral reading performance was used that is less technical than full linguistic analysis but which retains the quality of objective measurement of intonation variables. By carefully constructing the prose passage used to measure intonation, and carefully selecting a method of measuring comprehension, the possible confounding with word recognition may have been diminished. Also, by looking at other reading skills, reading behaviors, and perceptions about reading ability, this study has broadened the field of investigation.

The present study attempted to investigate intonation in oral reading within a psycholinguistic framework, an approach which emphasizes the communicative function of reading. The focus of the study was the child who is just beginning to master communication in written form.

The study was suggested by the need to measure fluency when working with Sherman's (1978) proposed model of the four major reading subskills to be checked in the diagnosis of reading difficulties. In this model, fluency is defined as the "overlay of language on single words," and is tested by listening to the child read orally while the examiner notes the use of appropriate intonation and rate of reading. Accordingly, there seemed a need for devising an instrument to give a quantitative estimate of use of appropriate intonation; for a measurement technique that could capture intonation contour appropriateness in a way diagnosticians would find useful. Once fluency can be quantified, one can turn to the study of the relationship between fluency and other reading skills.

Broadly stated, the question addressed in this study was: for children in the beginning stages of reading instruction, what is the nature of the relationship between appropriate use of intonation (pause, pitch, and stress) in oral reading and six potentially related variables (word recognition skill, comprehension skill, peer evaluation, classroom practice time, parent-reading-to-child time, and home reading practice)? A better understanding of oral

reading fluency and its relationship to these variables might provide teachers with a basis for selecting teaching techniques and materials that would ensure a balanced developmental reading program, and might help parents plan home activites that potentially enhance reading growth. Four specific questions were formulated for study.

The first question was to what extent is oral fluency, measured in terms of appropriate intonation, a unique reading subskill? That is to say, to what extent does fluency have low correlations with word recognition ability and with comprehension ability? Harris and Sipay (1975, pp. 199-200) suggest that reading subskills may develop somewhat independently, and that the relationship between these skills is not clearly established. These authors note that fluency does not automatically improve as word recognition skills increase: one can observe readers who can decode unfamiliar words but who continue to pause after each word as though reading a shopping list, a deficiency known as "word-by-word" reading. On the other hand, one may find a fluent-sounding reader who is quite inaccurate in word recognition. Similarly, although word-by-word reading may interfere with comprehension for some, other readers, particularly older students, may understand and recall material even though their oral reading lacks evidence of fluency. By correlating intonation measures with measures of word recognition and comprehension, one may be able to determine the relative independence of the fluency operation.

The second question dealt with the relationship between the child's oral reading performance and the impression of reading ability level formed by his listeners: to what extent does the child's ability to read fluently influence peer evaluation of that child's reading ability at the beginning stages of reading acquisition? It may be that a first grade child who can read a story aloud using natural language patterns will be judged by peers as a "good reader." These evaluations, in turn, may influence the child's attitudes toward reading and might color that individual's view of himself as a reader. A peer status evaluation was included in this study to probe this relationship between fluency and perceived reading ability level. The results of the group status questionnaire were intended to yield information about the degree to which peer evaluations of high reading ability are correlated with fluent oral rendering of prose material.

The third question concerned the relationship between fluency and time spent on oral reading in the primary classroom: is the fluent reader simply the one who has the most opportunity to practice oral reading in the classroom? Because of the importance of time-on-task, a teacher questionnaire was included to determine the amount of time each child spent on oral reading activities.

Finally, the writer looked at possible precursors of oral reading fluency: are parental influences such as reading to the child and listening to the child read highly correlated with expressive oral reading behavior? Also, because

information on current home reading behaviors may not reveal the extent of parental influence, a question appeared in the questionnaire about the age of the child when the parent began reading aloud.

An interest in the appropriate use of intonation features in the reading act rests on the theoretical assumption that reading is a communicative process. The assumption is made that the reader who recognizes reading as communication will, when reading orally, try to convey the perceived message with pause, pitch, and stress similar to that which he would use if conveying this message in conversation. A communication model of reading and a review of the literature concerned with fluent oral reading by elementary age children are presented in Chapter 2. Although many of the other variables included in this study have not previously been linked with oral fluency, some pertinent research on each variable is also included. A detailed description of the methods and measurements employed in this study is given in Chapter 3.

CHAPTER 2

THEORY AND SUPPORTIVE RESEARCH

Five major areas of theory and research seem pertinent to the questions raised in this investigation. First, because the investigation deals with a linguistic phenomenon in a learning-to-read situation, theoretical statements concerning the language-reading relationship are reviewed. Secondly, both theoretical and research attempts to look at oral reading fluency are considered, especially as they speak to the question of how fluency may be related to other reading subskills: namely, word recognition and comprehension. Particular attention is given to techniques for measuring fluency used in previous research. Another variable under consideration is the relationship between fluent reading ability and peer evaluation as a "good reader." To see how such an evaluation might, in turn, influence a child's progress, studies on the influence of affective factors are reviewed in a third section. A fourth area of interest consists of studies which demonstrate the importance of time-on-task, since one of the variables which might affect fluent reading would be allotted classroom practice time. And, lastly, some studies on the effects of reading experiences in the

home are reviewed to see to what extent such activities are thought to contribute to the acquisition of reading skills.

Theoretical Treatment of the Language-Reading Relationship

Reading has been defined by Ruddell as "a complex psycholinguistic behavior which consists of decoding written language units, processing the resulting language counterparts through structural and semantic dimensions, and interpreting the deep structure data relative to an individual's established objectives" (Ruddell, 1976, p. 452). In his attempt to set forth a Systems of Communication Model of Reading, Ruddell suggested that similar systems are involved in the encoding and production of speech or writing as are involved in the decoding and comprehension of listening or reading. And, although speech-listening and writing-reading are accessed through different perceptual systems, both utilize the same communication components: the morphemic system, short-term and long-term memory, syntactic and semantic structural analyses, affective mobilizers and cognitive strategies. Thus Ruddell provides a broad theoretical basis for the underlying communicative relationship of reading to oral language.

There appears to be some controversy about the function an oral rendering plays in the communication process, with some writers stating that the child needs to put the printed message into the familiar speech code before the deep

structure can be accessed, and other writers stating that comprehension takes place before the oral output.

When discussing the relationship between speech and reading, Conrad (1972) approached reading as a transduction problem where a visual input is transformed into a speech-motor output when we read aloud, and possibly also when we read silently to ourselves. He called attention to the task of short-term memory, which can hold onto one or more words, while considering the related implication of subsequent words or ideas, and speculated that we use a speech code in reading because it best sustains the short-term memory processes.

According to Eric Brown (1974), the reader needs to be completely familiar with surface structure complexities and with the lexicon before he can give an acceptable oral rendering, and an acceptable oral rendering is considered a significant linguistic event preliminary to further processing. In Brown's model, comprehension is the final step which may or may not follow a successful oral rendering. For Brown, an acceptable oral rendering indicates that "the child can read the passage--that the translation process is adequate" (Brown, 1974, p. 73). Reading involves a low-level transition to a more general and universal language processing level.

In Goodman's (1976) model, the child, in early stages of reading, is thought to "recode" graphic input into speech (either out loud or internally) and then utilize his oral

output as aural input which he decodes into meaning as he would in any speech act. This "recoding" is not considered "reading." As the reader becomes more proficient, Goodman proposes that the "recoding" is gradually supplanted by direct decoding from print to meaning, although there is evidence that "recoding" may not completely disappear. He also postulates that fluent readers will decode to meaning and then recode the message as oral output rather than getting meaning after recoding as beginners are thought to do. This is similar to the reading model proposed by Smith (1973), in which he suggested that the reader moves from the surface structure of the writing to the deep structure (meaning), and then to a surface structure of spoken language when reading aloud. In such a scheme, there is no room to hypothesize decoding to sound at all.

As can be seen, there is considerable theoretical interest in the relationship between reading and speech. After reviewing recent research on oral language and reading, Groff (1977) concluded that researchers disagree about the command of oral language factors necessary for reading success, and about the role played by oral reading and subvocalization in the development of reading skills.

Writings and Research Dealing with Fluency and with the Relationship Between Fluency and Other Reading Skills

In the present study, fluent oral reading has been defined as the ability to read text with appropriate

intonation patterns; appropriate because they are the patterns used by adults when reading orally. The intonation variables of pause, pitch, and stress were included because they have been discussed and measured by linguists with regard to language acquisition, mature speech, mature oral reading, and language-to-language variation (Lieberman, 1967; Kaplan, 1970). Crystal (1969) defined the prosodic features as "those non-segmental characteristics of speech referable to variations in pitch, loudness, duration and silence" (Crystal, 1969, p. 141). He stated that these features must be defined in terms of an individuals' norms, and that prosodic features are better described auditorily (as perceived by a human listener), rather than accoustically (as measured by technical means such as computerized Fourier analyses). He also discussed the high probability of prosodic co-occurrence in oral language; for example, low pitch is correlated with softness ("piano") and with narrow pitch range. In his discussion of the relationship between intonation and grammatical structure, Crystal cautioned that, although certain intonation patterns occur fairly regularly with given sentence types, it is simplistic to reduce intonation variations to three or four generalized patterns (statements, two types of questions, commands, and exclamations) because of the lack of evidence of correlation and because of the importance of individual variations. Evidence that the prosodic features mark important message-bearing units such as clauses and phrases has recently been cited:

Kleiman (1979) reviewed research studies which suggest that phrase and clause boundaries are marked by pause and by patterns of pitch change, and are reliably cued by peaks in loudness.

Pause is, in a sense, a segmental, working in sequence with segmental phonology. Pause, or time lapse, occurs in speech or oral reading due to biological necessity such as breathing, and due to hesitations. Crystal (1969, p. 166) reviewed the writings of linguists who suggested that, for English read aloud, the frequency and placement of breath pauses is largely a function of the grammatical structure of sentences, but that pauses might also be symptomatic of the amount of information related by the words. Brown and Miron (1971) found 64% of the pause time variance in the oral reading performance of college students to be predictable from syntactic analyses of the message. Both surface structure and deep structure analogue measurements correlated highly with pause time. These authors concluded that "an acceptable oral reading performance indicates an understanding of both deep and surface structure configurations in the material read" (Brown & Miron, 1971, p. 666).

The pitch variable, according to Crystal (1969), can be measured in terms of direction of pitch or range of pitch. The extent of a step of pitch is defined relatively rather than absolutely, and Crystal suggested a general middle, high, low breakdown. Stageberg (1965) described procedures for marking the patterns of pitch and their accompanying

terminals, and gave examples of pitch patterns which usually signal statements, yes-or-no questions, etc. He recommended four pitch levels, with the normal pitch of one's speaking voice, whatever its actual level, designated Level 2. He also described three terminals or methods of closure at terminal junctures. A fading terminal (marked by an arrow pointing down) is characterized by the rapid fadeaway of the voice and by a prolongation of the preceding word with pitch Level 3. It occurs at the end of statement sentences such as, "I'm going home."↓ A rising terminal (marked by an arrow pointing up) is a short, slight rise in pitch from the last level heard, but does not go all the way up to the next level. A rising pitch commonly occurs at the end of an English yes-or-no question such as, "Are you there?"↑ The third terminal is the sustained terminal, indicated by a sustaining of the last-heard pitch, and is marked with a horizontal arrow pointing to the right. It might occur with direct address, as in, "Why are you washing,→ Jane?"↑

The third variable, stress, is an indication of loudness. According to Crystal (1969), tonicity, or stress, usually falls on the last lexical unit in a tone unit, but can be placed at other points by the speaker who wishes to accent something. For example, stress marks a different interpretation in the similar surface structures of, "I thought it would <u>rain</u>" (and it hasn't), compared with, "I <u>thought</u> it would rain" (and it has). The idea of contrastive stress was further explored by Hornby and Hass (1970) and Hornby

(1971). In the first study, 20 children, ages 3-8 to 4-6, were asked to describe pairs of pictures in which only one element of the picture differed in each pair. Tape recordings of these descriptions were scored for contrastive stress, noting the number of times each sentence constituent (subject, verb, object) received contrastive stress. The authors report that the sentence constituents which were assigned contrastive stress were identical in 86% of the cases when judged by two judges. Few constituents received stress in the description of the initial picture, but when a new element was introduced in the second picture, it very frequently received stress. Stress was most prevalent for the subject (80%), less for the verb (56.25%), and still less for the object (43.75%). In a second study, 20 children at each of three age levels (6, 8, 10 years) were asked to produce sentences (to tell the Examiner what he should have said was happening in the selected picture), and these sentences were marked to show which of five constructions children would employ to mark the topic-comment relationship. Stress sentences were by far the most frequent at all ages, although the use of stress declined with age. Two judges, instructed to underline any word that they felt received greater than normal stress, were in agreement 87% of the time. Contrastive stress, then, appears to be a device used frequently by young children to mark the topic of verbal utterances.

Gibson and Levin (1975) have lamented the fact that intonation variables have received much more attention in

speech than in reading. There are, however, a significant number of writers who have "speculated" about the role of intonation in reading acquisition, a few who have actually studied these variables in beginning reading performance, and many practitioners who have written about their efforts to teach intonation features, assuming that such a teaching practice would facilitate the acquisition of other reading skills.

Lefevre (1967) has speculated that appropriate intonation is critical to reading comprehension since intonation patterns integrate sentences and help clarify their meaning. Another writer, commenting on the non-visual aspects of reader-author communication, suggested that for a pupil to derive meaning from print, he must "relate the melody and rhythm of his oral language to the visual language patterns found on the page" (Tovey, 1977, p.9). Printed text, however, provides few cues to the "melody and rhythm" of language. Steiner, Wiener, and Cromer (1971, p. 512) make a similar observation: "speech utilizes patterns of stress, pause, and intonation as essential and primary structure guides . . . graphic language, at least as it's widely taught, offers no equivalent devices for signaling syntactic and certain semantic functions--functions critical to comprehension." Some readers apparently find it difficult to supply the "missing signals" and consequently cannot group words syntactically. Vernon (1977) considers this difficulty to be a major reading deficiency category; a category consisting of children who

have facility in word recognition but are unable to group words into phrases for processing.

Steiner, Wiener, and Cromer are the only writers from those mentioned previously in this section who have attempted to test their assumptions with research. Using fifth grade subjects, these authors identified a group of poor readers as "different"; their problem did not lie in word identification but resulted from the manner in which they organized input. Despite training to identify all words found in the stories they were subsequently asked to read (Oaken, Wiener, & Cromer, 1971), a number of readers continued to treat words as unrelated items, failing to organize words into patterns that would enable them to understand what they read. Yet, when listening to material in which the words were both well identified and well organized, poor readers performed at a level of comprehension comparable to that of good readers. These authors also provided comprehension training (presenting a story summary with synonyms prior to reading) for the poor readers, but they still showed no improvement (Steiner, Wiener, & Cromer, 1971).

A number of recent studies on pause placement, or "parsing," appear to substantiate the importance of word organization for comprehension. Using 22 third graders, Johnson and Johnson (1978) found that the total number of pausal errors differentiated between "good" and "bad" readers ("good" and "bad" being defined in terms of scores on the reading comprehension subtest of the Iowa Test of Basic

Skills). Kleiman (1979) found that a group of below average readers at fourth grade placement (based on comprehension scores on the Stanford Diagnostic Test) marked significantly fewer required breaks in a no-prosody condition than when a spoken version was provided. And, using first grade subjects in a case study approach, Smith (1980) found that retelling scores were high when juncture pause percentages were high. All of these are consistent with the hypothesis that the reader's ability to segment prose into ideational constituents (as reflected by pauses), is related to the reader's competence in comprehending.

In addition to the previous group, six other researchers have conducted studies which look directly at the relationship between intonation features and reading comprehension. Goodman (1964) reported a correlational study involving 100 children in grades 1, 2, and 3. Each child read a paragraph and was rated on "naturalness" in intonation on a scale from 1 to 5, with a rating of 1 meaning natural speech intonation and a rating of 5 meaning "word calling." These ratings were then compared with the number of typed lines of retold story for each child. At first grade level, Goodman found that those with low intonation ratings retold fewer lines, but there was considerable variation among those with ratings of 3 and over. At second and third grade, also, the relationship was not clear. The author attributed this confusion, in part, to the measure of comprehension, noting that children

with better comprehension might be reducing the story to its essence for retelling, thus getting low retelling scores.

For a dissertation study, Means (1969) did a linguistic analysis of the oral reading of 60 third grade subjects. Each child was judged on his use of inappropriate pitch, stress, and pause, and these scores were correlated with comprehension scores for oral and silent reading obtained by using different forms of the Gilmore Oral Reading Test. High negative correlations were found between inappropriate use of pitch, stress, and pause and oral reading comprehension (-.611, -.603, and -.503). Smaller but significant correlations were found between subjects' scores in pitch, stress and terminal juncture and comprehension scores in silent reading (-.528, -.523, -.485). Means also noted that the children were highly consistent: those who used inappropriate pitch also tended to use inappropriate stress and pause. A correlation of .978 was obtained between use of inappropriate pitch and stress, .900 between pitch and pause, and .903 between stress and pause scores. When focusing on comprehension, Stewart (1978) found comprehension scores to be related to a linear combination of reading vocabulary, sensitivity to syntactic violations in oral reading, syntactic maturity in writing, and fluency in oral reading (multiple correlation coefficient of .71, significant at the .0001 level). Only vocabulary and fluency made significant contributions, however, with a partial correlation coefficient of .26 found to exist between reading comprehension (measured

by a standardized reading comprehension test) and fluency in oral reading (measured by judges assessment) when reading vocabulary was controlled.

Clay and Imlach (1971), using a linguistic analysis approach similar to Means (1969), found different intonational patterns in readers categorized as High, High-Middle, Low-Middle, or Low on the basis of an accuracy-plus-speed score. No correlational studies were done: the researchers simply listed median scores on various measures of pause, pitch, and stress for the children in each of the reading level groups. For example, the best readers read 7 words between pauses compared with 1.3 words between pauses for the poor readers, and the latter used the longer pause categories most often. With regard to pitch, the best readers completed a sentence with a fall in pitch but the poorer reader was more likely to use a rising or sustained pitch. The best readers read 4.7 words per stress while the low group used 1.1 stresses per word, as if reading a list. The children involved were 7-year olds (N=103), and the material used for oral reading consisted of four stories graded for difficulty, ranging from "easy" to "sufficiently difficult for the best children to show the full range of their skills" (Clay & Imlach, 1971, p. 134).

Recently, Coady and Baldwin (1977) examined the intonation patterns of 80 children (grades 2 to 5) who read sentences composed from a 36-word lexicon which every student could pronounce correctly on a flash card test. A structural

analysis of intonation was used, with performance criteria being adult normative patterns. The results indicated that the subjects generated appropriate patterns less than 60% of the time in spite of the fact that the words were known. The 18 sentences used were listed in order of difficulty and analyzed to see what cues, or lack of cues, may have accounted for their relative difficulty level. Then children's primers were surveyed, and the authors noted that difficult and potentially confusing sentences were common. (Example: "A dog that can talk?" said Tim.) An important aspect of this study is the authors' attempt to isolate ability to read with appropriate intonation from the ability to recognize words.

And, in a study of oral reading fluency, Aulls (1977) investigated the acquisition stages of fluency. Skilled and less skilled subjects (based on standardized test scores and teacher judgement) in grades 1, 2, and 3 read paragraphs from the Sucher-Allred Oral Reading Test. Seven categories of oral reading behavior were operationally defined, with the lowest category being word-by-word reading and the highest category requiring reading that was consistently in phrase-size units, that preserved external and internal sentence punctuation, and that gave an expressive interpretation of the semantic content. Two judges coded the level of fluency with which each reader read each sentence. Skilled readers obtained higher mean fluency scores than less skilled readers, and it was not until after the third year that the less

skilled readers obtained the pattern displayed in first grade by the good readers. The author concluded that, after two years of practice and instruction, less skilled readers did not change their level of fluency even when reading passages at their independent level (where they knew 97% of the words and comprehended 80% or more of the information needed to answer questions about the passage).

As noted earlier, there appear to be relatively few studies of the oral reading intonation patterns exhibited by elementary school children, and those which exist are difficult to compare. Since the studies varied in type of analysis, age of subject, difficulty level of reading text, and type of comprehension measure used, it is difficult to draw conclusions about the relative importance of fluency for children in the process of learning to read. One major difference in the studies was the method of measuring intonation; the range being from "naturalness" ratings to full linguistic description. The latter approach, by itself, gives no useable "score" which can be used to compare fluency with other reading skills or behaviors, or to compare fluency at one age level with fluency at another age level. The problem of quantifying the fluency operation is of paramount importance since, as can be seen in this literature review, many writers discuss fluency and make assumptions about the value of teaching it, but few have undertaken objective studies of this phenomenon.

Having mentioned writers who have called attention to the importance of studying intonation variables in oral reading, and having reviewed some research studies dealing with these variables, there still remains a body of literature dealing with the teaching of intonation variables to elementary age children in anticipation of improving their reading competency level. Mountain (1971), for example, outlined an instructional program for first graders which included tape recorded lessons designed to teach the use of the comma ("Let's eat, Mother" vs. "Let's eat Mother"), lessons designed to teach the drop in pitch at periods, and lessons designed to help pupils discover stress from context, since stress is not signalled in print. Pival (1968), also, urged the teaching of pitch, stress, and juncture, suggesting that stress be taught in a sequential program beginning as early as first grade so that by fourth grade all children would be able to identify at least three levels of pitch. She also offered specific teaching devices, concluding that a phonics program which didn't include the suprasegmental phonemes was incomplete.

When such direct methods are attempted and evaluated, however, the results are mixed. Ahlvers (1970) implemented a program with 210 first grade children which involved three lessons per week for 10 weeks. When compared to a control group who got regular reading instruction, no significant differences in reading comprehension (as measured by the Gates MacGinitie Comprehension Test) were found, although the

experimental group did improve significantly on an oral reading intonation test. In a different situation, Hantman (1970) identified four children (third and fourth graders) from a learning disabled program who had decoding skills but comprehension deficiencies. Working with these children three times a week (25 minute sessions) for 6 months, she taught the children to mark rising and falling final juncture pitch with arrows, called attention to words that signalled phrases, had the children separate sentences into phrase units, and devised a buzzer and flashing light instrument to practice rhythm patterns such as "— – –" for "good morning." Of the four subjects, one left the program, one showed normal maturation only, and two made notable gains in comprehension. Several intervention studies have utilized technical innovations. Martin and Meltzer (1976) programmed a computer to present sentences on a TV screen with each syllable timed as though it was spoken. Primary school children, exposed to training sessions in "visual rhythm" scored significantly higher than a control group on a test of reading fluency. And, in another unique approach, Ehri (1976) had intonation patterns represented graphically by having words printed in three sizes corresponding to stress-pitch levels, with large spacings to indicate pause points. The group of second and third graders trained to read the intoned print, however, did not outperform groups receiving other treatments.

Less direct methods of promoting fluent reading are currently receiving considerable attention. In a recent review,

Cunningham (1979) discussed four methods for improving "automaticity," the ability to decode words quickly and without thinking about it, and he noted that all four are attempts to allow students to "experience what fluent reading is like before they can read fluently, so they will understand what they are attempting to achieve" (Cunningham, 1979, p. 422). The methods included were (1) the Imitative Method, (2) the Impress Method, (3) Repeated Readings, and (4) Modified Cloze Procedure. Although Cunningham defined fluency in terms of only two components, accuracy of word recognition and reading speed, three of the four methods discussed have been used successfully by teachers concerned with the expressive quality of oral reading as well as just speed and accuracy. The Imitative Approach is essentially the "talking book" approach (Carbo, 1978) where the child follows printed text while listening to a taped version. The Impress Method calls for the teacher and the child to read in unison, with the teacher's voice modeling appropriate phrasing, pitch, and stress (Gibbs & Proctor, 1977). In the Repeated Reading approach, practice is usually done "silently" (Samuels, 1979); but subvocalization may have made this practice similar to an oral reading rehearsal. Such an effect was discovered in a study (Neville, 1968) where first graders were given echoic, oral reading, or silent reading practice sessions before reading a passage silently. There were no significant differences among the groups when subsequently tested on word recognition or comprehension. The author noted that one

reason for lack of differences may have been the lack of truly "silent reading," for, although instructed not to, the children whispered whenever they thought they were unobserved. The above citations are evidence of the concern for pupils who cannot read fluently, and highlight the considerable variety in teaching techniques which have been designed to help children develop the skill of reading printed text in a way that sounds natural to native speakers of the language.

As can be seen in the review, fluency is sometimes studied in terms of its relationship to comprehension (Means, 1969; Hantman, 1970; Clay & Imlach, 1971) and sometimes studied in terms of its relationship to word recognition ability. Some authors (Cunningham, 1979; Samuels, 1979) have emphasized word recognition skill, or the ability to decode "automatically" as a crucial component of fluent reading, while others (Oakan, Wiener, & Cromer, 1971; Vernon, 1977) have suggested that good identification is not a sufficient condition; that ability to organize words according to familiar oral language patterns is essential to getting meaning from text.

The Relationship Between Fluent Reading Ability and a Peer Evaluation as a Good Reader

The influence of status on attitude, and the subsequent influence of attitude on reading achievement has been investigated by many researchers interested in the affective domain. Athey (1976, p. 357), in reviewing the research in this area, noted the importance of the child's self-concept,

especially of one's self-image "as a reader." Other writers have noted that "self-concept may play an important role as an input and output of reading instructional programs" (Lynch & Haase, 1976, p. 198). The influence of status on self-concept was recently studied by Kibby (1977), who demonstrated that status as a reader within a group affects the child's concept of himself as a reader and his attitude toward reading--irrespective of his actual reading ability. Looking at second graders assigned to classrooms on the basis of reading ability, he found that high achievers had a significantly more negative self-concept than low achievers in spite of significantly superior reading facility. He also found that superior readers exhibited negative behaviors when coming to the reading group and during the group time, suggesting the ways in which their attitudes were influencing their behavior in a reading class.

Another writer, Kaczkowski (1977), has paid attention to the role that peers might play in shaping the student's self-concept of himself as a reader. He has proposed an interaction technique in which other members of the reading group make positive statements to every other group member after they read aloud. The purpose is to get the child to relate personal standards to reading competencies. Theoretically, "dissonance" between personal standards and peer statements tend to be resolved by the student accepting the peer opinion that he can read. Thus the student begins to act as a good reader and functions as one.

Because oral reading is a frequent activity in many first grade classrooms, and because it has been demonstrated that first and second graders perceive reading as an "oral" activity (Tovey, 1976, p. 537), skill in this area may be a salient feature in the identification of "good readers" by students. It seems reasonable to suggest that peer identification as a "good reader" might color the child's perception of himself as a reader.

The Relationship Between Fluent Reading and Classroom Reading Time

Recently researchers have become interested in the actual amount of time spent on reading activities in the classroom. Working in a secondary setting, Stallings (1978) compared the behavior of teachers and students in the classes which showed gain in reading achievement with the classes which showed no gain. She found that the high-gain group read aloud twice as often as the no-gain group, and also read silently from their workbooks more than the no-gain group. The no-gain groups spent more time in discussions, listening to the teacher talk, and performing drill and practice activites.

A recent study of second graders (Yap, 1977) emphasized the importance of reading practice for higher achievement in reading. In an evaluation of the Hawaii English Project, reading activity (measured by number of books read) was found to be highly correlated with reading achievement (measured by the California Reading Test), and, what's more, the influence

of amount of reading activity was found to be stronger than that of IQ. As Yap noted, at a time when educators are searching for ways to improve reading scores, these results "lend support to the common belief that practice makes perfect" (Yap, 1977, p. 28).

Another writer (Griffin, 1977) has pointed out the importance of looking at reading activities that go on throughout the day, apart from the designated reading period. Activities such as reading texts to each other informally, reading trade books and resource books, menus, daily schedules, recipes, labels on science equipment, etc., occurred frequently in the classroom, engaging the children in continuous reading practice. By contrast, the researcher found the overriding concern of the teacher-directed reading activities to be phonics oriented, and noted that a great deal of teaching-learning behaviors would be missed if one confined observations only to those methods and materials employed in the officially designated "reading" events.

The Relationship Between Fluency and Time Spent with Books in the Home

The exact contribution of the parental influence factor on success in initial stages of reading has not been determined but educators assume that the child's potential for success is increased by exposure to books in the home and parental encouragement for practicing newly acquired skills. A study of home environments by Lamme and Omsted (1977) attempted to assess the influence of family reading habits

on reading achievement of first grade children, as measured by a standardized test. In a parent interview, all but 1 of 38 low income families reported either reading aloud to the child or listening to him read at home. Children who reported that someone often read to them at home also watched less T.V., made greater use of the library, more often saw adults read in the home, and had more children's books at home. Yet, the children's attitude, perception, and habit scores were not significantly related to their reading achievement scores on the Comprehensive Test of Basic Skills. There was some indication that children who perceive themselves as poor readers were less involved with books at home, and these particular children tended to score lower on the reading achievement subtest of the Comprehensive Test of Basic Skills ($r. = .36$, $p. < .01$).

In a review of research on the effects of reading aloud to children, McCormick (1977), found evidence that having someone at home read to the child was positively related to success in first grade reading. She also noted that, in almost every case, children who read before entering school were read to by parents or older siblings. In addition to learning that print is meaningful, such early experiences with books can help the child "develop a feel for the patterns, the flow, the nature of written language" (Teale, 1978, p. 927).

Lyons (1972) also proposed exposure to the language of literature as a possible explanation for increased reading

comprehension scores. In a school setting, second grade children who heard literature read aloud scored significantly higher on a comprehension measure than children who participated in oral discussion. The authors concluded that listening to literature exposes the child to the language patterns he must deal with when reading to himself.

No research project has specifically dealt with the influence on fluent oral reading of home exposure to books, but the above research suggests that familiarity with "book language" may facilitate the production of fluent oral reading.

Summary

Ruddell's Systems of Communication Model of Reading suggests that decoding and comprehension in reading are related to, and at least initially dependent upon, the encoding and production systems of oral speech. In Eric Brown's (1974) model, a successful oral rendering is a significant linguistic event, an event necessary before comprehension can occur. In accordance with these theoretical positions, linguists and educators have observed the prosodic variables of speech as they occur in samples of oral reading.

The variables of pause, pitch, and stress appear to mark message components (Kleiman, 1979) and are the intonation variables most often described. Pause, or time lapse, appears to be particularly salient, since both surface structure and deep structure analogue measurements are highly correlated

with pause time (Brown & Miron, 1971). Relative levels of pitch have been described by Crystal (1969) and by Stageberg (1965), who provided examples of common English sentence types with their accompanying pitch pattern. Stress, or loudness, occurs also in regular grammatical positions, but can also be used by the speaker to accent something (Crystal, 1969). This stress variable appears to be frequently used by children (ages 3 to 10) to mark the topic or contrasting element in pairs of pictures which differ in only one regard (Hornby & Hass, 1970; Hornby, 1971).

There are relatively few studies which have examined these three intonation variables in the oral reading of elementary school schildren. Means (1969) did a linguistic analysis of oral reading of 60 third graders and found that the use of inappropriate pitch, stress, and pause was highly correlated with oral reading comprehension (-.611, -.603, and -.503) and moderately correlated with silent reading comprehension (-.528, -.523, and -.485). Means also reported high correlations among the three intonation measures (.978 between use of inappropriate pitch and stress, .900 between pitch and pause, and .903 between stress and pause).

Clay and Imlach (1971) used a similar linguistic analysis approach with second graders. They noted differences in the use of pause, pitch, and stress by readers categorized as High, High-Middle, Low-Middle, or Low on the basis of an accuracy-plus-speed score. Poor readers, for example, were found to pause more frequently, were more likely to complete

a sentence with a rising or sustained pitch, and used stress much more frequently. Coady and Baldwin (1977) examined intonation patterns of children in second to fifth grade. Although the sentences used were composed from a word lexicon which every student could pronounce correctly on a flash card test, subjects generated appropriate patterns less than 60% of the time. Aulls (1977) studied stages of fluency development, and noted that it was not until after the third year that the less skilled readers obtained the intonation patterns displayed in first grade by the good readers. He also observed less skilled second graders who did not change their level of fluency even when reading material in which they could identify 97% of the words and answer 80% of the comprehension questions.

In addition to these studies which examined all three intonation variables, several researchers have concerned themselves only with pause placement, or parsing. This is considered an important indication of the child's ability to organize words into units that aid comprehension, and is currently receiving research attention (Oakan, Wiener, & Cromer, 1971; Johnson & Johnson, 1978; Smith, 1980).

Studies were also reviewed in which children have been taught to use the prosodic variables (Ahlvers, 1970; Hantman, 1970), or in which these variables were mechanically marked for children (Martin & Meltzer, 1976; Ehri, 1976). There were also a number of studies in which less direct methods of promoting fluency were employed, such as the Imitative

Method, the Impress Method, and Repeated Readings (Cunningham, 1979). These treatments were undertaken on the assumption that using appropriate pause, pitch, and stress would improve the child's reading fluency, and presumably, his comprehension, but the results of these approaches have been mixed. And, although some researchers contend that fluent rendering depends heavily on the number of words one recognizes automatically (Samuels, 1979), other research suggests that word recognition ability is not sufficient for a fluent rendition or for comprehension of the intended message (Oakan, Wiener, & Cromer, 1971; Stewart, 1978).

In the present study, an attempt has been made to measure the use of appropriate pause, pitch, and stress, as opposed to the measure of inappropriate intonation used by Means (1969). Pause and pitch were examined at every punctuation mark, as done by Clay & Imlach (1971). A measure of word recognition skill was included, as was a measure of silent reading comprehension, to see how closely these variables are related to the use of appropriate pause, pitch, and stress.

In addition to investigating the relationships among fluency, word recognition, and comprehension, four additional variables were added which current educational reasoning suggested might be related to fluency (peer vote, classroom practice time, parent reading time, and home practice time). No studies could be located in which these variables were directly related to intonation, or to a general assessment

of oral reading fluency. Therefore, selected studies were reviewed dealing with each variable and its relationship to reading ability, broadly defined. Listening to books read at home, for example, has been found to be positively related to success in first grade reading (McCormick, 1977). Yet, Lamme and Omsted (1977) found home reading experiences unrelated to the comprehension scores of first graders. The amount of classroom time devoted to oral reading might also affect scores. Stallings (1978), for example, found that high-gain secondary classrooms read aloud twice as often as the no-gain group. The peer status variable was suggested by writers interested in the affective domain. Athey (1976) called attention to the importance of the child's self-image as a reader, and Lamme and Omsted (1977) found that first grade children who perceived themselves as poor readers tended to score lower on a standardized reading achievement test. There is, then, some support in the literature for the assumption that oral reading fluency might be related to other reading skills, such as word recognition ability and comprehension ability, and to other variables such as peer evaluation, classroom time spent in oral reading, hearing parents reading aloud, and reading aloud to parents in the home.

CHAPTER 3

RESEARCH DESIGN

The concern with fluency evident in the literature and the paucity of research on this variable suggested that an investigation of fluency in the oral reading of children in the beginning stages of learning to read might be a profitable study. This study merely begins the investigation of oral reading fluency and its relationship to other variables: it was undertaken to determine the comparative strength of these relationships, and it is hoped that future studies will probe these relationships in more detail. In this third chapter, the sample and the data gathering instruments will be described, and research procedures will be outlined.

Population

The populaton under consideration consisted of the children enrolled in the first grade classrooms of a mid-western surburban school system. This system has nine elementary buildings, three junior high schools, and two high schools, with a total enrollment of 10,000 pupils. The community is located 25 miles north of a major metropolis and is a rapidly growing community, with numerous subdivisions occupying what was recently farm land. The

socio-economic make-up of the community is largely middle and upper-middle level. Major industries are not located within the district, and many wage-earners commute toward the city. Representation from minority groups is very low.

Sample

The subjects of the study were 106 children enrolled in the first grade in the suburban school system described above. They were selected by cluster and stratified sampling procedures. In an attempt to include a full range of home environment, the nine elementary schools of the school system were characterized as Subdivision Schools, City Schools, or Rural Schools to designate the geographical area served by each. One of the three Subdivision Schools, one of the three City Schools, and one of the three Rural Schools were included in the sample. Within each of these schools, three first grade classrooms participated, yielding nine classroom clusters.

Initially, 12 subjects were selected from each of the 9 classrooms, yielding a sample of 108 children. Each teacher was asked to provide a list of pupils who could read at Primer level or above. The first 12 names heading the list were contacted, and were replaced with the names next in line if unable to participate. (Ten replacements were necessary: five parents denied permission and five parents could not be contacted.) The selection of equal numbers from every classroom was an attempt to control the teacher

extraneous variable, and also allowed for procedural ease in testing.

The tabulation which follows portrays the distribution of subjects in the sample:

	GEOGRAPHIC DESIGNATION		
	Subdivision School	City School	Rural School
Teacher A	12 subjects	12 subjects	12 subjects
Teacher B	12 subjects	12 subjects	12 subjects
Teacher C	12 subjects	12 subjects	12 subjects

(This diagram was for sampling only: it was not used in data analysis.)

All 108 subjects were tested, but results for only 106 subjects were used in data analysis. One of the subjects could not be used because his individualized testing session tape was blank, and a second subject could not be used because, although the parents gave verbal permission for testing, they moved back to India without returning the parent consent form or the parent questionnaire.

Variables

The dependent variable in the study was the ability to read aloud fluently. The independent variables were (1) word recognition skill, (2) silent reading comprehension ability, (3) peer status rating as a reader, (4) amount of time spent reading orally in the classroom, (5) amount of time spent listening to books read aloud in the home, and (6) amount of

time spent reading orally in the home. Of interest was the extent to which each of these six variables is related to the dependent variable.

Possible extraneous variables include IQ, sex, the teacher factor, and socio-economic status of the child. Previous research (Means, 1969) has suggested that sex is not significantly related to reading fluency, and that only a small proportion of the variance in the relationship between oral reading fluency and comprehension is accounted for by Mental Age scores. Accordingly, in the present study, no attempt was made to control sex, and no mental ability scores were included. An attempt was made to control the teacher factor by including nine different classrooms in the study, with equal representation from each. However, to the extent that teachers provided differential opportunities for oral reading, placed differential emphasis on fluent rendering, and allowed differential amounts of time for reading tasks, the teacher factor was not controlled. As described in the discussion of population, the subjects were drawn from a community largely composed of middle and upper-middle income level families, with very low minority enrollment. An attempt was made to tap the full range of socio-economic levels represented within the community, but the generalizability of the results of this study may be limited to suburban communities of similar make-up.

Instrumentation

The dependent and independent variables were measured using the following instruments: three tests (Oral Reading Fluency, Word Recognition, Comprehension Ability) and three questionnaires (Peer Status, Classroom Reading Time, and Reading in the Home). These are described below in detail.

Oral Reading Fluency, the dependent variable, was assessed by the use of a researcher-designed test, referred to throughout as the Oral Reading Fluency Test. The test has two parts: a short story to measure use of pause and pitch, and 12 pairs of cards, each card having a simple picture and a short sentence, to measure use of contrastive stress. The story contains ten sentences (four statements, one "wh" question, two "yes-no" questions, and three short exclamations), and there are seven commas located within sentences (three associated with quoter clauses such as "No," said Jan,"It's . . .," and four designating items in a series). The vocabulary items are words ordinarily found with high frequency in Primer level texts, and, if a subject hesitated more than two seconds, or mispronounced a word, the examiner pronounced that word for the subject. The story is printed in primary-size type on 8½ x 11 paper, and a line drawing of a girl holding a large bag appears on the bottom half of the page. Three xerographic copies were made and each copy laminated for use by the three examiners.

The cards used to measure contrastive stress in oral reading were designed to be similar to those used by Hornby &

Hass (1970) in their study of contrastive stress in children's speech. There were 24, 4 x 6 inch cards, each containing a line drawing of an object or person and a short sentence or phrase. The cards were designed in pairs, with only one element of the picture differing in each picture of the pair. Three pairs differed in adjective used (A red ball/A blue ball), three differed in object with actor remaining the same (The boy has a car/The boy has a truck), three differed in actor with object remaining constant (The boy can hit the ball/The girl can hit the ball), and three differed in action with actor remaining the same (The boy is skating/The boy is not skating). These cards were not presented in the groupings just described, but in a set order of presentation with the 12 pairs presented in the same sequence at each administration. When giving the test, one card of the pair was placed on the table in front of the child and he was instructed to read it. Then the second card was placed beside the first card, allowing for visual comparison, and the child read the second card of the pair. This set was removed from view and the next set presented. The sentences accompanying the pictures are hand printed in large letters at the bottom of the cards. The vocabulary consisted of high frequency words and words readily identifiable from the pictures (Superman/Wonder Woman), but if a child hesitated, the word was pronounced by the examiner. Three identical sets of cards were made by tracing the original set. Copies of these materials appear in the appendix.

The oral fluency test materials were individually administered and responses were recorded on cassette tape for later scoring. The story, the cards, and the Slosson Oral Reading Test were all given in one session, and these three tests were presented in rotated order. The testing session began with a general statement about the purpose of the project ("I want to learn more about how first graders read . . ."), and was followed by a tape recorder desensitization activity in which the child said his name, age, and other comments about himself into the recorder, listened to himself, and then was instructed to read one of the three individually administered tests.

Socring was done by four judges who listened to the tapes and marked responses on two scoring sheets. On one score sheet, the story was reproduced without capitalization or punctuation so that the judge could mark total number of pauses without being visually influenced. Then, referring to a punctuated copy of the story, the judge circled the punctuation points and counted the number of pauses which occurred at punctuation. The number of total pauses was unlimited, but the highest score obtainable on pause-at-punctuation was 21. On the bottom of that first score sheet the 12 contrastive stress sentence pairs were reproduced, and the judge marked each pair "+" or "0" on whether or not the subject stressed the contrastive element in the second sentence of the pair. The highest possible score was 12. The second score sheet was for judging pitch change. A key

appeared at the top of the page, showing expressive adult pitch changes with directional arrows (as suggested by Stageberg, 1965), and the judge marked the subject's pitch changes on the text of the story which appeared again at the bottom of the page. The subject's rendition was compared to the key and a point was given for agreement: possible score = 21. Three of the scores (pause, pitch, and stress) were added together to form an Oral Reading Fluency score, a score based on the use of appropriate intonation patterns. However, all four scores (total pause, pause, pitch, and stress) were also used separately in data analysis.

Word Recognition Ability was measured using the Slosson Oral Reading Test (Slosson Educational Publications, Inc.). A test-retest reliability of .99 is reported for this test. The test consists of graded word lists of 20 words each, from Primer level to High School level. The child was handed a laminated copy of the test to read, and scoring was done on additional forms of the Slosson test. Each subject was asked to start reading words at the Primer level, and was encouraged to pronounce only words readily recognized rather than attempting phonetic or structural analysis. The total number of words read correctly was taken as the raw score for word recognition.

Silent Reading Comprehension Ability was measured using the Cooperative Primary Test, Form 12A (Educational Testing Service, 1967). This instrument was designed to be a test of the ability to read words, sentences, paragraphs, and longer

passages with understanding. The test consists of 50 items, with a suggested administration time of 35 minutes. The authors report a KR_{20} coefficient of internal consistency for Spring administration in Grade 1 of .87, with a standard error of measurement of 3.35. Tests were administered in small groups of six, and were scored by hand. Raw scores (number correct) were used as the score for silent reading comprehension (highest possible score being 50).

Peer Status as a "Good Reader" was assessed in the following way: the child was read a list of classmates involved in the study (11 children), and was asked to name the three "best readers" on the list. The number of votes each child received from peers was that individual's score for Peer Vote. (If a child was named by everyone in the peer group, it was possible to get a score of 11.) The names of each child's three "best friends" (from the list of classmates) were also elicited and recorded on the peer status questionnaire form. This was used as a check to see whether the children were actually nominating "good readers," or simply naming their friends.

Classroom Oral Reading Time was also assessed by a questionnaire. Each teacher was asked to keep a record for each subject for one week, recording the time the subject spent reading orally each day in minutes. From these questionnaires, a minutes-per-week score for each subject was calculated which became the child's score for Classroom Practice Time.

Reading in the Home was assessed by a parent questionnaire, suggested by an instrument designed by Chomsky (1972) to study the relationship between exposure to written language and the rate of linguistic development. The parent was first asked how many times a week the child had books read aloud to him, and how long the reading sessions usually lasted. These figures were used to calculate a minutes-per-week score for each subject which was that individual's score for Parent Reading Time.

The parent was then asked to report how old the subject was when the parent began reading orally to the child. This latter score was not used to calculate a correlation, but simply plotted to show the relationship between level of fluency score (High, Middle, Low) and age when parent began reading. A graph was developed showing the frequency of individuals in each cell of a chart which had Oral Fluency Level on the vertical axis and Age of Child When Parent Began to Read on the horizontal axis.

Thirdly, the parent was asked to report how many minutes per week the subject read aloud to the parent. This became the child's score for Home Practice Time.

Copies of the three questionnaires used in the study appear in Appendix A.

Research Questions

The study was undertaken to investigate the nature of the relationship between oral reading fluency and six other

variables, and to assess the relative strength of those relationships. The four research questions, posed in chapter 1, are:

1. To what extent is oral reading fluency a unique reading subskill: to what extent do measures of fluency have low correlations with measures of word recognition ability and with measures of comprehension ability?
2. To what extent is the child's ability to read fluently related to peer evaluation of that child as a "good reader"?
3. To what extent is fluency related to time spent practicing oral reading in the classroom?
4. To what extent is fluency related to how much time the parent spends reading aloud to the child, to the age at which the parent began reading to the child, and to the time the child spends practicing oral reading in the home?

Previous research suggests that a positive relationship may exist between the independent variables and the dependent variable, but only in the case of oral reading fluency and reading comprehension ability has the relationship actually been studied. Therefore, the research questions are stated in nondirectional terms.

When testing the correlations for significance, the null hypothesis and alternative hypothesis being tested in this study are:

Ho: The population correlation coefficient is equal to zero.

H_1: The population correlation coefficient is non-zero.

Design

The investigation was essentially a correlational study, designed to assess the relationships between oral reading fluency and other reading skills and behaviors. Because the independent variables were assumed to be correlated with each other, a multiple regression analysis was performed to evaluate the relative strength of the relationships between oral reading fluency and the six other variables included in the study.

Analysis of Data

After all tests were scored and questionnaire responses tabulated, Pearson product-moment correlation coefficients were calculated to determine the extent of the relationship between the dependent variables (the measures of fluency) and each independent variable, and between each possible pair of independent variables. The assumption when utilizing correlation coefficients is that the two variables involved have a bivariate normal distribution. The test statistic is t, and the sampling distribution is considered a t distribution with degrees of freedom = n-2. Calculations were done at the Michigan State University Computer Center using an SPSS program (Statistical Package for the Social Studies),

with program writing assistance from the Office of Research Consultants and the SPSS Consultant.

Because the independent variables are all assumed to be related to reading, and therefore assumed to correlate with each other to a certain degree, a multiple regression analysis was undertaken involving the independent variables with each measure of the dependent variable. The regression equations and multiple correlation coefficients were also computed using an SPSS program, using an F statistic with k-1, N-k degrees of freedom. The level of confidence for all inferential tests was set at .05.

A double cross validation study was done to evaluate the usefulness of the obtained Beta weights.

Research Schedule

The research study proceeded according to the schedule outlined below.

A. Preparation for the study

1. In September 1979, permission was obtained from the Assistant Superintendent of the school district to use subjects from the schools in the research project. The nine schools were categorized as Subdivision, City, or Rural, and one of each category, having three first grade sections, was targeted for the project.
2. In March 1980, principals were contacted and meetings were set up with the principals and

teachers concerned to discuss the purpose of the study and to schedule testing.

3. The teachers provided a list of subjects with addresses and phone numbers.
4. The three research assistants met for 4 hours of instruction in testing procedures.
5. A professional children's librarian made a recording of the Oral Fluency Test paragraph which was used as a resource in establishing a norm to which student renderings could be compared.

B. Conducting the study

6. In March, the parent permission slips and questionnaires were mailed. A stamped, addressed envelope was included. After 1 week, return was approximately 50%.
7. Follow-up phone calls were made to answer questions about the research and to enlist participation. When participation was denied (five instances) and when the parents could not be contacted either by mail or by phone (five instances), another subject from the same classroom was contacted.
8. If verbal consent was given but the written permission and questionnaire were not returned in 1 week, a second letter and second copy of

the forms were mailed to the parents. After 4 weeks, 107 were returned.

9. During the last 2 weeks of April, subjects, in the school building they attended, met individually with an examiner to take the individualized tests (a 20 minute session), and met in groups of six to take the comprehension test (a 45 minute session).

10. During the last week in April teachers were asked to keep a daily record of time each subject read orally on the "Classroom Reading Time" questionnaire.

C. Scoring and data analysis

11. All tests were scored according to keys, and all questionnaire responses recorded, giving each subject a score on each of the six independent variables.

12. Three judges met in two 3-hour sessions with the author to practice scoring the components of the Oral Reading Fluency Test.

13. Each of four judges scored 27 tapes for pause, pitch, and stress. Sixteen tapes were selected by chance to be scored by all four judges to establish inter-rater reliability. Each judge also re-scored ten of her own tapes (tapes chosen by reaching into the box and drawing

out a tape), to establish time-lapse stability as a rater.

14. Because of seeming inconsistencies in the four-judge scorings, all 106 tapes were scored by the author, and 32 tapes were re-scored after 1 week to establish one-judge rating stability.
15. Pearson product-moment correlations were computed between five measures of oral reading fluency and the six independent variables.
16. A correlation-inter-correlation matrix was developed, and multiple regression analysis was undertaken to examine the comparative strength of the relationships generated.
17. A double-cross validation study was made to check on the accuracy of the regression equations generated in the multiple regression analysis.

Summary

This study was undertaken to investigate the relationship between oral reading fluency and six independent variables: word recognition, comprehension, peer status as a reader, classroom reading time, parent time spent reading to child, and child time spent reading orally at home. The final sample consisted of 106 first grade children from a midwestern suburban school system. Initially 12 children came from each of nine classrooms located in three schools which represented different home environments. The entire

community, however, was middle to upper-middle socio-economic level, and minority population was very low. The students from each classroom were those recommended by the teachers as children who could read at Primer level or above.

Measuring instruments used included three tests and three questionnaires. Oral reading fluency was assessed by a researcher-designed instrument consisting of a story to assess use of appropriate pause and pitch, and a set of contrasting picture-plus-sentence cards to test use of contrastive stress. Word recognition was measured using the Slosson Oral Reading Test, and the Cooperative Primary Test was used to assess comprehension. Peer status rating was measured with a student questionnaire and classroom oral reading time by a teacher questionnaire. A parent questionnaire provided data on the two home reading variables.

The analysis consisted of calculating Pearson product-moment correlation coefficients for the dependent variable measures with the six independent variables, and performing a multiple regression analysis. The research question asked was to what extent do non-zero correlations exist between the variables.

CHAPTER 4

ANALYSIS OF RESULTS

Data were collected and recorded according to the schedule outlined in the previous chapter. It immediately became apparent that scoring the variables of pause, pitch and stress was much more subjective than anticipated, and reliability of the judges surfaced as a major concern. Inter-rater reliability data was, therefore, included in the initial section of this chapter so that the reader may have this information prior to considering the results of the four research questions. A presentation of the results and the reliability among the judges of the Oral Reading Fluency Test is followed by a section on each of the four research questions: (1) To what extent is oral reading fluency a unique reading subskill? (2) To what extent does the child's ability to read fluently appear to be related to peer evaluation of that child as a "good reader"? (3) To what extent is fluency related to time spent on oral reading in the classroom? (4) To what extent is fluency related to reading-at-home factors? In each section, two sets of data will be presented, one set based on scores assigned

originally by the four judges, and a second set based on scores assigned by one judge; namely, the author in this study.

The Test of Oral Reading Fluency: Analysis of Results

Five measures of oral reading fluency were obtained: pause-at-punctuation (Pause), pitch-at-punctuation (Pitch), stress on contrastive elements (Stress), a composite of these first three scores (Oral Reading Fluency or ORF), and a count of the total number of pauses made in reading the story (T-Pause). The first three and their composite represent appropriate intonation, the fifth (T-Pause), represents nonfluent intonation patterns.

Results of the fluency test for the 106 first grade readers are presented in Tables 0:1 and 0:2. The percent of appropriate intonation is the total number of correct

Table 0:1.--Oral Reading Fluency Statistics: Four Judge Data

	Pause	Pitch	Stress	ORF	T-Pause
Mean	16.425	15.585	6.717	38.726	26.217
Std Dev.	2.526	3.380	3.161	6.102	6.905
Score Range	8-21	6-21	0-12	19-49	12-54
Possible Points	21	21	12	54	---
% of Appropriate Intonation	78	74	56	72	---

Table 0:2.--Oral Reading Fluency Statistics: One Judge Data

	Pause	Pitch	Stress	ORF	T-Pause
Mean	16.160	17.123	5.415	38.698	27.755
Std Dev.	2.130	1.717	2.722	4.308	6.274
Score Range	11-21	12-21	0-12	29-48	13-54
Possible Points	21	21	12	54	---
% of Appropriate Intonation	77	81	45	72	---

responses divided by the total number of possible correct responses.

A further analysis of responses on the contrastive stress test was carried out so that results might be compared with results obtained in oral language research on the production of contrastive stress. There were five sentence constituents in which stress occurred: subject, verb, object, adjective and adverb ("is skating"/"is not skating"). The number of correct responses was tabulated for each category and results are reported in percentages (Tables 0:3 and 0:4).

Scoring difficulties encountered by the four judges suggested that an alternative scoring should be undertaken. As originally proposed, the four judges met together for training sessions where scoring criteria were discussed and tapes played for practice in marking pause, pitch and stress. In the sessions, each judge scored each tape

Table 0:3.--Analysis of Contrastive Stress Scores: Stress in Sentence Constituents: Four Judge Data

Subject (3 items)	Verb (2 items)	Object (3 items)	Adjective (3 items)	Adverb (1 item)
45%	62%	57%	54%	84%

Table 0:4.--Analysis of Contrastive Stress Scores: Stress in Sentence Constituents: One Judge Data

Subject (3 items)	Verb (2 items)	Object (3 items)	Adjective (3 items)	Adverb (1 item)
45%	40%	41%	40%	84%

independently, and then the assigned scores were discussed. With practice, the judges appeared to come closer together in scores assigned, but differences among judges were still evident. For example, one judge heard pitch rise when another did not, and one judge's interpretation of a pause differed from another's; yet, each felt confident of what she had heard, and could not "hear" what the other heard. Also, all judges reported a heightened awareness of cues the more tapes they scored, resulting in subtle criterion changes over a 2 or 3 hour scoring session. Because of these scoring difficulties, all tapes were judged by the author to see if results would differ had the readings been rated by one judge rather than four. (Three weeks had

elapsed since the author had participated in the original scorings.)

One measure of fluency, Total Pause, was not included in the following comparisons of the four judge scores with the one judge scores. There was initial indecision about the scoring of Total Pause, and not all of the judges scored their protocols for this measure of fluency during the first 2 weeks of scoring. In the process of re-scoring for establishing reliability, many of the missing Total Pause scores were filled in. The 29 remaining missing Total Pause scores were assigned by the author (Judge 3) so that the correlations could be calculated between the five fluency variables and the six independent variables for all 106 subjects. Total Pause scores assigned in this manner, however, could not be used in the comparison of four judge scores with one judge scores (Tables 0:5 and 0:6), nor could they be used in establishing inter-rater reliability for the four judges (Tables 0:7, 0:8, and 0:9).

Differences between the four judge scores and the one judge scores are reported in Table 0:5. Pearson correlation coefficients were calculated to show the relationships of the scores in the two judging situations, and a T-test was run to test for significant differences in means. For the correlations, the hypothesis to be tested is:

Ho: The population correlation coefficient is equal to zero.

Table 0:5.--Correlation Between the Four Judge Scores and the One Judge Scores

Pause	Pitch	Stress	ORF
.614*	.326*	.759*	.656*

N=106

*Significant at the .05 level

H_1: The population correlation coefficient is not equal to zero.

Although the null hypothesis can be rejected for all correlations tested, the relationship between scores assigned for the Pitch variable (.326) was not as strong as the correlations between the four judge scores and the one judge scores for Pause (.614), Stress (.759), and Oral Reading Fluency (.656).

When testing for significant differences in means, the hypothesis being investigated is:

Ho: There is no difference between the scores assigned by four judges and the scores assigned by one judge.

H_1: There is a difference between the scores assigned by four judges and the scores assigned by one judge.

The null hypothesis cannot be rejected for Pause and for Oral Reading Fluency, the composite. For the Pitch variable, the one judge mean was 1.54 points higher than the four judge mean: this is significant at the .05 level

and the null hypothesis can be rejected. For the Stress variable, the one judge mean was 1.30 points lower, a difference significant at the .05 level allowing the null hypothesis to be rejected. In summary, the results of the T-test indicate that Pitch and Stress scores differed significantly (when comparing team and single-judge scores), but Pause and Oral Reading Fluency did not (see Table 0:6).

Two measures of inter-rater reliability were included in the research design: a measure of inter-rater reliability among the four judges, and a measure of each judge's consistency after a time lapse. This latter measure was also applied to the results obtained in one-judge scoring. Reported in Tables 0:7, 0:8, and 0:9 are the alpha coefficients and Pearson correlation coefficients computed to assess inter-rater reliabilities. When testing for significance, in each instance, the null hypothesis states that the population correlation is zero, and the alternative hypothesis states that the population correlation is non-zero.

Inter-Rater Reliability of the Four Judges

In the original four judge scoring, inter-rater reliability of the four judges was established by drawing out four tapes of each judge and circulating those until 16 tapes had been scored by all four judges. Crombach's coefficient alpha was used to compute the inter-rater reliabilities for the four judges on four intonation measures:

Table 0:6.--Results of T-Test for Differences in Means Between the Four Judge Scores and the One Judge Scores

	Mean	Std. D.	S.E.	Difference Mean	Difference Std. D.	Difference S.E.
Pause						
Four Judge Scores	16.42	2.53	.25	.26	2.08	.20
One Judge Scores	16.16	2.13	.21			
Pitch						
Four Judge Scores	15.58	3.38	.33	-1.54*	3.26	.32
One Judge Scores	17.12	1.72	.17			
Stress						
Four Judge Scores	6.72	3.16	.31	1.30*	2.09	.20
One Judge Scores	5.41	2.72	.25			
Oral Reading Fluency (Pause + Pitch + Stress)						
Four Judge Scores	38.73	6.10	.59	.03	4.62	.45
One Judge Scores	38.70	4.31	.42			

*Significant at the .05 level, 2-tail probability with degrees of freedom = 105.

Pause, Pitch, Stress, and the composite, Oral Reading Fluency (Table 0:7). In an attempt to determine the extent to which individual judges were influencing the reliability coefficients, inter-rater reliabilities were also computed for each possible set of three judges (Table 0:8). Inter-rater reliability for the four judges ranged from .639 for Pitch to .900 for Stress, but the reliability would have been higher on three of the four measures if Judge 1 had been deleted.

Table 0:7.--Inter-Rater Reliability Coefficients for Four Judges

	Pause	Pitch	Stress	Oral Reading Fluency
Alpha:	.867	.639	.900	.858

N = 16

Rating Consistency Over Time

The reliability of each individual judge over time was established by having each judge re-score 10 of the 27 tapes previously scored. One to three weeks elapsed between ratings. Pearson correlation coefficients were computed for each judge for the scoring and re-scoring of four intonation measures (Table 0:9). Rating consistency coefficients for Judge 3 and Judge 4 were significant for all four measures, but Judge 1 and Judge 2 had significant consistency coefficients for only two of the four measures.

Table 0:8.--Coefficients when Each of the Four Judges is Deleted

	Pause	Pitch	Stress	Oral Reading Fluency
Alpha if Judge 1 Deleted	.917	.797	.846	.880
Alpha if Judge 2 Deleted	.800	.548	.884	.775
Alpha if Judge 3 Deleted	.803	.554	.870	.814
Alpha if Judge 4 Deleted	.795	.434	.880	.816

N = 16

Table 0:9.--Rating Consistency Over Time: Four Judges

	Pause	Pitch	Stress	Oral Reading Fluency
Judge 1	.379	.258	.953*	.715*
Judge 2	.610	.792*	.587	.714*
Judge 3	.912*	.907*	.937*	.949*
Judge 4	.815*	.935*	.970*	.974*

N = 10

*Significant at the .05 level

To establish the reliability of scoring when all 106 tapes were scored by one person, 32 tapes were selected at random for rescoring 1 to 2 weeks after the initial scoring. Pearson correlation coefficients for five intonation measures are given in Table 0:10. The rating consistency coefficients for the one judge were significant for all four measures.

Table 0:10.--Rating Consistency Over Time: One Judge

	Pause	Pitch	Stress	ORF	T-Pause
Author-Judge	.893*	.725*	.835*	.815*	.819*

N = 32

*Significant at the .05 level

In summary, the measures of inter-rater reliability yielded scoring agreement among the four judges ranging from .639 for Pitch scores to .900 for Stress scores. On three of four variables scored, deleting Judge 1 would have resulted in higher inter-rater reliability. When time lapse consistency was measured for each of the judges separately, correlations ranged from .258 (Judge 1 on the scoring of Pitch) to .974 (Judge 4 on the composite Oral Reading Fluency score). Time lapse consistency for the one judge scoring ranged from .725 (Pitch) to .893 (Pause). The reader is asked to keep in mind these scoring reliabilities when examining the main body of data presented below.

Each of the four research questions will be examined in turn.

Research Question 1: To what extent is oral reading fluency a unique subskill?

The first question was the extent to which oral reading fluency is a subskill not highly correlated with other recognized subskills such as word recognition and comprehension. Pearson correlation coefficients are reported for five measures of fluency with scores on the Slosson Word Recognition Test and scores on the Cooperative Primary Test (a measure of comprehension). Following that, a matrix is presented, giving inter-correlations between all seven variables. The hypothesis to be tested:

Ho: The population correlation coefficient is equal to zero.

H_1: The population correlation coefficient is not equal to zero.

Table 1:1.--The Relationship Between the Fluency Variables and Other Reading Subskills: Four Judge Data

	Pause	Pitch	Stress	ORF	T-Pause
Word Recognition	-.017	.223*	.149	.194*	-.573*
Comprehension	.129	.173	.016	.158	-.343*

N = 106

*Significant at .05 level

The decision is to reject the null hypothesis for four of the relationships tested: the correlation between Word Recognition and Pitch, between Word Recognition and Oral Reading Fluency, between Word Recognition and Total Pause, and between Comprehension and Total Pause. It appears that the relationships between the use of appropriate intonation features and other reading subskills are low or nonexistent, but that the number of total pauses made by the reader shows a moderate negative relationship to high scores on word recognition (-.573) and comprehension (-.343).

Table 1:2.--The Inter-Correlations Among Reading Variables: Four Judge Data

	Pause	Pitch	Stress	ORF	T-Pause	W. Recog.	Comp.
Pause	---						
Pitch	.348*	---					
Stress	.144	.056	---				
ORF	.681*	.727*	.609*	---			
T-Pause	.209*	-.073	-.182	-.048	---		
W. Recog.	-.017	.223*	.149	.194*	-.573*	---	
Comp.	.129	.173	.016	.158	-.343*	.682*	---

N = 106

*Significant at .05 level

The decision to reject the null hypothesis can be made for ten of the inter-correlations: four were identified in the preceding table, three are between the composite Oral

Reading Fluency score and its component parts, and two of the significant correlations are between individual measures of fluency (Pause with Pitch, and Pause with Total Pause). The two reading measures, Word Recognition and Comprehension, were also significantly related. The strongest relationships were between Word Recognition and Comprehension (.682) and between Oral Reading Fluency and its components (.681, .727, .609), while the significant inter-correlations between individual measures of fluency were smaller (.348, .209).

Table 1:3.--The Relationship Between the Fluency Variables and Other Reading Subskills: One Judge Data

	Pause	Pitch	Stress	ORF	T-Pause
Word Recognition	-.060	.063	.109	.064	-.609*
Comprehension	.175	.104	.016	.138	-.427*

N = 106

*Significant at .05 level

The decision to reject the null hypothesis is made for two of the relationships tested: the correlations between Word Recognition and Total Pause, and between Comprehension and Total Pause. These results are similar to results given for the four judge data (Table 1:1). High Total Pause scores, an indication of poor fluency, were negatively correlated with Word Recognition (-.609) and with Comprehension (-.427). The use of appropriate Pause, Pitch, and

Stress was not significantly related to the other reading subskills.

Table 1:4.--The Inter-Correlations Among Reading Variables: One Judge Data

	Pause	Pitch	Stress	ORF	T-Pause	W. Recog.	Comp.
Pause	---						
Pitch	.203*	---					
Stress	.072	.144	---				
ORF	.621*	.590*	.725*	---			
T-Pause	.424*	-.111	-.116	.092	---		
W. Recog.	-.060	.063	.109	.064	-.609*	---	
Comp.	.175	.104	.016	.138	-.427*	.682*	---

N = 106

*Significant at .05 level

The decision to reject the null hypothesis can be made for eight of the inter-correlations: two were identified in the preceding table, three exist between the composite Oral Reading Fluency score and its components, and two of the fluency variables are significantly correlated with each other (Pause with Total Pause, and Pause with Pitch). The reading subskills (Word Recognition and Comprehension) were also significantly correlated. The one judge data were consistent with the four judge inter-correlation data (Table 1:2). The significant inter-correlations among intonation measures were not strong (.424, .203) compared

with the correlations between Word Recognition and Comprehension (.682) and between Oral Reading Fluency and its components (.621, .590, .725).

Five step-wise multiple regression analyses were done, using each of the five intonation measures as dependent variables with all six of the independent variables entered into each analysis. The multiple correlation coefficients and equations are presented in Tables 5:1 and 5:2.

Word Recognition and Comprehension scores were two of the six independent variables entered into the prediction equations. Tables 1:5 and 1:6 give the position in each regression equation of the reading subskills, and the R^2 change resulting from the addition of these variables into the equation. Only twice in the four judge data and twice in the one judge data did either of these reading subskills have correlations with the fluency scores higher than those of other independent variables, allowing them to be entered on the first step of the regression. Using the four judge data (Table 1:5), Word Recognition entered first in the prediction equations for Stress and for Total Pause, and using the one judge data (Table 1:6), Word Recognition entered first in the equation for Total Pause, while Comprehension entered first in the equation for Pause. Yet only in the case of Total Pause did these reading subskill scores cause a moderate change in the amount of variance which can be accounted for by the multiple regression (R^2).

Table 1:5.--Entry Step and R^2 Changes of Word Recognition and Comprehension in Multiple Regression Analyses of Intonation Variables: Four Judge Data

Dependent Variable	Word Recog. Entry	W.R. Caused R^2 Change	Comp. Entry	Comp. Caused R^2 Change
Pause	Step 4	.023	Step 3	.010
Pitch	Step 2	.042	Step 6	.002
Stress	Step 1	.022	Step 2	.014
ORF	Step 2	.032	Step 6	.001
T-Pause	Step 1	.328	Step 4	.016

Table 1:6.--Entry Step and R^2 Changes of Word Recognition and Comprehension in Multiple Regression Analyses of Intonation Variables: One Judge Data

Dependent Variable	Word Recog. Entry	W.R. Caused R^2 Change	Comp. Entry	Comp. Caused R^2 Change
Pause	Step 2	.060	Step 1	.030
Pitch	Step 6	.001	Step 4	.007
Stress	Step 4	.005	Step 5	.010
ORF	Step 6	.001	Step 2	.034
T-Pause	Step 1	.371	Step 5	.000

Research Question 2: To what extent is the child's ability to read fluently related to peer evaluation of that child as a "good reader"?

The second question was the extent to which fluency might be seen as an influence on peer evaluation as a reader--is the child who has expressive oral reading the child voted one of the "best readers" in a group of his peers? Pearson correlation coefficients are reported for five measures of fluency correlated with number of peer votes as a "good reader." The inferential hypothesis to be tested is:

Ho: The population correlation coefficient is equal to zero.

H_1: The population correlation coefficient is not equal to zero.

Table 2:1.--The Relationship Between Fluency Variables and Peer Evaluation as a "Good Reader": Four Judge Data

	Pause	Pitch	Stress	ORF	T-Pause
Peer Vote	-.002	.146	.114	.139	-.454*

N = 106

*Significant at .05 level

The decision is to reject the null hypothesis for one of the relationships tested: the correlation between Peer Vote and Total Pause. As can be seen in Table 2:1, the correlation between Total Pause and Peer Vote was -.454,

while the use of appropriate Pause, Pitch, and Stress had correlations ranging only between -.002 and .146.

Table 2:2.--The Relationship Between Fluency Variables and Peer Evaluation as a "Good Reader": One Judge Data

	Pause	Pitch	Stress	ORF	T-Pause
Peer Vote	-.057	.132	.131	.107	-.377*

N = 106

*Significant at .05 level

The decision is made to reject the null hypothesis for one of the relationships tested: the correlation between Peer Vote and Total Pause. Consistent with results in the four judge data (Table 2:1), the correlations found in the one judge data (Table 2:2) show a moderate relationship only between Total Pause and Peer Vote (-.377).

Peer vote was also correlated with the five other independent variables in the study.

Table 2:3.--The Relationship Between Peer Vote and the Five Other Independent Variables (Four Judge Data = One Judge Data)

	Word Recog.	Comp.	Classroom Practice Time	Parent Reading Time	Home Practice Time
Peer Vote	.490*	.452*	.035	-.141	-.172

N = 106

*Significant at .05 level

The decision is to reject the null hypothesis for two of the relationships tested: the correlations between Peer Vote and Word Recognition and between Peer Vote and Comprehension. As seen in Table 2:3, both of these correlations were positive and moderate (.490, .452). It is of interest to note that these correlations are similar in strength to the correlations between Peer Vote and Total Pause (-.454, -.377) given in Tables 2:1 and 2:2.

Peer Vote was one of six independent variables entered into multiple regression equations with each intonation measure as a dependent variable. Multiple correlation coefficients and equations are given in Tables 5:3 and 5:4. The contribution of Peer Vote scores to the prediction equations is summarized in Tables 2:4 and 2:5. Although the correlations in the one judge data (Table 2:2) between Pitch and Peer Vote and between Stress and Peer Vote were low and non-significant (.132, .131), they were still strong enough to enter the regression equation first. Peer Vote scores, however, accounted for very little of the variance in these intonation measures (R^2 = .017).

To see whether pupils might be naming their friends rather than nominating "good readers," pupils were asked to name their three "best friends" from the list of 12 subjects after they had named their choices for "good readers." A frequency count was done to determine the number of overlaps existing in each classroom. For example, if a child named one classmate to both lists, the overlap was 1, etc.

Table 2:4.--Entry Step and R^2 Change of Peer Vote in Multiple Regression Analyses of Intonation Variables: Four Judge Data

Dependent Variable	Peer Vote Entry	R^2 Change
Pause	Step 5	.001
Pitch	Step 5	.003
Stress	Step 3	.005
ORF	Step 5	.003
T-Pause	Step 2	.039

Table 2:5.--Entry Step and R^2 Change of Peer Vote in Multiple Regression Analyses of Intonation Variables: One Judge Data

Dependent Variable	Peer Vote Entry	R^2 Change
Pause	Step 5	.010
Pitch	Step 1	.017
Stress	Step 1	.017
ORF	Step 4	.002
T-Pause	Step 4	.012

Results are charted below (Table 2:6). Fifty-five of the 106 subjects had no overlap or named just one person as both a good friend and a good reader, suggesting that first grade subjects were able to make a distinction between "good reader" and "good friend."

Table 2:6.--Frequency Count of Children who had Overlap for Names Proposed as Both "Good Reader" and "Best Friend"

Amount of Overlap	Classroom									Total
	1	2	3	4	5	6	7	8	9	
0	0	1	1	4	2	2	4	0	3	17
1	4	4	6	2	3	3	5	8	3	38
2	8	7	5	5	3	6	3	4	4	45
3	0	0	0	1	4	0	0	0	1	6

N = 106

Research Question 3: To what extent is fluency related to time spent on oral reading in the classroom?

The third question asked about the possible contribution to fluent reading of oral reading practice in the classroom. Pearson correlation coefficients are reported for the five measures of fluency with Classroom Practice Time, the minutes per week of classroom oral reading reported for each subject. The relationship between Classroom Practice Time and the five other independent variables is also

reported. The inferential hypothesis to be tested for each relationship is:

Ho: The population correlation coefficient is equal to zero.

H_1: The population correlation coefficient is not equal to zero.

Table 3:1.--The Relationship Between Fluency Variables and Classroom Practice Time: Four Judge Data

	Pause	Pitch	Stress	ORF	T-Pause
Classroom Practice Time	-.278*	-.295*	.051	-.252*	.089

N = 106

*Significant at .05 level

Using the four judge data (Table 3:1), the decision is to reject the null hypothesis for three of the relationships tested: Classroom Practice Time with Pause, with Pitch, and with Oral Reading Fluency. Although a positive relationship might have been expected, all of the significant correlations were negative (-.278, -.295, -.252). One explanation for the negative findings might be that children who are reading with appropriate intonation are doing more silent reading than oral reading in the classroom, while the teacher schedules oral reading practice for less fluent readers.

None of the relationships generated using the one judge data (Table 3:2), were significant at the .05 level. These

Table 3:2.--The Relationship Between Fluency Variables and Classroom Practice Time: One Judge Data

	Pause	Pitch	Stress	ORF	T-Pause
Classroom Practice Time	-.000	.104	.006	.045	.031

N = 106

*Significant at .05 level

results are in contrast with results obtained from analysis of the four judge data (Table 3:1).

When examining the correlations between intonation variables and independent variables elsewhere in this study, the significant correlations from the four judge data and the one judge data were fairly consistent, but the correlations for Classroom Practice Time were significantly different for three of the five intonation measures. The difference in Pause results is particularly interesting because, although significant differences in means were found between four judge scores and one judge scores for Pitch and Stress, the means and standard deviations of Pause scores were very similar (Table 0:6). These differences suggest a need for future research on the nature of the relationship between fluent oral reading and classroom practice time, perhaps with a more accurate method of measuring time spent reading aloud in the classroom.

Correlations were also calculated to show the relationship between Classroom Practice Time and the other five independent variables.

Table 3:3.--The Relationship Between Classroom Practice Time and the Five Other Independent Variables (Four Judge Data = One Judge Data)

	Word Recog.	Comp.	Peer Vote	Parent Reading Time	Home Practice Time
Classroom Practice Time	-.061	.010	.035	-.021	-.082

N = 106

*Significant at .05 level

None of these relationships were significant at the .05 level, suggesting that, as measured in this study, Classroom Practice Time is not highly inter-correlated with other measures of reading behavior.

The contribution of Classroom Practice Time to the multiple regression equations of the fluency variables is given in Tables 3:4 and 3:5. Because of the high correlations between Classroom Practice Time and several of the intonation variables found in the four judge data (Table 3:1), this variable entered the multiple regression equation at Step 1. However, this variable accounted for very little of the variation in intonation scores. In the one judge data, there were no significant correlations (Table 3:2), and Classroom Practice Time entered the

Table 3:4.--Entry Step and R^2 Change of Classroom Practice Time in the Multiple Regression Analyses of Intonation Variables: Four Judge Data

Dependent Variable	Classroom Practice Time Entry	R^2 Change
Pause	Step 1	.077
Pitch	Step 1	.087
Stress	Step 4	.004
ORF	Step 1	.063
T-Pause	Step 6	.004

Table 3:5.--Entry Step and R^2 Change of Classroom Practice Time in the Multiple Regression Analyses of Intonation Variables: One Judge Data

Dependent Variable	Classroom Practice Time Entry	R^2 Change
Pause	Step 6	.001
Pitch	Step 3	.010
Stress	not entered	
ORF	Step 5	.001
T-Pause	not entered	

multiple regression equations after other independent variables or not at all.

Research Question 4: To what extent is fluency related to reading-at-home factors?

The fourth question dealt with possible home influences on fluent reading. Two measures of time spent on home-reading activities were included: the amount of time per week the parent spends reading to the child, and the amount of time per week the child spends reading to the parent or sibling. The Pearson correlation coefficients are reported below for the five measures of fluency with the two measures of home-reading activity. Following that, the relationship between the Reading-at-Home variables and the other independent variables is reported. The hypothesis to be tested:

Ho: The population correlation coefficient is equal to zero.

H_1: The population correlation coefficient is not equal to zero.

Using the four judge data, the decision to reject the null hypothesis can be made for only one of the relationships: Parent Reading Time with Total Pause. Use of appropriate Pause, Pitch and Stress was not found to be significantly correlated with either Parent Reading Time or Home Practice Time. Although one might expect a positive relationship to exist between fluency variables and reading at home, several low negative correlations were found in the analysis of the four

Table 4:1.--The Relationship Between Fluency Variables and Reading-at-Home Variables (Parent Reading Time and Home Practice Time): Four Judge Data

	Pause	Pitch	Stress	ORF	T-Pause
Parent Reading Time	-.032	.033	.026	.018	.274*
Home Practice Time (Child Reading)	-.158	-.052	-.019	-.104	-.041

N = 106

*Significant at .05 level

judge data, and the significant correlation between Parent Reading Time and Total Pause (.274) was positive when one might have expected the correlation to be negative. The data seem to suggest that the child whose parents read aloud frequently may also be the child who makes many pauses and hesitations while reading orally. One explanation for this unexpected finding may be that the child who uses intonation appropriately and reads orally with a minimal number of pauses is now spending time at home in silent reading activities, while parents of less fluent readers still spend time reading aloud to their children.

The decision to reject the null hypothesis can be made for only one of the relationships studied using the one judge data: the correlation between Parent Reading Time and Total Pause (.243). These results are consistent with results of the four judge data (Table 4:1). As previously discussed, this unexpected positive relationship may be due to fluent

Table 4:2.--The Relationship Between Fluency Variables and Reading-at-Home Variables (Parent Reading Time and Home Practice Time): One Judge Data

	Pause	Pitch	Stress	ORF	T-Pause
Parent Reading Time	.134	.113	.080	.162	.243*
Home Practice Time (Child Reading)	-.161	.010	-.100	-.138	-.108

N = 106

*Significant at .05 level

readers turning to silent reading while parents continue to spend time reading to those children who are less fluent readers.

The inter-correlations between the Reading-at-Home variables and the other four independent variables are presented in Table 4:3.

The decision is to reject the null hypothesis for two of the relationships tested: Parent Reading Time with Word Recognition and with Comprehension (both negative). These inter-correlations are of interest because of the unexpected positive relationships between Parent Reading Time and Total Pause found in both the four judge data (Table 4:1) and the one judge data (Table 4:2). These correlations are consistent in suggesting that those children who are being read-to for longer periods of time are those children who have low reading performance scores in major subskill areas. There is the possibility that high performance children

Table 4:3.--The Relationship Between Reading-at-Home Variables and the Other Independent Variables (Four Judge Data = One Judge Data)

	Word Recog.	Comp.	Peer Vote	Classroom Practice Time	Parent Reading Time	Home Practice Time
Parent Reading Time	-.208*	-.255*	-.141	-.021	---	.047
Home Practice Time	-.035	-.180	-.172	-.082	.047	---

N = 106

*Significant at the .05 level

are engaging in silent reading activities at home, but this was not measured in the present study.

The contribution of the home reading variables to the multiple regression equations for the five measures of oral reading fluency is given in Tables 4:4 and 4:5. Although Parent Reading Time entered the Oral Reading Fluency equation on the first step in the one judge data (Table 4:5), knowing the amount of time the parent reads to the child allows one to account for less than 3% of the variance in Oral Reading Fluency scores. In all other instances, the home reading variables entered the equation at Step 2 or later, and resulted in R^2 changes of .03 or less.

Question 4 also asked about the relationship between fluent reading scores and age at which the parent began to read orally to the child. In order to examine this

Table 4:4.--Entry Step and R^2 Change of Home Reading Variables in the Multiple Regression Analyses of Intonation Variables: Four Judge Data

Dependent Variable	Parent Reading Time Entry	R^2 Change	Home Practice Time Entry	R^2 Change
Pause	Step 6	.000	Step 2	.033
Pitch	Step 3	.005	Step 4	.005
Stress	Step 5	.002	Step 6	.001
ORF	Step 4	.003	Step 3	.014
T-Pause	Step 3	.022	Step 5	.006

Table 4:5.--Entry Step and R^2 Change of Home Reading Variables in the Multiple Regression Analyses of Intonation Variables: One Judge Data

Dependent Variable	Parent Reading Time Entry	R^2 Change	Home Practice Time Entry	R^2 Change
Pause	Step 3	.030	Step 4	.011
Pitch	Step 2	.018	Step 5	.002
Stress	Step 2	.010	Step 3	.006
ORF	Step 1	.026	Step 3	.013
T-Pause	Step 3	.015	Step 2	.017

relationship, the composite Oral Reading Fluency scores were displayed on the vertical axis and Age in Years was charted along the horizontal axis. Oral Reading Fluency scores were divided into three groups: High (at or above 1 standard deviation from the Mean), Middle (those between 1 standard deviation above the Mean and 1 standard deviation below the Mean), and Low (those at or below 1 standard deviation below the Mean). The ages were divided into five categories: Ages 0.0-0.9 years, 1.0-1.9 years, 2.0-2.9 years, 3.0-3.9 years, and 4.0-4.9 years. The number of subjects in the resulting cells is summarized in Tables 4:6 and 4:7. A scatter graph, or visual representation of the data, is found in Appendix B (Tables B:1 and B:2). The scatter graph allows one to see the lack of clearly defined relationships. The dots representing each subject are clustered at the early year levels, and the Oral Reading Fluency scores earned by these subjects in the 0.0-0.9 and 1.0-1.9 age columns ranged broadly from high to low. At ages 3.0 and above, subjects cluster in the middle to high score ranges.

Eighty of the 106 children were read to before the age of 2, according to parent reports. When examining the four judge data, it can be noted that 12 high readers were read to by their parent beginning before age 2 vs. six high readers who were first read to by their parents after age 2. For low readers, 13 were read to by their parent beginning before age 2 vs. 7 who were first read to by the parent

Table 4:6.--The Relationship Between Oral Reading Fluency Scores and Age when Parent Began Reading to Child: Four Judge Data

Oral Fluency Scores	Age in Years				
	0.0-0.9	1.0-1.9	2.0-2.9	3.0-3.9	4.0-4.9
High (45 - 50)	1	11	4	2	0
Middle (34 - 44)	24	31	7	4	2
Low (19 - 33)	6	7	7	0	0

Table 4:7.--The Relationship Between Oral Reading Fluency Scores and Age when Parent Began Reading to Child: One Judge Data

Oral Fluency Scores	Age in Years				
	0.0-0.9	1.0-1.9	2.0-2.9	3.0-3.9	4.0-4.9
High (43 - 48)	5	11	2	2	0
Middle (35 - 42)	22	33	9	4	2
Low (29 - 34)	4	5	7	0	0

after age 2. When scores were assigned by one judge, 16 high readers fell into "before age 2" categories vs. 4 high readers who heard their parent read after age 2. For low readers, nine were first read to before the age of 2 vs. seven after the age of 2.

Usefulness of the Six Selected Independent Variables in Accounting for Variation in the Measures of Fluency: Multiple Regression Equations

Six independent variables were included in the study because there was some suggestion in the literature or in current educational practice that these six variables might be related to fluent oral reading ability. The simple correlations between these variables and the fluency variables have been presented in the four previous sections. In addition to these simple correlations, a multiple regression analysis was undertaken to determine the amount of variation in the fluency measures that could be explained by the independent variables operating jointly. The multiple regression statistics and prediction equations for each of the five fluency variables are given in Tables 5:1 and 5:2. The null hypothesis in each case is that the multiple correlation coefficient R is equal to zero in the population from which the sample was drawn.

The decision to reject the null hypothesis can be made only for the two dependent variables Pause and T-Pause in the one judge data, and for Pause, Pitch, and T-Pause in the four judge data analysis. Using either set of data,

Table 5:1.--Multiple Regression Coefficients and Prediction Equations for the Five Fluency Variables (without selection parameters): Four Judge Data

Dependent Variable	Multiple R	R^2	Signif.	Regression Equation (Unnormalized)
Pause	.380	.144	.015*	Y'= 16.545+(-.026)CLSM+(-.005)HOM+(.074)COMP+(-.026)SLOSS+(-.036)VOTE+(-.001)PAR
Pitch	.379	.144	.016*	Y'= 13.922+(-.033)CLSM+(.027)SLOSS+(.005)PAR+(-.002)HOM+(.076)VOTE+(.022)COMP
Stress	.218	.048	.552	Y'= 6.207+(.040)SLOSS+(-.066)COMP+(.091)VOTE+(.007)CLSM+(.003)PAR+(-.001)HOM
ORF	.340	.116	.053	Y'= 36.674+(-.052)CLSM+(.041)SLOSS+(-.009)HOM+(.007)PAR+(.131)VOTE+(.029)COMP
T-Pause	.645	.416	.000*	Y'= 32.612+(-.181)SLOSS+(-.714)VOTE+(.022)PAR+(.123)COMP+(-.007)HOM+(.015)CLSM

*Significant at .05 level N = 106

Table 5:2.--Multiple Regression Coefficients and Prediction Equations for the Five Fluency Variables (without selection parameters): One Judge Data

Dependent Variable	Multiple R	R^2	Signif.	Regression Equation (Unormalized)
Pause	.377	.142	.017*	Y'= 14.164+(.106)COMP+(-.029)SLOSS+(.007)PAR+(-.004)HOM+(-.097)VOTE+(-.002)CLSM
Pitch	.235	.055	.454	Y'= 15.616+(.083)VOTE+(.005)PAR+(.006)CLSM+(.025)COMP+(.001)HOM+(-.004)SLOSS
Stress	.220	.049	.408	Y'= 5.226+(115)VOTE+(.005)PAR+(-.004)HOM+(.024)SLOSS+(-.044)COMP
ORF	.280	.078	.221	Y'= 34.983+(.017)PAR+(.087)COMP+(-.006)HOM+(.100)VOTE+(.005)CLSM+(-.009)SLOSS
T-Pause	.644	.416	.000*	Y'= 38.152+(-.167)SLOSS+(-.013)HOM+(.014)PAR+(-.311)VOTE+(-.009)COMP

*Significant at .05 level N = 106

the R^2 indicates that 14% of the variation in Pause scores and 42% of the variation in T-Pause scores can be explained by the independent variables operating jointly: using the four judge data 14% of the variation in Pitch scores can also be accounted for by the multiple regression equation. For the Stress and Oral Reading Fluency measures, having information about the subject's word recognition skill, comprehension ability, peer status as a reader, classroom practice opportunities, parent-child reading time and home practice time would not allow one to make an accurate or reliable estimate of that subject's score.

A double cross validation analysis (Mosler, 1951) was undertaken to check on the usefulness of the multiple regression equations generated by the four judge and one judge data. For each set of data, one-half of the subject data cards were selected at random to represent Sample 1, and the remaining cards represented Sample 2, each subset having 53 subjects. Multiple regression equations were calculated from data in each subset, and then the equations were used to predict fluency variable scores for subjects in the other. These predicted scores for Pause, Pitch, Stress, Oral Reading Fluency and Total Pause could then be compared with the subjects' actual scores on the fluency measures. Linear correlation coefficients were calculated to determine the strength of the relationship between predicted scores and observed scores, and these figures are reported as "cross-validated validity." In other words,

"cross-validated validity" is the level of accuracy in prediction obtained when the regression equations were applied to subject data not used in the formulation of the equation.

The complete set of regression equations generated by dividing each set of data into subsets for cross-validation purposes is given in the Appendix (Tables B:3 and B:4). The cross-validated validity coefficients, or correlations between predicted scores and observed scores, are reported in Tables 5:3 and 5:4. Moderate positive coefficients were found for Total Pause scores in both the four judge and one judge data, but for the other intonation variables, the correlations were so low that scores predicted by the multiple regression equations would have negligible accuracy.

Table 5:3.--Cross-Validated Validity: Four Judge Data

	In Sample 1	In Sample 2
Predicted Pause with Observed Pause:	.050	-.026
Predicted Pitch with Observed Pitch:	.183	.266
Predicted Stress with Observed Stress:	-.102	-.116
Predicted ORF with Observed ORF:	.058	.089
Predicted T-Pause with Observed T-Pause:	.525	.569

Table 5:4.--Cross-Validated Validity: One Judge Data

	In Sample 1	In Sample 2
Predicted Pause with Observed Pause:	.235	.045
Predicted Pitch with Observed Pitch:	.069	.198
Predicted Stress with Observed Stress:	-.136	.067
Predicted ORF with Observed ORF:	-.097	.083
Predicted T-Pause with Observed T-Pause	.624	.538

Data Analysis of Interest for Planning Future Research

In addition to the data analyses performed as part of the research project, other analyses were undertaken which are of interest in terms of planning future research in the same area.

First, classroom means were computed for each of the five fluency measures (using the one judge data). This was done because one of the teachers involved reported that she emphasized fluent oral rendering in her reading program, and she was interested in learning how her classroom compared with other first grade classrooms when intonation features were measured. The classroom means are given in Table 6:1.

Classroom 7 was taught by the teacher who reported that she explicitly taught fluent oral reading. Classroom 7 had the lowest Total Pause mean, ranked second on appropriate use of Stress, ranked fourth on the Oral Reading Fluency

Table 6:1.--Classroom Means of Fluency Measures: One Judge Data

Classroom	N	Pause Mean	Pitch Mean	Stress Mean	ORF Mean	T-Pause Mean
1	11	16.64	17.36	5.27	39.27	28.09
2	12	15.75	17.33	6.67	39.75	29.33
3	12	15.75	16.50	4.67	36.92	26.33
4	12	17.00	16.50	4.75	38.25	30.17
5	12	15.00	17.17	5.75	37.92	26.50
6	12	16.83	17.00	5.00	38.83	28.25
7	12	15.92	17.08	6.25	39.25	24.00
8	12	16.17	17.17	4.25	37.58	32.08
9	11	16.45	8.09	6.18	40.73	24.82

composite scores, but ranked sixth on Pitch and Pause. The results suggest that explicit teaching of intonation may be a fruitful area of future research, and that one might hypothesize that explicit teaching will have a more significant effect on some measures of fluency than on other measures.

Secondly, school means were computed to see if the schools chosen to represent different home environments would score differently on the fluency measures. The school means are listed in Table 6:2.

The school means fell within one point of each other on every fluency measure. This suggests either that levels of fluency are not affected by home environment or that the

Table 6:2.--School Means of Fluency Measures: One Judge Data

School	N	Pause Mean	Pitch Mean	Stress Mean	ORF Mean	T-Pause Mean
Rural	35	16.03	17.06	5.54	38.63	27.91
City	36	16.28	16.89	5.17	38.33	28.31
Subdivision	35	16.17	17.43	5.54	39.14	27.03

community in which the study was done was so homogeneous that such effects were not observable. Additional research, done in two communities with widely different socio-economic levels, might be of considerable interest.

Thirdly, an examination of individual subject protocols suggested scoring guidelines which might help to quantify intonation variables in oral reading in a more accurate and useful way. For example, the subject who had the highest Word Recognition score and one of the highest Comprehension scores, had the lowest Pause score, and one of the lowest Stress scores (using the one judge data). However, every-one of this subject's pauses came at the end of a sentence: the subject paused after every complete sentence, but did not pause at all internally. When examining the Stress responses, it appears that this subject used stress to mark only five of the picture contrasts, but marked the other seven contrasts with dramatic pitch changes. This suggests that some refinement in the measurement of pause might pin-point pause locations which are more critical than others

for fluent oral reading, and perhaps for comprehension. It also suggests the inclusion of a scoring category for ability to use intonation to convey contrasts, using either Stress or Pitch.

Summary

Establishing scoring reliability for the oral reading fluency measures became not only the first analysis undertaken, but one of the most crucial. These data were presented at the beginning of this analysis chapter, along with the statistics of the Oral Reading Fluency measures (Means, Standard Deviations, Range of Scores, and Percentage of Appropriate Use), followed by an examination of the four research questions. Significant differences were found (T-test for differences in means) between fluency scores when assigned by four judges dividing up the 106 tapes and fluency scores assigned by one judge scoring all 106 tapes. The mean of the Pitch scores was 1.54 points higher when judged by one judge, and the mean Stress score was 1.30 points lower when judged by one judge. Although the inter-rater reliability coefficients for the four judges ranged from .639 to .900 (with the other variables at .858 and .867), the rating consistency over time for the four judges ranged from .258 (Judge 1 on Pitch) to .974 (Judge 4 on ORF). The rating consistency when author-judged (referred to as one judge data), ranged from .725 (Pitch) to .893 (Pause).

For the four research questions, various Pearson correlation coefficients were calculated and the null hypothesis of a population correlation coefficient equal to zero was tested for each coefficient. Tables 7:1 and 7:2 list the significant relationships identified for each of the research questions; relationships for which the null hypothesis was rejected at the .05 level of confidence.

When oral reading fluency scores were charted against age when parent began reading to the child, there was some suggestion of a positive relationship between fluency and early experiences with books. For example, with one judge data, 16 high readers were read to by their parents beginning before age 2 vs. 4 high readers who were first read to by their parents after age 2.

Multiple regression analysis data were presented to indicate the amount of variation in the five fluency measures which could be accounted for by the six independent variables operating jointly. With the four judge data, the decision to reject the null hypothesis (population multiple correlation coefficient equal to zero) could be made for three of the multiple regression coefficients: Pause ($R = .380$), Pitch ($R = .379$), and T-Pause ($R = .645$). With the one judge data, the decision to reject the null hypothesis could be made for two of the multiple coefficients: Pause ($R = .377$) and T-Pause ($R = .644$). The regression equation entry step and resulting R^2 change for the independent

Table 7:1.--Summary of Correlations for Which Null Hypothesis was Rejected: Four Judge Data

Research Question	Null Hypothesis Rejected For:	Correlation Coefficient
1. Reading Subskills	Word Recog with Pitch	.223
	Word Recog with ORF	.194
	Word Recog with T-Pause	-.573
	Comp with T-Pause	-.343
	ORF with its Components (Pause, Pitch, Stress)	(.681, .727, .609)
	Pause with Pitch	.348
	Pause with T-Pause	.209
	(Word Recog with Comp)	(.682)
2. Peer Vote	Peer Vote with T-Pause	-.454
	(Peer Vote with Word Recog)	(.490)
	(Peer Vote with Comp)	(.452)
3. Classroom Practice Time	Classroom P.T. with Pause	-.278
	Classroom P.T. with Pitch	-.295
	Classroom P.T. with ORF	-.252
4. Home Factors	Parent Reading Time with T-Pause	.274
	(Parent Reading Time with Word Recog)	(-.208)
	(Parent Reading Time with Comp)	(-.255)

variables were included in the data presentation for each of the four research questions.

A double cross-validation procedure was performed by dividing each data set into two samples and using multiple regression equations generated from one sample to predict fluency scores in the other sample. The correlation between predicted score and observed score (cross-validated validity) was reported for each fluency variable: cross-validated validity for T-Pause ranged from .525 to .624 but all others were below .266.

Table 7:2.--Summary of Correlations for Which Null Hypothesis was Rejected: One Judge Data

Reading Question	Null Hypothesis Rejected For:	Correlation Coefficient
1. Reading Subskills	Word Recog with T-Pause	-.609
	Comp with T-Pause	-.427
	ORF with its Components (Pause, Pitch, Stress)	(.621, .590, .725)
	Pause with Pitch	.203
	Pause with T-Pause	.424
	(Word Recog with Comp)	(.682)
2. Peer Vote	Peer Vote with T-Pause	-.377
	(Peer Vote with Word Recog)	(.490)
	(Peer Vote with Comp)	(.452)
3. Classroom Practice Time	None	
4. Home Factors	Parent Reading Time with T-Pause	.243
	(Parent Reading Time with Word Recog)	(-.208)
	(Parent Reading Time with Comp)	(-.255)

A discussion of these results, and conclusions to be drawn, are presented in Chapter 5.

CHAPTER 5

SUMMARY AND CONCLUSIONS

Following the summary, conclusions to be drawn from the results of the data analysis will be presented and discussed. Limitations of the present study and implications for future research are included in the discussion and are summarized at the end of the chapter.

Summary

This study was undertaken to investigate the phenomenon of oral reading fluency among children in the beginning stages of reading instruction. It was suggested by the body of theoretical literature which emphasizes the link between oral language and reading as communicative processes, and by the very practical problem of assessing fluency when attempting to diagnose reading difficulties.

Oral reading fluency was defined as the ability to read text with appropriate intonation patterns: pausing at punctuation, raising or lowering pitch at terminal juncture to indicate a statement or question, stressing contrastive elements, and reading a story with a minimal number of pauses. These measures of fluency were then correlated with measures of six other reading abilities and activities to see to what

extent these skills and activities are related. These six independent variables were word recognition ability, silent reading comprehension, peer evaluation as a "good reader," classroom practice time, time parent spends reading to the child, and time the child spends reading orally at home.

The variables of pause, pitch and stress have been described by linguists, and their use to mark message components has been studied. Research with elementary school children has suggested that use of intonation in oral reading is correlated with comprehension ability and with reading level. There is also evidence that elementary children have a difficult time reading sentences fluently despite their familiarity with the words used in the sentences, and that less skilled readers may not obtain until the third grade the fluency patterns displayed by good readers in grade one. Researchers have reported their attempts to teach fluency explicitly, and there is current research interest in methods which allow the child to experience fluent reading although he cannot yet produce it. There does not appear to be prior research on fluent oral reading related to reading behaviors such as classroom practice and home reading activities, but these variables have been linked to reading achievement in general.

The purpose of the study was to investigate the extent to which oral reading fluency among first grade readers at Primer level is related to six other reading behaviors. Four specific research questions were posed: (1) To what extent

is oral reading fluency a unique reading subskill? (2) To what extent is the child's ability to read fluently related to peer evaluation of that child as a "good reader"? (3) To what extent is fluency related to time spent practicing oral reading in the classroom? (4) To what extent is fluency related to home reading activities?

The study was done using 106 first grade children from a midwestern suburban school system. The community is middle to upper-middle socio-economic level and minority representation in the community is very low. The children came from nine classrooms in three different school buildings, and were those recommended by teachers as children who could read at Primer level or above.

Testing was done in the schools in April 1980, by three trained research assistants. The measuring instruments used included three tests and three questionnaires: a researcher-designed Oral Fluency Test, the Slosson Oral Reading Test for word recognition, the Cooperative Primary Reading Test to assess comprehension, a student questionnaire for peer status rating, a classroom oral reading time questionnaire and a parent questionnaire to gather data on the two home variables.

Responses to the Oral Reading Fluency Test were scored twice, once by a group of four judges and once by the author, yielding two sets of data. Pearson product-moment correlation coefficients were calculated for the five fluency measures with each of the six independent variables, and a multiple regression equation was developed to assess the contribution

of the six independent variables to the Oral Fluency scores. This was done separately for the four judge data and for the one judge data. For each simple and multiple correlation, the null hypothesis of a population correlation coefficient equal to zero was tested, with level of confidence set at .05.

Results are summarized for each of the four research questions.

1. Fluency as a unique subskill:

   - using the four judge data: significant correlations were found for Word Recognition with Pitch (.223), with ORF (.194), and with T-Pause (-.573), and for Comprehension with T-Pause (-.343).

   - using the one judge data: significant correlations were found for Word Recognition with T-Pause (-.609), and for Comprehension with T-Pause (-.427).

2. Fluency and peer evaluation:

   - using the four judge data: a significant correlation was found between Peer Vote and T-Pause (-.454).

   - using the one judge data: a significant correlation was found between Peer Vote and T-Pause (-.377). No other significant correlations emerged.

3. Fluency and classroom practice:

   - using the four judge data: a significant correlation was found for Classroom Time with Pause (-.278), with Pitch (-.295), and with ORF (-.252).

   - using the one judge data: no significant correlations were found.

4. Fluency and home reading factors:

   - using the four judge data: a significant correlation was found for Parent Reading Time with T-Pause (.274).

   - using the one judge data: a significant correlation was found for Parent Reading Time with T-Pause (.243).

Multiple regression analysis suggested that only a small percentage of pause, pitch and stress could be accounted for by the six independent variables included in this study. Total Pause, the measure of non-fluency, was the measure most highly correlated with the six independent variables (R = .645, R = .644).

Conclusions

Given the characteristics of the sample, and the limitations of the testing instruments and scoring procedures employed, the following conclusions might be drawn from the results of data analysis.

A. Conclusions pertaining to the Oral Fluency Test:

1. The Oral Reading Fluency Test was more reliable when scores for the intonation variables were assigned by one judge than when assigned by four judges.

Scoring difficulties which developed during the scoring sessions were confirmed by low consistency over time reliability coefficients for one of the judges on two of the intonation variables and moderate reliabilities for a second judge (Table 0:9). The scoring of intonation is qualitative and therefore subject to the scorer's interpretation of criterion as well as to other influences such as noise interference or fatigue of the rater. However, it is hypothesized that more rigorous training and a more specific definition of what constituted "appropriate" pause, pitch, and stress might

have improved the performance of the four judges. It is recommended that, in future research, training in scoring procedures involve demonstration and practice until judges demonstrate a higher level of inter-judge reliability before actual scoring begins. For example, it might be established that judges must be in agreement about scores assigned 85% of the time before judges are allowed to score protocols.

2. The Oral Reading Fluency Test cannot be recommended for use when making decisions about individuals because of its marginal reliability.

The scores assigned appeared to have been affected by the scorer as well as by the child's performance, and the variation was such that a child considered above level by one judge might have fallen into an average group if rated by another judge (or rated on another day by the same judge). As discussed above, it may or may not be possible to improve judging reliability through training, additional experience, refined scoring keys, etc. At present, however, the individual scores must be considered somewhat variable, and might best be reported to parents, students, etc., in terms of High, Middle, or Low (±1 standard deviation above the Mean) on the ORF composite score, or some other band-of-scores system. If individual scores are required for assignment to treatment groups or educational programs, testing the student on two or three different occasions is recommended. Samples of oral reading might be taped on three different occasions and

scored by one trained judge. It is hypothesized that such a procedure might improve reliability.

3. The Oral Reading Fluency Test appears to have potential as a useful research and diagnostic tool.

The test was designed to be read with minimal word recognition difficulty and yet to have sentence syntax varied enough to provide opportunities to apply expressive intonation to printed text. In both respects, the instrument appeared to be satisfactory. There were relatively few instances among the 106 cases in which the examiner interrupted the reader with a correction, and several of these were instances where the child had skipped one whole line of print. When reading aloud, the subjects did exhibit a range of expressive intonation, from very "flat" to very expressive. For future use, the test might be improved by adding more sentences of various types, especially more exclamatory sentences, since this might result in a greater spread of scores. The criterion of controlled sight vocabulary, however, must be retained so that a test of appropriate intonation is not confounded with a test of word recognition.

Possible diagnostic uses of the test suggested themselves while listening to the tapes. Individual children demonstrated some self-correcting behaviors which seemed to indicate that they were conscious of pause and pitch placement as communicative markers. They would repeat phrases to correct pause or pitch errors just as children do who misread

a word which causes the sentence not to make sense. Accordingly, giving an individual reading diagnostic evaluation, the examiner could use the test paragraph and stress sentence cards to see if the child used appropriate pause, pitch, and stress, and to see whether or not they will self-correct inappropriate productions.

4. The first grade subjects in the study used intonation variables appropriately 72% of the time in their oral reading of Primer level text, and were more likely to apply appropriate pause and pitch than they were to employ contrastive stress.

The Oral Reading Fluency Test statistics from both the four judge data and the one judge data suggest that performance on the contrastive stress sentences was weaker than performance on measures of pause and pitch. However, both sets of data yielded a similar composite mean, which, when divided by the number of possible points (54), resulted in an appropriate intonation usage estimate of 72% (Table 0:1). Although the use of subjects at different ages precludes a direct comparison, it is of interest to recall the research of Coady and Baldwin (1977). Those authors reported that second to fifth grade subjects were able to generate appropriate patterns less than 60% of the time in spite of the fact that the words were known to them in a word recognition pretest. It might be hypothesized that the relatively higher percentage of usage of appropriate intonation variables

demonstrated in the present study was due to the select sample: the first grade subjects were included because they read at Primer level or above, but subjects in the Coady and Baldwin study were unselected except that they were able to read the words of the text. However, it is also possible that the difference in usage of appropriate intonation reported in the two studies is in some part a function of the test format. Coady and Baldwin used a list of unconnected sentences, while the present study used sentences connected in a story, suggesting the possibility that use of appropriate intonation patterns increases in connected text.

The percentage of appropriate use of intonation reported in both studies may seem low, considering that children are exposed to appropriate intonation patterns in daily conversation and in examples of oral reading by adults, and considering that the words of the text are familiar to them. These results, however, are consistent with the position of other researchers (Oakan, Weiner, & Cromer, 1971; Aulls, 1977) who believe that knowing the words is not a sufficient condition for producing a fluent oral rendering. It might be hypothesized that children read expressively only to this extent, (1) because cues to intonation are not graphically represented in text, (2) because children in the beginning stages of reading mastery are still concentrating on reproducing the words to the exclusion of all other communicative elements, or (3) because expressive oral reading is not taught or rewarded in the school reading curriculum.

Speculation about the variables which effect the percentage of appropriate intonation usage may lead to formulation of testable hypotheses for future research.

5. The first grade subjects in the study stressed the contrastive element in sentence pairs only about 50% of the time, although the tendency to employ stress differed somewhat depending on the sentence constituent in which the contrast occurred.

Using the four judge data, appropriate use of stress occurred 56% of the time, and with the one judge data, appropriate use of stress only 45% of the time (Tables 0:1 and 0:2). Indeed, there were many instances in which the second sentence appeared to be delivered with intonation patterns identical to the reading of the first sentence. Use of stress did vary somewhat for different sentence constituents. The negative adverb ("is skating"/"is not skating") was stressed 84% of the time in both sets of data, with contrastive elements as subjects, verbs, objects or adjectives eliciting stress to a lesser degree. In contrast to the high percentage of stress on the negative adverb, the use of stress ranged from 45% (Subjects) to 62% (Verbs) with the four judge data, while, with the one judge data, the range was only from 40% (Adjectives and Verbs) to 45% (Subjects).

It is interesting to compare these statistics on the use of contrastive stress in reading with the Hornby and Haas study (1970) of contrastive stress in verbal productions. In

that study, 20 subjects, with a mean age of 4, used stress about 60% of the time as a marker for contrastive elements in picture pairs. The frequency of contrastive stress was greatest in describing pictures where the new element was the subject (80%), less when it was the verb (56%), and still less when it was the object (44%). Results of the present study suggest that contrastive stress is less in evidence when reading contrastive elements than when producing contrastive statements in an oral language situation, and that the use of stress is less a function of sentence constituent position when reading text. The extent to which such differences actually exist might be tested by a study which includes both a measure of oral contrast and a measure of contrast when reading printed text.

Contrastive stress may be less in evidence when reading because the child employs devices other than stress to mark the contrasting elements. When listening to the tapes, the following contrastive patterns were observed:

1. Falling pitch as the contrastive word was pronounced. Example: "The clown is sad↘."
2. Falling pitch one or two words <u>after</u> the contrastive element. Example: "The girl can↘ hit the ball." This pattern occurred on a number of tapes. One explanation might be that the reader realized at that point that he had already named the contrastive element, and so lowered his pitch for the rest of the sentence.

3. Increased speed on the contrast word. Example: "Two cars" "Three cars" (pronounced very rapidly)
4. Contrastive pitch patterns for the whole sentence. Example: "The boy has a car." _ _ _ _ → "The boy has a truck." – – – – →

The observation of these intonation changes suggests future research in which a variety of contrastive intonation patterns might be investigated, not just contrastive stress.

6. Inter-correlations of the intonation variables pause, pitch, and stress, as measured in this study, were modest or non-significant for first grade children who read at Primer level.

Referring to both the four judge data (Table 1:2) and the one judge data (Table 1:4), pause and pitch were significantly related (.348, .203), but between pause and stress, and between pitch and stress, correlations were low and non-significant. In other words, those who read with appropriate stress were not particularly likely to read with appropriate pause or pitch. By contrast, Means (1969) found use of inappropriate pause, pitch, and stress to be highly inter-correlated (r = .900 between pause and pitch, .903 between pause and stress, and .978 between pitch and stress). It might be hypothesized that such differences could be accounted for by sample selection, age of subjects, tests used, or training and orientation of the judges. The subjects in the Mean's study, for example, were unselected third graders, presumably with a wide range of reading

levels, rather than first grade subjects at Primer level or above. Aulls (1977), however, has postulated acquisition stages of fluency, and it may be that inter-correlations between fluency variables may increase as a function of practice and instruction.

B. Conclusions pertaining to the four research questions:

7. Use of appropriate intonation in oral reading does not appear to be highly correlated with word recognition or comprehension skill among first grade children reading at Primer level.

The use of pause, pitch, and stress, measured alone or in the composite Oral Reading Fluency score, does not have a high and predictable linear relationship to other reading subskills. It is therefore not possible to assume that a first grader with good word recognition skills will be a fluent-sounding reader, nor is it possible to assume that a child who reads with appropriate intonation will be the child who gets high scores on a measure of comprehension. This conclusion is supported by both the four judge data and the one judge data. With the four judge analysis, both pitch and ORF (the Oral Reading Fluency composite) had a low positive relationship with word recognition. With the one judge data, no significant correlations were found between the measures of appropriate intonation and the measures of word recognition and comprehension. The correlations obtained were well below the inter-correlation coefficient found

between word recognition and comprehension in the present study (.682), so to this extent Oral Reading Fluency can be considered a unique reading subskill.

Observations from the data suggested the possibility that a non-linear relationship might exist, to some extent, between fluent rendering and other reading subskills. Individual cases were observed in which readers with high scores on measures of word recognition and comprehension read rapidly in a non-expressive style, receiving low fluency scores (especially on stress). Yet, readers with low scores on measures of word recognition and comprehension, who read slowly in non-expressive style, received similar low fluency scores. The extent to which such a non-linear relationship might exist was not tested in this study, but in future studies scores might be plotted to investigate this phenomenon. A measure of speed might be included to investigate the effect of this variable.

8. A measure of the total number of pauses in oral reading appears to be the measure of fluency most related to other reading subskills.

The measure of total pause emerged as a fairly salient, reliably-scored (.819) measure of non-fluency. Compared with the non-significant or low positive correlations found between the use of appropriate intonation and other reading subskills, correlations between total pause and word recognition and between total pause and comprehension tended to be moderate, but negative. Referring to the four judge data and to the

one judge data, total pause was significantly correlated with word recognition (-.573, -.609) and with comprehension (-.343, -.427). These were the highest correlations obtained in the present study; the strongest relationships found between any of the five measures of fluency with any of the six independent variables. In the stepwise multiple regression of variables accounting for variance in total pause socres, word recognition entered first, and alone would have accounted for 33% to 37% of the score variance (depending on the set of data used to generate the equation).

These results are consistent with the theoretical position that grouping words into meaningful units is a component in the reading process important for comprehension (Means, 1969; Oakan, Wiener & Cromer, 1971). These correlations may also be seen as lending support to the current interest in "parsing" (Johnson & Johnson, 1978; Kleiman, 1979) as an indication of the reader's ability to segment prose into ideational units for comprehending the message in the text.

However, these results are also consistent with the position that those with poorly developed instant word recognition vocabularies are more likely to read with a disrupted, word-by-word style (Cunningham, 1979; Samuels, 1979). Both areas of investigation seem important to pursue, since it might be hypothesized that the relationship between fluency and other reading subskills might vary depending on a number of variables, such as age of child, reading ability level,

the emphasis of the instructional program, and the purpose for which the subject is reading.

9. The child's use of appropriate pause, pitch and stress in oral reading is not highly related to peer evaluation of that child as a "good reader," but use of a minimal number of total pauses in oral reading is significantly related to peer evaluation as a "good reader."

Peer evaluation as a good reader was more highly related to total pause, a measure of non-fluency than to pause, pitch, and stress, the measures of appropriate use of intonation. With both sets of data, total pause was the only fluency measure significantly correlated with peer vote (-.454, -.377). And, equally interesting, is the observation that peer evaluation is as highly related to measures of word recognition and comprehension skill as it is to the measure of total pause (Table 2:3). The results suggest that, at this point in the school year, for children making successful progress in reading instruction, the identification of a "good reader" does not depend heavily on fluent oral rendering of text. It might be hypothesized that in situations where oral reading was the predominant reading activity, fluency would be a more salient determinant of peer status. For readers in the present study, appropriate use of pause and pitch at punctuation did not appear to be an influential component of peer evaluation.

10. First grade children appear to be able to nominate for "best reader" pupils who are not their best friends.

There were only six instances out of 106 cases where a child gave the same three names for both designations, and there were 55 instances of no overlap or one name overlap (Table 2:6). In a classroom cluster where these children interact daily, a moderate amount of overlap might be expected. An examination of individual protocols suggested that individuals did not choose strictly along sex lines either: most boys chose some girls as "best readers" and vice versa. The results suggest that for successful first grade readers, evaluation as a "good reader" is not completely confounded with "good friend."

11. Fluent oral reading among successfully reading first grade subjects appears to have a low negative or negligible relationship with classroom practice time as measured in the present study.

In the analysis of the four judge data, classroom practice time had small, significant, negative correlations with pause (-.278), pitch (-.295), and oral reading fluency (-.252), but an analysis of the one judge data did not yield any significant correlations. A possible explanation for the negative findings is that, by April of the first grade year, oral reading practice is no longer a significant part of the instructional program, especially for readers who have progressed to the Primer level and beyond. In other words, those with lower fluency scores are spending more time at classroom practice than those who have already demonstrated fluent

reading patterns. Classroom practice time, measured at a point earlier in the school year, might have resulted in different correlations. The limitations of the questionnaire measurement tool must also be kept in mind: results might differ if one could observe each subject (via an observer or a TV monitoring system) and actually tally the time spent in oral reading activity in the classroom. Given the measurement conditions of the present study, and the lack of significant findings in the one judge data, classroom reading time does not appear to be highly related to fluent reading. If this variable is included in future research, it is recommended that more accurate measuring tools be designed.

12. The use of appropriate intonation appears to have a non-significant relationship with the amount of time the parent spends reading orally to selected first grade subjects; but total number of pauses, a measure of non-fluency, has a low positive relationship with amount of parent reading time.

No significant relationships were found between measures of pause, pitch, and stress and parent reading time. However, although one might have expected a negative relationship to exist, significant positive correlations were found between parent reading time and total pause in the four judge data (.274), and in the one judge data (.243). When examining the inter-correlations between the independent variables (Table 4:3), parent reading time was found to be negatively

correlated with word recognition (-.208) and with comprehension (-.255), when one might have expected a positive relationship. One explanation may be that children who have reached Primer level prefer to read to themselves or to another person rather than being read to. Indeed, parents reported in phone conversations and in written comments on the questionnaire that, since learning to read, their child preferred to read to himself. Amount of parent reading measured at an earlier age, perhaps even in the first month of first grade, might have resulted in a different set of correlations. It seems more plausible to assume that parents continue reading to the children whose skills are less advanced, than to interpret the findings as suggesting that the amount of parent oral reading has a negative effect on reading skills, an interpretation which is contrary to current educational practice. The absence of a positive relationship between the amount of time the parent spends reading to the child and oral reading fluency is consistent with other research on the influence of home variables on reading achievement (Lamme & Omsted, 1977), but these results suggest that much definitive work remains to be done in the realm of home influences on reading skill development. It is recommended that, if this variable is included in future studies, an exact accounting be kept by parents of reading time rather than allowing parents to give an estimate, and, that such accounting be made at several different points during the first grade year.

13. The use of appropriate intonation appears to have a non-significant relationship with the amount of time the child spends reading orally at home.

The relationship between the fluency variables and home practice time were low and non-significant in both the four judge data and the one judge data. Furthermore, an examination of the inter-correlations among the independent variables reveals that home practice time is not significantly related to any of the other five variables. It might be hypothesized that an actual accounting of home reading time, rather than an estimate, would result in the emergence of significant relationships, or that a measure of time spent reading silently at home would be related to measures of fluency, but these hypotheses are untested. Although current educational practice suggests that having a first grade child read aloud to parents at home will have a positive effect on reading achievement, this practice was not supported for fluency scores of children reading at Primer level in April of the first grade year.

14. For the first grade subjects in the study, level of oral reading fluency was not highly correlated with age when parent first began reading to the child.

The data on age at which the child was first read to was based on parent report. When level of fluency was charted against age at which parent first read to the child, subjects

were heavily concentrated at the young end of the scale: 75% of the subjects had parents who read to them by the age of 2. This data suggests that those children who have successfully reached Primer level in reading by April of first grade are those who have had an early experience with books, but the hypothesized relationship between fluency and early experience is not evident (Tables 4:6 and 4:7). It might be that a sample of readers with a broader range of fluency skills would provide evidence for a correlation between these variables, but such a hypothesis is yet to be tested.

15. The six independent variables included in the study, functioning jointly, accounted for only a small percentage of the variance in oral reading fluency scores.

The measure of total pause emerged as the component in the fluency score most highly correlated with the independent variables: using either set of data, the regression equation could account for about 42% of the variance in total pause socres (Tables 5:1 and 5:2). Using either set of data, pause was also significantly related to the independent variables considered jointly, but to a lesser extent: only about 14% of the variance in pause scores is accounted for by the regression equation. In the four judge analysis of data, 14% of the variance in pitch scores can also be accounted for by the multiple regression equation. Stress and composite scores were not significantly related to the independent variables functioning jointly. It might be hypothesized that

the multiple regression coefficients might be increased with a more varied sample, with more precise measurement of the variables included, or by substituting other potentially related variables for those found to have negligible relationships with fluency variables in the present study. The possibility exists that the inclusion of variables such as a measure of oral language production, a measure of IQ, or a measure of story retelling ability might increase the predictability of fluency scores, but these proposals are only speculation at this point.

In summary, the conclusions which can be drawn from this study are:

1. The Oral Reading Fluency Test was more reliable when scores for the intonation variables were assigned by one judge than when assigned by four judges.

2. The Oral Reading Fluency Test cannot be recommended for use when making decisions about individuals because of its marginal reliability.

3. The Oral Reading Fluency Test appears to have potential as a useful research and diagnostic tool.

4. The first grade subjects in the study used intonation variables appropriately 72% of the time in their oral reading of Primer level text, and were more likely to apply appropriate pause and pitch than they were to employ contrastive stress.

5. The first grade subjects in the study stressed the contrastive element in sentence pairs only about 50% of the time, although the tendency to employ stress differed somewhat depending on the sentence constituent in which the contrast occurred.

6. Inter-correlations of the intonation variables pause, pitch, and stress, as measured in this study, were modest or non-significant for first grade children who read at Primer level.

7. Use of appropriate intonation in oral reading does not appear to be highly correlated with word recognition or comprehension skill among first grade children reading at Primer level.

8. A measure of the total number of pauses in oral reading appears to be the measure of fluency most related to other reading subskills.

9. The child's use of appropriate pause, pitch, and stress in oral reading is not highly related to peer evaluation of that child as a "good reader," but use of a minimal number of total pauses in oral reading is significantly related to peer evaluation as a "good reader."

10. First grade children appear to be able to nominate for "best reader" pupils who are not their best friends.

11. Fluent oral reading among successfully reading first grade subjects appears to have a low negative or negligible relationship with classroom practice time as measured in the present study.

12. The use of appropriate intonation appears to have a non-significant relationship with the amount of time the parent spends reading orally to selected first grade subjects--but total number of pauses, a measure of non-fluency, has a low positive relationship with amount of parent reading time.

13. The use of appropriate intonation appears to have a non-significant relationship to the amount of time the child spends reading orally at home.

14. For the first grade subjects in the study, level of oral reading fluency was not highly correlated with age when parent first began reading to the child.

15. The six independent variables included in the study, functioning jointly, accounted for only a small percentage of the variance in oral reading fluency scores.

Limitations

As the research progressed, problems and limitations became apparent which should be noted when generalizing from

these conclusions to other populations, and when planning replications or future research studies of a similar nature.

1. The subjects were a very select group.

Although attempts were made to include subjects from different home environments, the socio-economic status of the entire community from which the subjects were drawn is largely middle or upper-middle level. Also, all of the pupils were making satisfactory progress in learning to read: they were selected because they could read at least at Primer level in April of the first grade year. However, their performance on the two standardized test instruments was higher than anticipated--well above Primer level. The group mean (N = 106) on the Slosson Oral Reading Test (the measure of word recognition) was 55, equal to grade level equivalent of 2.7. The group mean on the Cooperative Primary Reading Test (the comprehension measure) was 35, equivalent to the 86th percentile on national norms. These scores indicate that the sample was indeed a very select group, quite advanced in the learning-to-read process. First grade children with poor reading skills were not included because it was felt that word identification problems would be confounded with the fluency factor. In generalizing from these data, the reader must be cautioned that children nominated as "Primer level or above" in another population might not compare with this particular sample in levels of reading achievement.

2. Marginal scoring reliability

Although inter-rater reliability for the four judges appeared at first to be satisfactory (ranging from .639 for

pitch to .900 for stress), the rating consistency over time for the four judges was quite variable (ranging from .258 to .974). The scoring consistency when judged by the author ranged from .725 for pitch to .893 for pause. Significant differences were found in the means of scores for pitch and stress when assigned by the four judge team and when assigned by the author with the result that different significant correlation coefficients emerged from the data anlysis. Despite differences, tentative conclusions can be drawn from the scores assigned for research purposes. The testing instruments and scoring techniques used, however, may not be reliable enough for making decisions about individual children.

3. Lack of variability

The scores assigned to the intonation variables pause, pitch, and stress were concentrated at the mean, with a minimal spread of scores. On the one judge data, for example, 68% of the pause scores were within 2 points of the mean of 16, with a possible score of 21. It is possible that the oral reading intonation patterns of first grade children do not truly vary a great deal, or it is possible that the research procedures used did not capture the variability that exists. In the latter case, variability might be improved by including subjects from different socio-economic levels or ability levels, by lengthening the test, or by increasing the complexity of syntax used in the sentences.

4. Imprecise measurement instruments

One of the questionnaires and one of the intonation measures appeared to have some specific limitations. The parent questionnaire was open-ended rather than forced-choice, so that responses were quite varied and were stated in such a way that, in some cases, phone calls to parents were required for clarification. For example, to the question, "How many minutes per week does your child read out loud to you?", one parent wrote "Yes, constantly!" Pre-established time categories in a check-off format might have eliminated the problem. Accuracy of reporting might have been improved by asking parents to actually keep track of home reading activities for 1 week rather than giving an approximation.

Secondly, a more valid procedure for the scoring of the pause component could have been adopted: failure to pause at commas should not have been marked wrong if that comma was a writing convention. For example, in the construction, "'Is it a game, Jan?' asked Kim," neglecting to pause before the word "Jan" was marked wrong, yet a pause is not always placed there in observed adult conversation. In any future research, the points at which pause and pitch change are evaluated should more closely correspond to adult oral patterns.

Implications and Suggestions for Future Research

There is more to learn about the use of appropriate intonation variables in the oral reading of elementary school

children. A replication of the study, exactly as presently designed, might result in different conclusions if the data were collected from a sample representing a different socio-economic or geographical community. And a longitudinal study of the same subjects immediately presents itself as a worthwhile project because of Aull's (1977) developmental hypothesis, and because it would allow for comparisons with other research studies using children in middle grades. What will be the intonation patterns of these same children in second grade?, in third grade? Will their third grade fluency scores be equalled or surpassed by any of those classmates who had not yet attained Primer level by the end of first grade? Will observed inter-correlations between intonation variables increase, and will the relationships between fluency and other reading subskills shift as the child progresses from beginning reader to experienced reader? These questions might be addressed in such a longitudinal study.

A study of the same design with slight modifications in measurement tools and scoring procedures might also result in different conclusions. As recommended in the conclusions section, the use of forced-choice questionnaires, the tabulation of actual time rather than approximations, and more rigorous training of judges might provide significantly different data. Variations might also be considered: children might be asked to read from an unpunctuated story to see how well they can apply appropriate intonation without any graphic cues, or a practice condition might be added so that

pupils would have an opportunity to practice reading the text silently before being called upon to read aloud.

Results of the present study also suggest the exclusion of variables such as classroom reading time, and the inclusion of some new variables. Of particular interest might be the addition of an assessment of oral language intonation. A sample of oral language use could be recorded, perhaps using a puppet dialogue so that one could elicit questions as well as statements from the child. One could then compare intonation usage in the oral language of a child with intonation patterns in that child's oral reading. A measure of IQ might also be appropriate: although this writer is unaware of an established relationship between aptitude and intonation in conversation, aptitude measures are correlated with success in school-related tasks and fluent oral reading may be included in that category. As previously mentioned, a measure of reading speed might also be included. This would allow one to see to what extent a fast reader is considered a "good reader," and to see the effect of the speed variable on pause, pitch, and stress. Again, there is the possibility of a non-linear relationship, since both very slow and very fast readers might omit intonation variables. Additional variables which suggest themselves for inclusion are teacher emphasis on fluent renderings, formal pre-school experience, and self-concept as a reader.

The emergence of total pause as the fluency score most related to other reading skills suggests that further

experimental investigation in this area might be fruitful. An educational intervention might be planned, perhaps for those children identified as having sufficient word recognition skills but poor comprehension. For example, sessions might be planned in which subjects read stories along with tape recorded versions, thus practicing appropriate word groupings they themselves could not generate. Pretest and posttest measures would assess the extent to which such imitative techniques affect the reading subskills of word recognition, comprehension, and fluency, and delayed posttest scores would indicate the extent to which these effects are lasting.

The reliable scoring of intonation variables in oral reading, and the designing of materials which tap the variability that exists are crucial considerations in all future research in this area. The measurement of oral reading fluency appears to have a potentially useful place, both in reading research and in the field of reading diagnosis.

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APPENDICES

APPENDIX A

LETTER TO PARENTS

Dear Parent:

Your child has been selected to participate in a research project which was designed to investigate the reading skills of first graders. Your child will not be identified by name in this study: he will be assigned a number and all of his responses will be coded only with that number.

The project consists of the following activities:

1. Having the parent fill out the attached questionnaire.

2. Having the child read out loud a short paragraph, some sentences, and a list of words. This oral reading will be recorded on a tape recorder.

3. Having the child read silently and answer some questions about what he has read.

4. Having the teacher fill out a questionnaire about the amount of time the child reads orally in the classroom.

All together, the child's activities will take approximately 1 hour. All testing will be done at school by a trained researcher.

I appreciate your help in this project.

If you agree to your child's participation, please sign the permission form and fill out the questionnaire. An addressed, stamped envelope is enclosed for your convenience in returning the form. I would like to have the forms back by . If you have any questions, please call me at 651-3498 after 5 p.m.

Thank you,

Nancy K. Rice
Michigan State University
Doctoral Candidate in Education

PARENT PERMISSION FORM

I give my permission for my child _____ to participate in a reading research study.

_____
Parent

PARENT QUESTIONNAIRE

1. About how many times a week do you (or another adult or older child) read to your first grader?

   _____

2. How long (in minutes) do these reading sessions usually last?

   _____

3. How old was your child when you started reading books to him/her?

   _____

4. Does your child read out loud to you? If so, about how many minutes each week is your first grader reading out loud to you?

   _____

PUPIL STATUS QUESTIONNAIRE

I will read you the names of 11 boys and girls in your class. Listen to their names. Then tell me who are the three best readers on this list.

(Read names except own name)

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.

Now, who are the three best readers? (Check three names.)

I'll read the names again. Then tell me, who are your three best friends on this list? (Omit child's own name.)

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.

Now, who are your three best friends? (Check names.)

CLASSROOM ORAL READING TIME
QUESTIONNAIRE

To the Teacher:

Please list below the 12 subjects from your class. For each subject record the time, in minutes, that the subject reads orally each day. Keep the record for 1 week.

Include only reading activities that involve sentences or phrases: Do not record time spent on reading drill activities such as word card practice or dittos of vowel sounds, etc. Do record time spent reading orally outside of the prescribed reading time, such as reading library books to a partner orally, or reading aloud from a content area textbook.

Names:	Monday	Tuesday	Wednesday	Thursday	Friday
1. _____	_____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____	_____
4. _____	_____	_____	_____	_____	_____
5. _____	_____	_____	_____	_____	_____
6. _____	_____	_____	_____	_____	_____
7. _____	_____	_____	_____	_____	_____
8. _____	_____	_____	_____	_____	_____
9. _____	_____	_____	_____	_____	_____
10. _____	_____	_____	_____	_____	_____
11. _____	_____	_____	_____	_____	_____
12. _____	_____	_____	_____	_____	_____

INDIVIDUAL TESTING ADMINISTRATION

(Including Tape Recorder De-sensitization)

"Hi, _____. How are you?"

(Positive comments on clothes, weather, classroom activities, etc.)

"I want to learn more about how first graders read . . . and I would like to have you read some things for me tdoay . . . would you do that for me?

And while you're reading, I'll be running the tape recorder so I can remember how you sound when you read.

Did you ever tape record your reading before?

Let's see how you sound. I'll turn it on while you tell me your name and how old you are. (What kind of stories you like?) Let's do that now."

(Turn on tape: Record)

"Now let's listen to your voice."

(Rewind: Play)

"Now, let's read some things into the tape recorder, and when we're all done, you can listen to yourself again."

Child reads: Slosson List
Intonation Paragraph "Jan" In rotated order
Contrastive Stress Cards

"Now, would you like to hear yourself again?"

(Replay last minute or two of tape--not whole tape.)

"Before we go back to class, I would like you to answer some questions for me."

(Administer Pupil Questionnaire)

"Thank you so much for reading for me today. You did such a good job."

ORAL READING FLUENCY TEST: STORY

A New Toy

Jan is a girl who has a new toy.

Jan said, "I have something that is new, and it is red, and we can play with it. Who can guess what it is?"

"Is it a car?" asked Jim.

"Is it a game, Jan?" asked Kim.

"No," said Jan, "It is not a car, and it is not a game. It is a big, red ball for us to play with. Jim! Kim! Let's play ball."

ORAL READING FLUENCY TEST

DIRECTIONS FOR CONTRASTIVE STRESS CARDS

Say, "I have some cards with pictures for you to look at. Then I want you to read to me what it says about these pictures."

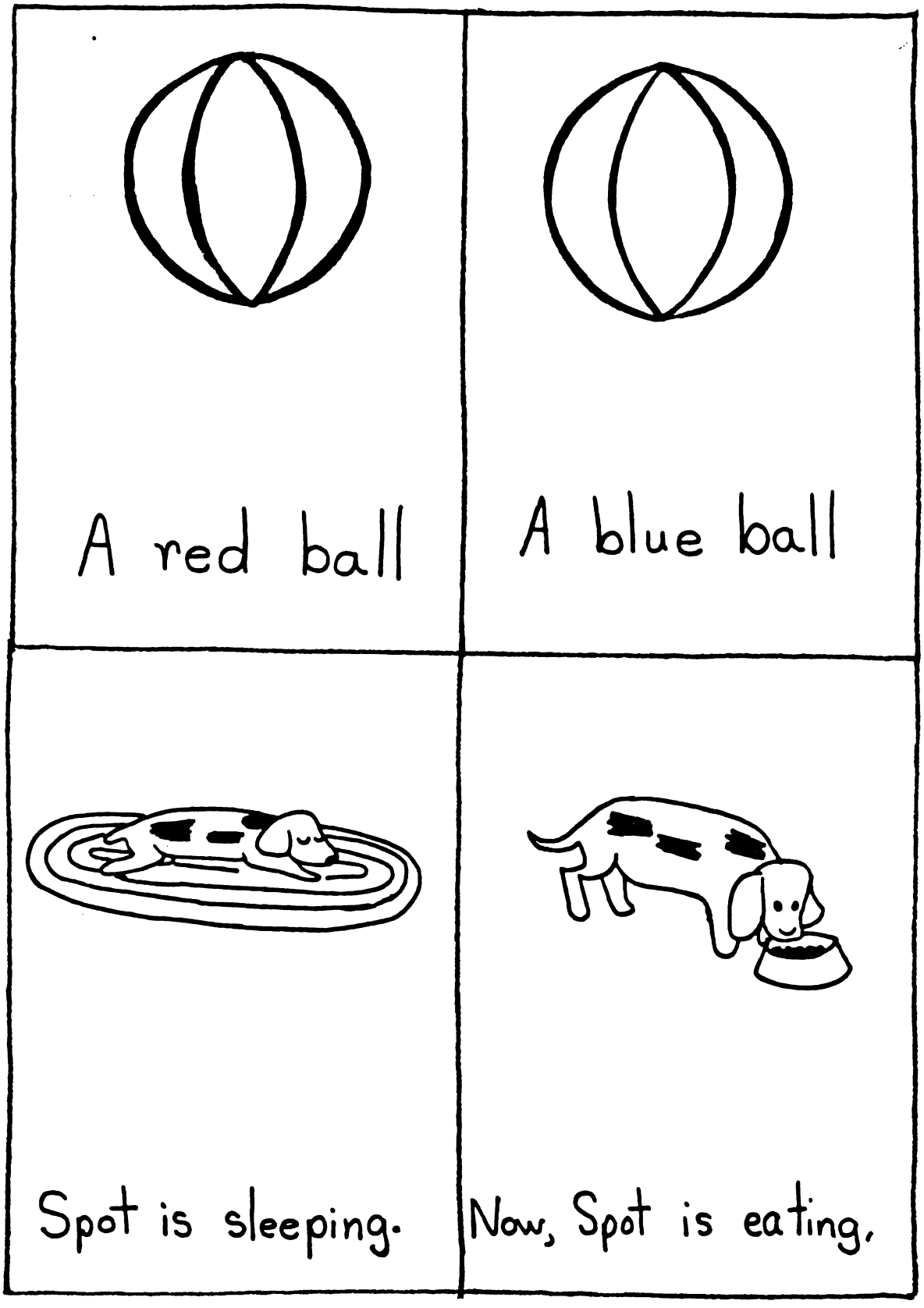
Lay down first card of a pair. Pause for child to read first card.

Lay the second card beside the first, and pause for the child to read the sentence from the second card.

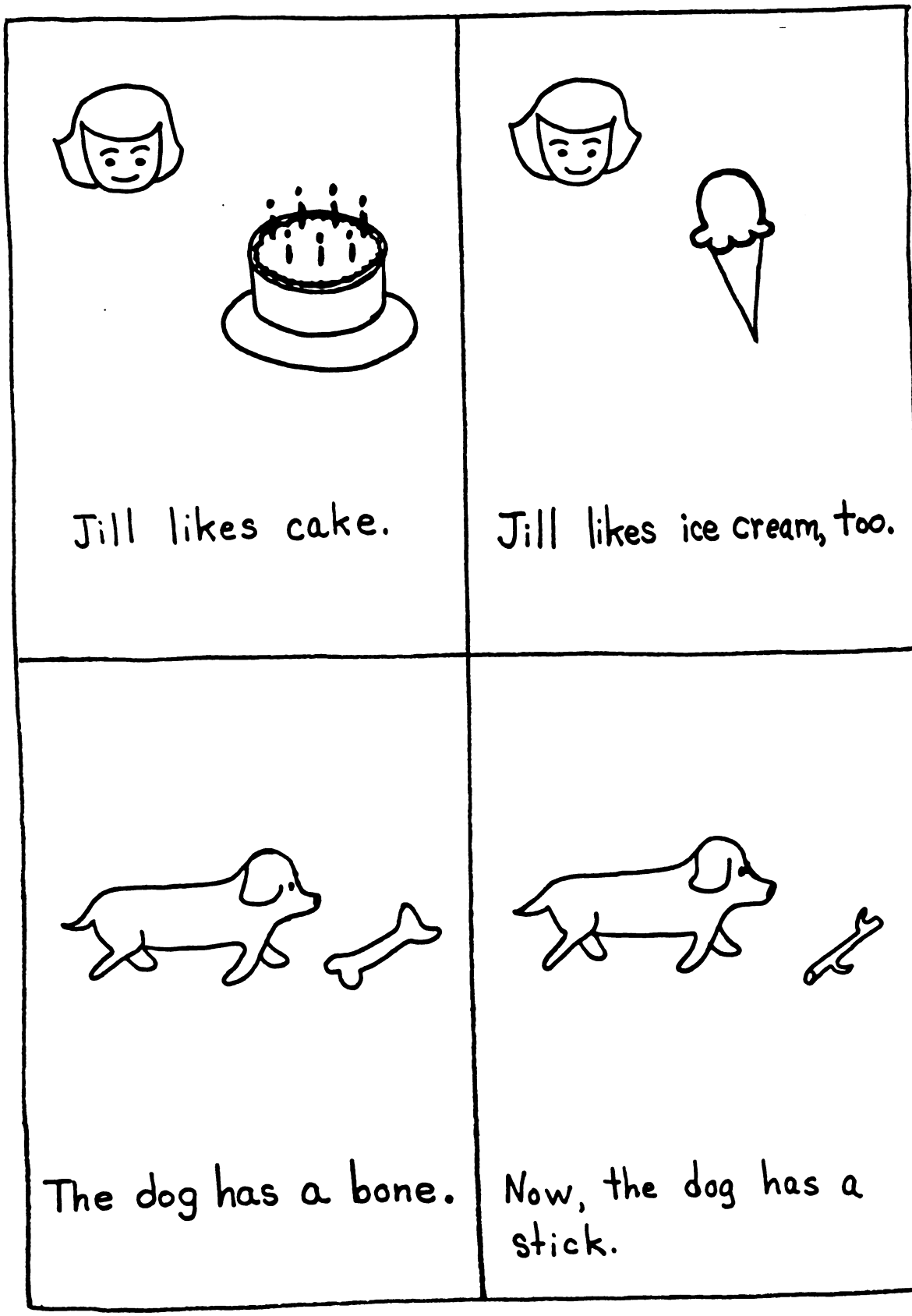
After each pair, give an expression of satisfaction and remove that pair from view.

Help children, if necessary, with pronunciation of words.

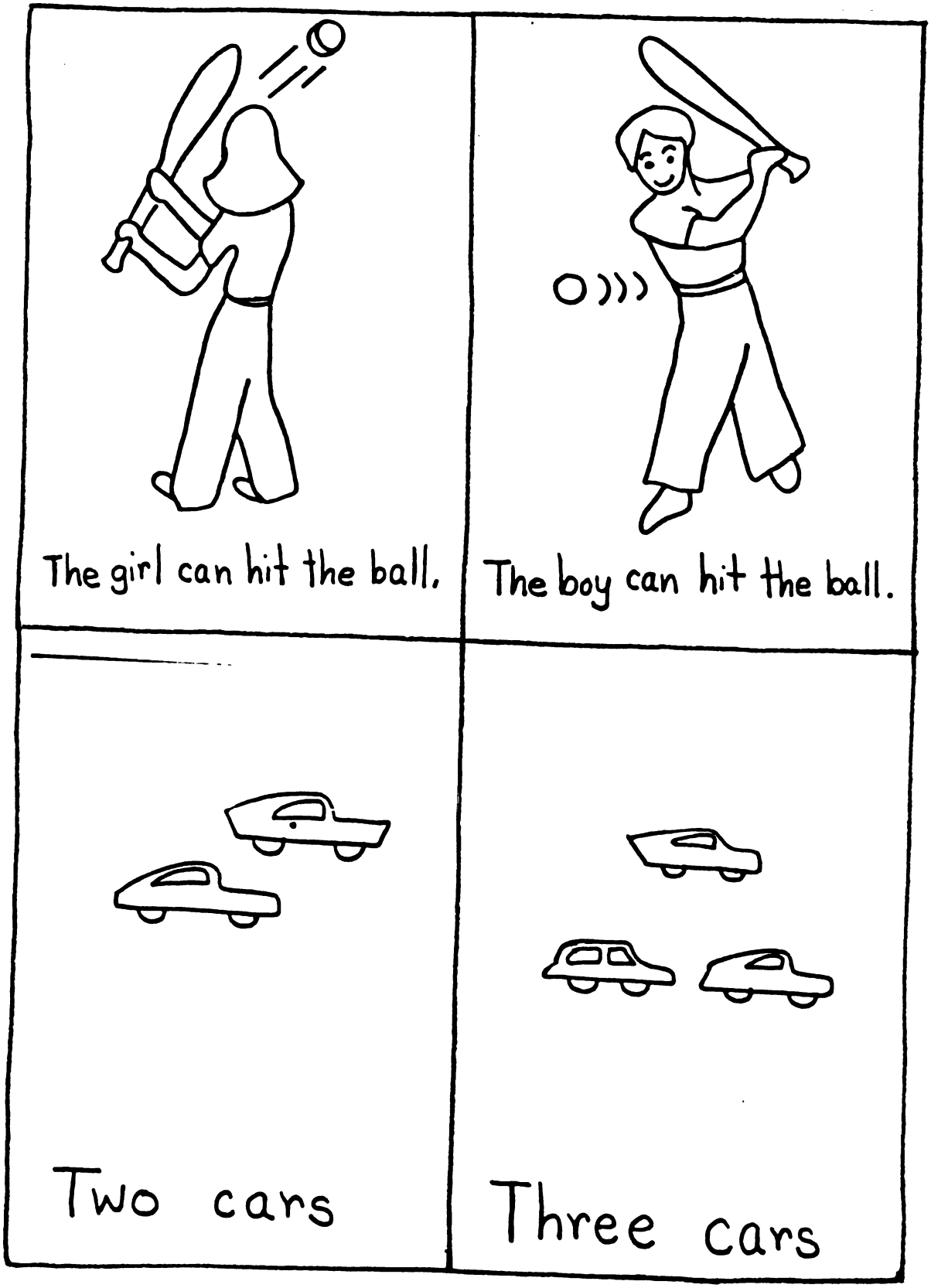
ORAL READING FLUENCY TEST:
CONTRASTIVE STRESS CARDS
(Actual Size: 4" x 6")



ORAL READING FLUENCY TEST:
CONTRASTIVE STRESS CARDS
(Actual Size: 4" x 6")



ORAL READING FLUENCY TEST:
CONTRASTIVE STRESS CARDS
(Actual Size: 4" x 6")



ORAL READING FLUENCY TEST:
CONTRASTIVE STRESS CARDS
(Actual Size: 4" x 6")

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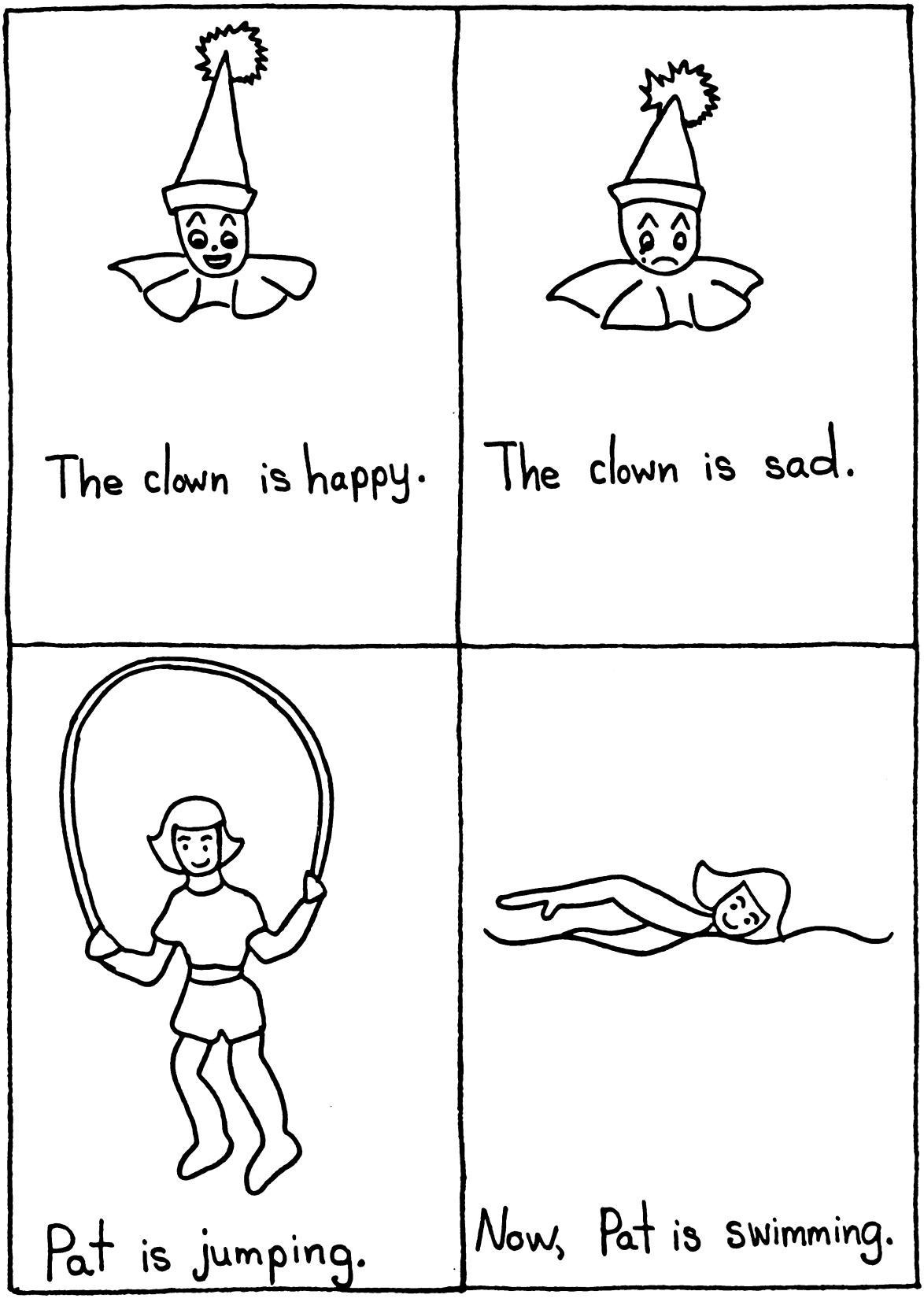
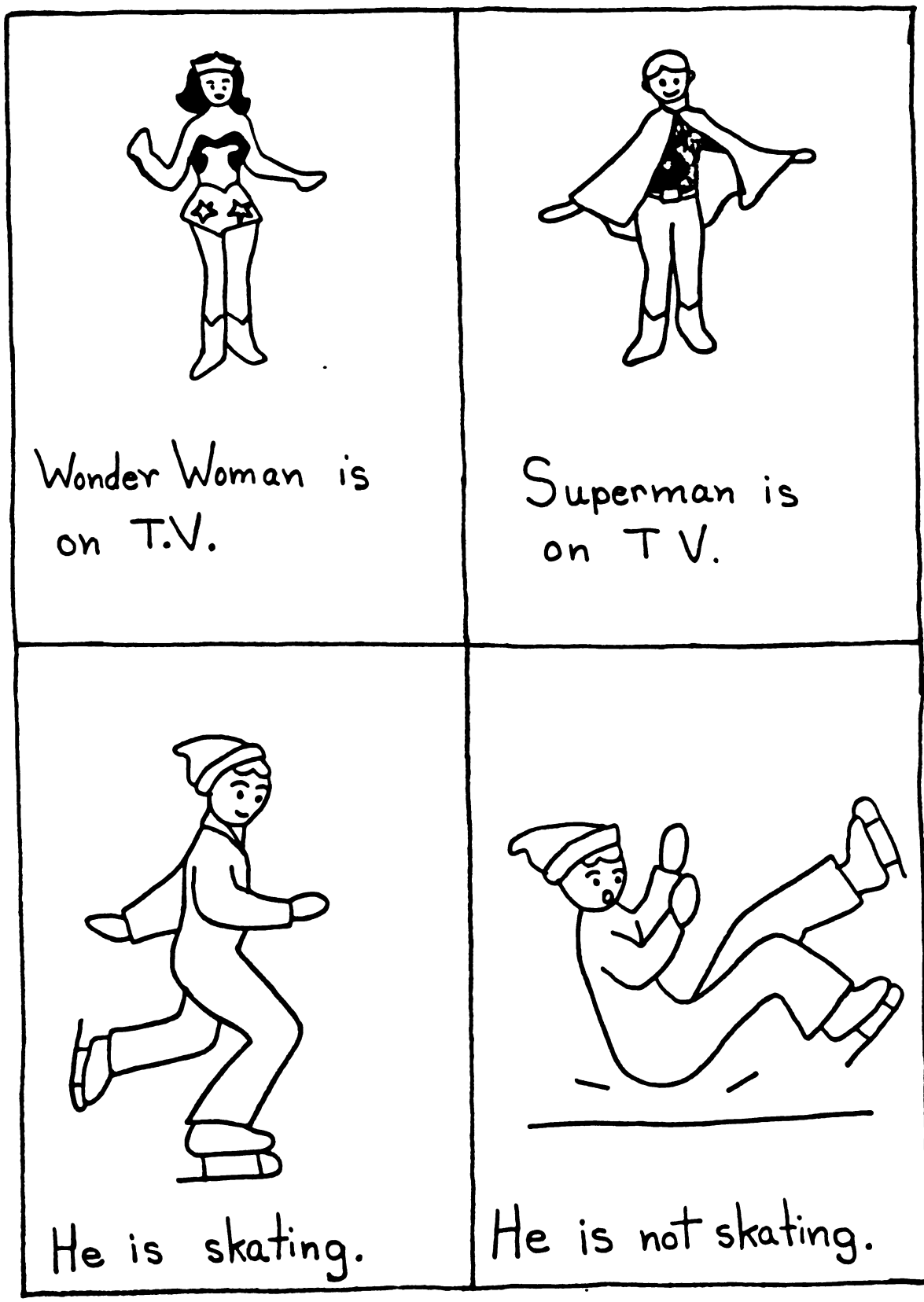
CONTRASTIVE STRESS CARDS
(Actual Size: 4" x 6")



ORAL READING FLUENCY TEST:
CONTRASTIVE STRESS CARDS
(Actual Size: 4" x 6")

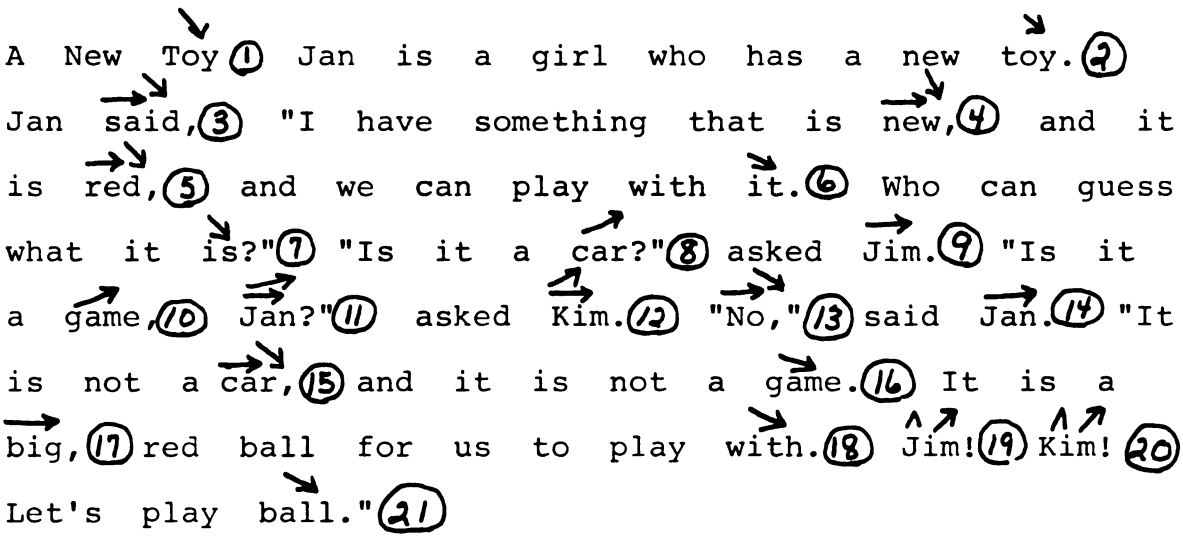


ORAL READING FLUENCY TEST:
SCORING SHEET FOR PAUSE, TOTAL PAUSE,
AND CONTRASTIVE STRESS

a new toy Jan is a girl who has a new toy Jan said I have something that is new and it is red and we can play with it who can guess what it is is it a car asked Jim is it a game Jan asked Kim no said Jan it is not a car and it is not a game it is a big red ball for us to play with Jim Kim let's play ball

A red ball A blue ball
Spot is sleeping. Now, Spot is eating.
Jill likes cake. Jill likes ice cream, too.
The dog has a bone. Now, the dog has a stick.
The girl can hit the ball. The boy can hit the ball.
Two cars Three cars
A car goes fast. A plane goes fast.
The boy has a car. Now, the boy has a truck.
The clown is happy. The clown is sad.
Pat is jumping. Now, Pat is swimming.
Wonder Woman is on T.V. Superman is on T.V.
He is skating. He is not skating.

ORAL READING FLUENCY TEST:
SCORING SHEET FOR PITCH



A New Toy Jan is a girl who has a new toy.

Jan said, "I have something that is new, and it is red, and we can play with it. Who can guess what it is?" "Is it a car?" asked Jim. "Is it a game, Jan?" asked Kim. "No," said Jan. "It is not a car, and it is not a game. It is a big, red ball for us to play with. Jim! Kim! Let's play ball."

APPENDIX B

Table B:1.--Relationship Between the Oral Reading Fluency Score and Age when Parent Began Reading to Child: Four Judge Data

Oral Fluency Score	Age in Years				
	0.0 - 0.9	1.0 - 1.9	2.0 - 2.9	3.0 - 3.9	4.0 - 4.9
50		*			
49	*		*		
48			*		
47		**		*	
46		****	*	*	
45		****	*		
44	******	*			
43	****	***			*
42	**	****	**	*	
41	*	***			
40	***	**		*	
39	**	**	*		
38		*****		*	
37	**	****	*		
36	**	*		*	
35		****	*		
34	**	**	*		*
33			*		
32	**	***	*		
31		*	***		
30	*	*	**		
29	*				
28					
27		*	*		
26					
25	*				
24					
23					
22		*			
21					
20					
19	*				

Mean (Oral Reading Fluency): 38.73
Standard Deviation: 6.10
High Scores: 45 - 50
Middle Scores: 33 - 44
Low Scores: 19 - 32

Table B:2.--Relationship Between the Oral Reading Fluency Score and Age when Parent Began Reading to Child: One Judge Data

Oral Fluency Score	Age in Years				
	0.0 - 0.9	1.0 - 1.9	2.0 - 2.9	3.0 - 3.9	4.0 - 4.9
48		*	**		
47	*			*	
46	*	*			
45		**		*	
44		**			
43	***	*****			
42	****	****	**		
41	***	*****		*	
40	*****	*****	*		*
39	*	*			
38	**	****	**		
37	****	****	***	*	
36	*	****	*	*	
35	**	******		*	*
34	***	*			
33	*		*		
32		*	**		
31		***	**		
30			*		
29			*		

Mean (Oral Reading Fluency): 38.70
Standard Deviation: 4.31
High Scores: 43 - 48
Middle Scores: 35 - 42
Low Scores: 29 - 34

Table B:3.--Double-Cross Validation Regression Equations: Four Judge Data

Equations generated from Sample 1, used for prediction on Sample 2:

Pause Y' - 15.515+(-.088*H)+(.161*C)+(-.065*S)+(-.018*CL)+(-.004*P)+(.078*V)

Pitch Y' = 12.777+(.018*S)+(.008*P)+(-.016*CL)+(.142*V)+(.033*C)

Stress Y' = 9.694+(-.009*H)+(.228*V)+(-.104*C)+(.014*CL)+(-.006*P)+(.014*S)

ORF Y' - 37.763+(-.016*H)+(.445*V)+(-.020*CL)+(.091*C)+(-.032*S)

T-Pause Y' = 30.276+(-.220*S)+(.249*C)+(-.255*V)+(-.005*H)+(.005*P)

Equations generated from Sample 2, used for prediction on Sample 1:

Pause Y' - 18.162+(-.035*L)+(-.004*P)+(-.047*V)+(.002*H)+(-.004*S)

Pitch Y' = 15.635+(-.053*CL)+(.050*S)+(-.007*H)+(-.004*P)+(-.054*V)

Stress Y' = 3.586+(.043*S)+(.010*H)+(.009*P)+(.062*V)+(-.021*C)

ORF Y' = 37.434+(-.088*CL)=(.090*S)+(.005*H)+(-.024*C)+(-.037*V)

T-Pause Y' = 32.466+(-.208*S)+(.056*P)+(-.976*V)+(.039*CL)+(.128*C)+(-.009*H)

Table B:4.--Double-Cross Validation Regression Equations: One Judge Data

Equations generated from Sample 1, used for prediction on Sample 2:

Pause Y' = 14.592+(-.007*H)+(-.187*V)+(.124*C)+(-.042*S)+(.011*CL)+(.005*P)

Pitch Y' = 15.642+(.173*V)+(.006*P)+(.009*CL)+(-.008*S)+(.018*C)+(.001*H)

Stress Y' = 4.881+(.273*V)+(-.006*H)+(.004*P)+(.015*S)+(-.021*C)+(-.004*CL)

ORF Y' = 35.116+(-.013*H)+(.258*V)+(.014*P)+(.121*C)+(-.035*S)+(.015*CL)

T-Pause Y' = 38.825+(-.175*S)+(-.021*H)+(-.339*V)+(.012*P)+(-.005*CL)

Equations generated from Sample 2, used for prediction on Sample 1:

Pause Y' = 14.078+(.008*P)+(.070*C)+(.004*H)+(-.018*S)+(-.005*CL)

Pitch Y' = 15.789+(.004*P)+(.030*C)+(.002*H)+(.002*CL)+(-.018*V)

Stress Y' = 5.553+(.008*P)+(-.072*C)+(.031*S)+(.002*H)+(-.019*V)

ORF Y' = 35.380+(.021*P)+(.007*H)+(.013*S)+(.029*C)+(-.048*V)+(-.003*L)

T-Pause Y' = 38.534+(-.150*S)+(.016*P)+(-.212*V)+(-.075*C)