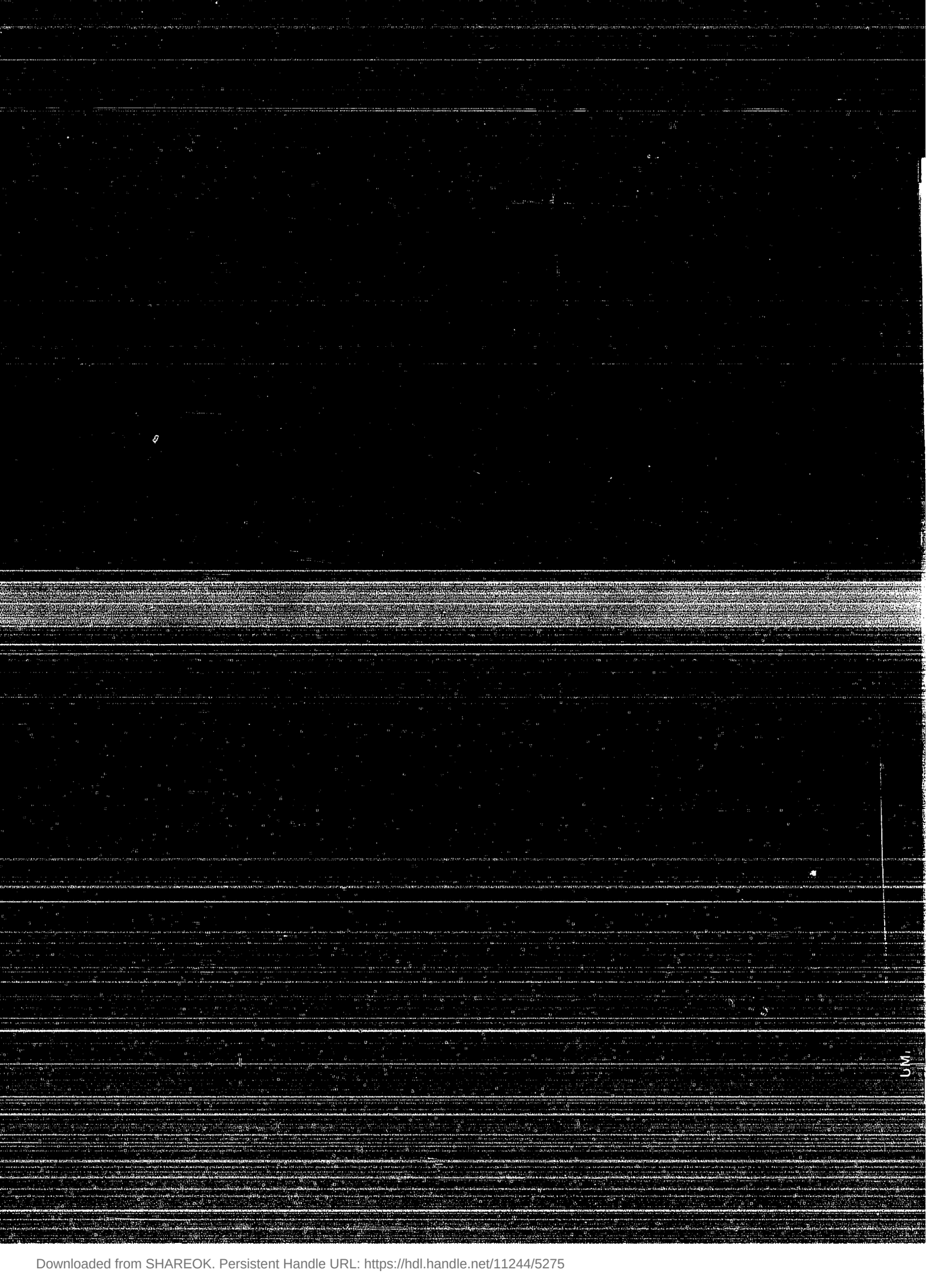

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THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

CONSTRUCT SYSTEMS OF SEVENTH GRADE STUDENTS AND THEIR RELATIONSHIPS TO READING ACHIEVEMENT: AN APPLICATION OF KELLY'S REPERTORY GRID TECHNIQUE

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CONSTRUCT SYSTEMS OF SEVENTH GRADE STUDENTS AND

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GRID TECHNIQUE

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Note

An effort was made to use nondiscriminatory pronouns in this manuscript. However, in chapter three, which describes the theoretical framework on which this study was based, it seemed appropriate to conform with Kelly's (1955) use of singular, masculine pronouns in order that consistency be maintained.

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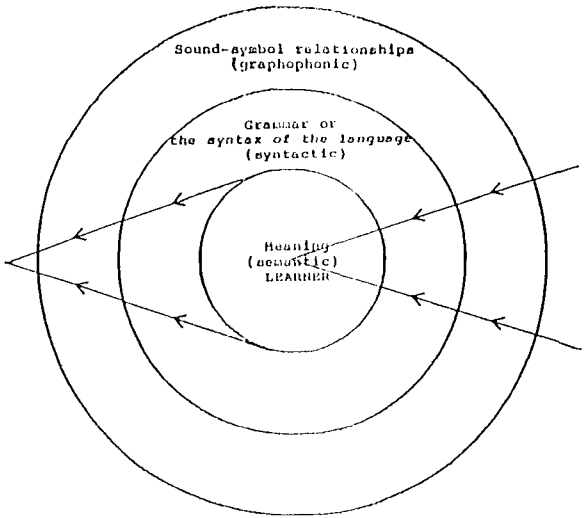
CHAPTER I

INTRODUCTION

Teachers are basically using two different approaches to teach children to read: the synthetic/analytic approach and the holistic approach. Underlying each approach exists a theoretical, psychological assumption of how children learn and how teachers relate to children during the learning process (Harste & Burke, 1977). A diagram, adapted from Burke (1972) to include arrows and an additional wedge, illustrates the emphases of the two basic approaches (see Figure 1).

Teachers using the synthetic/analytic approach present reading to children from outside their realm of knowledge with one piece of information at a time (e.g., letter, letter-sound relation). The intent in this approach is to work on meaning (comprehension) after children have learned to read. In contrast, teachers using the holistic approach begin with what is meaningful for children and work from the inside of the circle out.

Figure 1. Differing emphases of reading approaches.



Reading instruction according to the holistic approach

Reading instruction according to the synthetic/analytic approach

Print is utilized in stories, directions, announcements, and other written forms that hold meaning for children, and parts of the outer circles are pulled into the inner circle as children's awareness and needs arise. Goodman (1970) suggested that mature readers simultaneously utilize three cueing systems (graphophonic, syntactic, and semantic) as they engage in processing the print. These cueing systems are consistent with the diagram and were included to better describe the major differences in the approaches and their basic learning theories.

Although the synthetic/analytic approach fundamentally takes one perspective in teaching children to read, there are subtle differences between synthetic and analytic methods that have been debated (Chall, 1967). Therefore, for clarity of content, each will be discussed separately.

Synthetic Approach

The synthetic approach emphasizes the sound-symbol correspondence (graphophonic) in which children are taught the letters, sounds of letters, letter-sound combinations, and then how to combine them to pronounce words. If the phonics method is used, the phonic generalization that applies to these combinations is taught at the same time.

As psycholinguist Frank Smith (1971) has pointed out,

there is not a one-to-one correspondence between letters and letter sounds. Researchers have determined that there are between 40 to 47 distinct sounds (phonemes) in the English language which are represented by 26 letters. In addition, these sounds have 500 to 2,000 possible spellings. In an attempt to cope with this problem, instructional materials (e.g., Initial Teaching Alphabet [i/t/a]) have been developed for beginning reading instruction that are phonemic rather than phonetic (Mazurkiewicz, 1964). Each of i/t/a's 44 symbols represents one sound (e.g., ee would be used in we, key, bee and written as wee, kee, bee). A transition to traditional orthography is made at the end of first grade (Downing, 1967).

Another method that is classified under the synthetic approach to reading is the alphabet method. This method, popularized in the 16th century, requires students to name the letters of a word and then spell the word in syllables before reading the word aloud.

Analytic Approach

While the synthetic approach can be recognized as being inductively derived, either by phonics or phonemes, the analytic approach can be considered deductive phonics. The analytic approach starts with words, basic sight words

or high frequency words, and then moves to the sound-symbol generalizations. Carefully controlled word units are taught in isolation until they are recognized "at sight" and then phonic generalizations are related. The word method became popular in the United States in 1870 and came to be known as "look-and-say." It originated from the Orbus Pictus Book written by Comenius in 1657 in which words were presented with a picture that suggested its name.

Methods classified either synthetic or analytic vary in sequence of introducing the vowel sounds, consonants, letters or words (Chall, 1967). They have in common an underlying psychological base that views the learner as passive and assumes that the teacher must present a planned sequence of instruction that moves from part to whole. The teacher begins with decoding (Samuels, 1977) and continues to build to "create comprehension" (Holmes, 1953). A historical-philosophical base can be found in John Locke's (1632-1704) "tabula rasa" theory in which a person is viewed as building-up and storing impressions. A person, according to this theory, is not considered to be able to think critically. Students are completely dependent on their tutor/teacher to give them the "right" experiences so that the right way can be gradually absorbed to dominate their thinking. This behavioristic

view of reading suggests that children have to be trained by stimulus, response, and reinforcement to reproduce precise sound and letter representations (Otto, 1982). This approach is generally found in commercially produced basal series in which skills in word recognition, comprehension, and study skills are coordinated, sequenced, and arranged from kindergarten through sixth grade.

Holistic Approach

The holistic approach emphasizes the semantic cueing system and views learners as interactively involved in a thinking process. Smith (1975) suggested that "...comprehension means making sense" and "...relating new experience to the already known" (p. 10). The whole personality acts as a guide in creating meaning from the print. In an explanation of the psychological theory of George Kelly (1955), Bannister and Fransella (1980) considered the fundamental postulate to imply that the "...personality is the way you go about making sense of the world" (p. 17). The present researcher suggests that many of the fundamental views that this approach advocates can be traced to Pestalozzi (1746-1827) and his admonishments to: (a) educate the entire child; (b) place the child, not subject matter, at the center of the

process; (c) connect the unknown to what the child already knows; (d) make education a natural process; (e) base teaching on what is familiar to the child; (f) use relevant, practical subject matter that draws from actual circumstances; and (g) tell the child as little as possible by permitting discovery and self instruction (Butts, 1955).

During the early part of this century, however, the most prevalent learning theory used by teachers in reading instruction was behaviorally based. Since that time, reading researchers (e.g., Goodman & Goodman, 1981) have encouraged teachers to return to a "humanistic acceptance of the learner" (p. 3) similar to those views proposed by Pestalozzi. The revival of this emphasis can be traced to Gestalt psychologists who influenced reading teachers to broaden their "field" from phonemes, letters, and words to context. Additional influences have been from researchers such as Piaget (1954) who looked at how learners' processes affect and influence their perceptions. Gibson (1969) found three trends in perceptual development: (a) the ability to discriminate with increasing specificity; (b) the ability to focus and utilize attention; and (c) the ability to economically search and select information. His findings suggest that as children become readers, they work on the pieces of language (e.g., letters, words), not

the other way around. Miller (1965) argued that reading is not the sum of its parts but rather the whole is greater than the sum of its parts. Studies have shown that no more information is required for the brain to identify a word in meaningful text than to identify a single letter in isolation (Smith, 1971). Smith and Holmes's (1971) review of the studies done by Shannon (1951) and Cattell (1947) concluded that uncertainty can be eliminated by one half if letters are placed in word form and "...half as much uncertainty again can be removed if the words are linked in a meaningful sequence" (p. 413).

The holistic reading approach suggests that impressions are organized in wholes. The whole must be considered before there is an awareness of the parts. Goodman (1971) suggested that comprehension precedes word identification and "...makes unnecessary the process of identifying individual words" (p. 180). Thoughts, therefore, being integrated and related to one another in complex ways can not be separated and added together.

Theorists and researchers who have explored the holistic approach in reading and the psycholinguistic theory from which it is derived, have suggested that written language is composed of a deep structure and surface structure (Goodman, 1971; Smith, 1971; 1975). The

surface level involves the visible, physical representation of print while the deep structure involves the meaning of the print. Goodman (1970) suggested that readers sample from the surface level in order to make predictions about meaning. If young readers are given materials that they have written or materials that are familiar to them, their whole mental processes are better able to anticipate and predict the print. Therefore, only a minimal sampling of the surface level is required.

The holistic approach to reading instruction encourages prediction by having children recall previous happenings in the story and make use of prior knowledge. Familiarizing readers with background information and possibilities for story events is thought to eliminate unlikely predictions and uncertainties as readers interactively process the print. Through this approach readers gain access to what Smith (1973) called "nonvisual information" (p. 6). He found that the more readers know about the context, the less visual information they need. Analyzing reading errors semantically, syntactically, and graphophonically, Goodman (1969) found that errors were generally not semantic but visual oversights. Therefore, he termed them miscues rather than errors. He stressed that reading materials and activities must make sense and relate to what children already know and want to know

about their world. Implementing this approach necessitates providing learners with nonreading experiences so that concepts can be understood before the symbolic representation is attempted. In addition, text needs to be natural and sensible so children are not forced to attend to the surface level. Evidence and monitoring of readers using semantic cues can be observed when children, reading orally, make an error or miscue and preserve the meaning of the context (Goodman, 1969). Gibson and Levin (1976) found that 90 per cent of the substitutions that readers make preserve the meaning.

Educators utilizing this approach in teaching beginning reading use language experience (Allen, 1976), literature, and trade books that are written simply but with natural syntax or word order. Literature and supplemental reading books containing rhyme, repetition, rhythm, or context that can be predicted become the texts for beginning readers. Reading instruction, considered a process, finds expression in group and individual situations with unsequenced materials. The process is thought to be best accomplished by trusting children's sensitive systems (Holdaway, 1979) and relating to children's systems from the semantic realm (Goodman & Goodman, 1979).

Continued emphasis on finding viable answers for

difficulties children have in learning to read has led some researchers to investigate questions dealing with children's concepts about reading. Perceptions that children hold about reading have been considered from two major perspectives: (a) metalinguistic and (b) metacognitive. Research from the metalinguistic perspective tends to parallel those emphases found in the synthetic/analytic approach to reading, while research from the metacognitive perspective parallels and elaborates those emphases of reading found in the holistic approach.

The first, the metalinguistic perspective, has three dimensions. Investigators who have explored children's awareness or lack of concept awareness of linguistic terms have concluded that children arrive at school with little understanding of the "technical vocabulary" used in reading instruction (Reid, 1966; Downing, 1969; Downing & Oliver, 1974). The second dimension encompasses observed behaviors including children's orientations to books and print (e.g., Clay, 1973). Investigations dealing with observed literacy behavior have included: (a) orientations to books (e.g., front to back, top to bottom progression, print as a message carrier) and (b) orientations to print (e.g., left to right, word boundaries, capital and lower case letters, punctuation). Researchers have concluded

that print awareness, directionality, and knowledge about the orthography conventions increase with reading proficiency and encounters with written language (Clay, 1969, 1973; Meltzer & Herse, 1969; Mickish, 1974; Ehri, 1979; Johns, 1980; Yaden, 1982). The third dimension includes concepts and relationships of spoken and written units (e.g., Mattingly, 1972). Investigators considering concepts and relationships of spoken and written units (e.g. letters, syllables, words) have concluded that reading instruction provides children with opportunities to analytically approach oral language, and it is through these encounters that children develop concepts about letters, words, and sentences (Francis, 1973). Ehri (1976) concluded "word segmentation is an inevitable product of the learner's attempts to achieve competence with printed language" (p. 841) while Mattingly (1972) contended that acquisition of the written language is dependent on awareness that has been previously acquired in the auditory and verbal modalities. Generally, findings indicate that children are not aware that language is comprised of units (Karpova, 1966; Huttenlocher, 1964; Holden & MacGinitie, 1972; Papandropoulou & Sinclair, 1974). Not having awareness of language units in the spoken mode has led some to question fragmenting reading instruction into phonemes (Johns,

1977). In summary, the metalinguistic perspective deals with children's reflections on the language terms used to talk about reading (e.g., word, letter), directionality (e.g., left-to-right, top-to-bottom progression) and their awareness of the sound and symbol representations.

The second perspective, metacognition, deals with children's concepts of "what reading is" as well as conceptual influences on their reading performance. A complete review of investigations in these areas will be given in chapter two.

Statement of the Problem

These two research perspectives, metalinguistic and metacognitive, have provided insight into children's concepts about print by focusing on different aspects of reading. The present study attempted to gain further insight into reading difficulties from a metacognitive perspective by considering students' reflections on reading materials. Students were asked to compare and contrast reading materials in an attempt to better understand the conceptual systems of readers at varying levels of achievement.

Purpose of the Study

The purpose of this study was to investigate the construct systems of seventh-grade students at varying reading achievement levels. To be consistent with the theoretical framework utilized in the present study, the term "concepts" was referred to as "constructs" (Kelly, 1955).

The following research questions were investigated:

1. What is the frequency of constructs, categorized as to surface level or deep level, used by seventh-grade students to differentiate various forms of reading materials?

2. What are the (a) verbal content categories and (b) patterns of relations that exist within the construct systems of seventh-grade readers of increasing reading achievement levels as they contrast and compare reading materials?

3. What relationship, if any, exists between reading achievement and the number of surface level and deep level constructs utilized by students?

4. What relationship, if any, exists between levels of reading achievement and the organizational patterns of constructs used by students?

Significance of the Study

Researchers have suggested that readers who experience difficulty comprehending also view reading as a code rather than a process of gaining meaning (e.g., Canney & Winograd, 1979; Myers & Paris, 1978). Previous studies attempting to gain access to students' metacognitive perceptions of reading have been limited in instrumentation to interview techniques. The present study utilized a novel instrument in the areas of metacognition and reading to consider the content of students' awareness and the control they demonstrated over their awareness. In addition, the present study attempted to sketch changes or shifts in construct systems of students that might be found along the achievement continuum. Previous studies have selected samples that included high and low achieving groups (e.g., Johns, 1974; Canney & Winograd, 1979). Relationships that may exist between students' achievement and their metacognitive perceptions have not been determined. The present study, then, attempted to make a contribution to the knowledge about the influences of metacognition on reading achievement.

Limitation of the Study

"In many ways the constructs which are important behaviourally may be just those which defy easy verbalisation and which in fact exist at a rather low level of awareness." (Ravenette, 1977, p. 260). A limitation of the present study was that only those metacognitive perceptions that subjects verbalize could be considered. Ravenette (1977), however, concluded that the grid technique with its capacity to individually consider finer details "may reveal truths" (p. 258) that traditional research methods can not identify.

Definitions of Terms

Deep Level Construct - verbal labels about reading materials pertaining to inference, interpretative, and semantic observations.

Graphophonic Cueing System - responses made about the sound-symbol relationships.

Metacognition - the knowledge and control over thinking and learning (Brown, 1980); a perspective in reading research concerned with understanding the thought processes.

Metacomprehension - a conscious implementation of a

learned strategy to obtain meaning from the text.

Metalinguistic - a capability to communicate or demonstrate knowledge of spoken and written language terms; a perspective in reading research concerned with children's awareness of literacy behaviors (e.g., directionality), recognition of terminology, and relationships of spoken and written units (e.g., letters, syllables, words).

Reading Achievement - the combined normal curve equivalent scores on the following subtests of the California Achievement Test, (1977):

a. reading comprehension - recognizing and/or applying skills in recalling of facts, inference, character analysis, figurative language, author attitude and position, and techniques of persuasion.

b. reading vocabulary - selecting synonyms, antonyms, and multimeanings for given words.

Semantic Cueing System - responses made about the meaning of the language.

Surface Level Construct - verbal labels about reading materials describing visible observations and/or graphophonic representations of print.

Syntactic Cueing System - responses made about the grammatical patterns and rules of language.

CHAPTER II

REVIEW OF THE LITERATURE

Metacognitive researchers have investigated the underlying understanding or the semantic realm of subjects' perceptions of the reading process. These researchers have examined their findings to formulate speculations as to how childrens' understanding of the reading process affects their reading performance, achievement, and comprehension.

The literature review focused on: (a) studies that probed concepts of reading from a metacognitive perspective; (b) studies that related this conceptualization to reading achievement; and (c) related metacognitive studies in reading that considered comprehension monitoring in good and poor readers. Each of these three sections was considered separately. The first section included studies that investigated students' awareness of concepts about reading, including self-report studies using interview instrumentation.

The second section of the review considered studies that endeavored to relate conceptualization of the reading process to reading achievement. These studies were concerned with the way in which students' concepts guided and focused their reading behavior.

The final section included studies that considered comprehension monitoring in metacognitive and/or metacomprehension research. Comprehension monitoring was defined as "...the ability to monitor one's understanding" and the ability to "judge the level of one's understanding." (Raphael, Myers, Tirre, Fritz, & Freebody, 1981, p. 325). Researchers considering these three aspects of comprehension monitoring focused on (a) monitoring through self-correction, (b) the use of task and strategy variables through text alterations, and (c) monitoring of different reading materials.

Concepts About Reading

A brief overview of studies considering students' concepts about reading from a metalinguistic view was presented in chapter one. These studies probed students' concepts of reading terms, their orientations to books and print, and their concepts of oral-written relationships. They considered concepts of reading from an outside-in

view, focusing on their subjects' knowledge about the graphophonic system. Metacognitive studies have considered students' concepts of reading from an inside-out view, focusing on their subjects' understanding about the semantic system. In an attempt to discuss each related study fully and clearly, several investigations that have incorporated an examination of both metalinguistic and metacognitive perspectives will be reported.

Concepts relating to reading and printed materials were investigated beginning in the late 1960's. Research in this area was partially the result of methodological arguments between the synthetic and analytic approaches (Chall, 1967). Concerns ranged from instruction with a code-emphasis (synthetic approach) giving children the "...wrong initial concepts of reading" (Strang, 1968, p. 577) to arguments concerning concept development, "...direct teaching of concepts is impossible and fruitless" (Vygotsky, 1962, p. 83). Reid (1966) considered the development of twelve five-year olds' concepts of print as they progressed through their first year of schooling. Her study focused on the "...technical vocabulary - the language available to them for talking and thinking about the activity of reading itself" (p. 56) or the metalinguistic aspect of the children's

understanding of reading instruction terms (e.g., letter, word, sentence, sound). Three interview sessions, held during the children's second, fifth, and ninth months of schooling disclosed that children progressed from vague notions about this "mysterious activity" (p. 60) of reading to varying understandings of print, terminology, and interpretations of instructional practices. In the initial interview, children did not know if one was to read the pictures or the print. Only one out of the twelve indicated that words were in books. Confusion was noted in terminology as children referred to letters and letter-sounds as number. In addition, there was a lack of awareness that words were composed of letters and the existence of letter-sound relations. Reid suggested that the reading tasks the children were asked to distinquish and understand were not possible due to a lack of "technical vocabulary" needed for bringing order to their understanding. She also indicated that these children did not verbalize any purposes for reading, give explanations of how they would use reading or what it would be like to read.

Considering the effects of social perceptions and children's concepts of reading, Edwards (1958) interviewed 66 remedial readers about their earliest remembrances of what they thought being a "good reader" entailed. Second

through fourth graders in groups of one to four were asked questions about what they perceived their first year teachers meant when they referred to good readers. For these children, a good reader was characterized as one who read with fluency and speed. Edwards concluded that young readers' concepts of reading relies in part on what others around them reflect a good reader to be. Caution was also expressed in that conformity to these good reader perceptions may not necessarily be consistent with those held by teachers.

Using 13 five-year olds, Downing (1969) replicated Reid's (1966) study and confirmed her findings, concluding that children have difficulty dealing with abstract terms and understanding reading and writing purposes. Downing extended his study to include pictures, objects, and auditory stimuli to determine if children's concepts about the reading terminology could be better accessed if they were provided with concrete objects and examples that contained a representation of a word, letter, sound, number, or writing. When Reid asked children to describe what/how their parents read, only one child indicated print; however, 6 of the 13 children in Downing's study used the terms writing, words, or letters when presented a book and asked to "Show me what they look at." (p. 221). When a toy bus that displayed a number and destination

board was presented to the children, Downing found that all but one of the children could clearly indicate how one knew which bus to take. Recorded auditory stimuli were used to further explore the students' knowledge of the instructional terms word and sound. Subjects were asked to identify "a word(s)" and "a sound" from a variety of stimuli (e.g., ringing bells, vowel sounds, phrases). Subjects were unable to consistently identify either of the two terms with the presented stimuli. In addition, they did not interpret a sound as a phoneme utterance or identify word units by definitions used by classroom teachers.

An interesting observation in the previously discussed study that was pertinent to the present study was that Downing (1969) found clues on the conceptual differences of children. When the children were asked "What is in books?" only one child replied "stories" (p. 220). When the children were asked specifically, "Do books have stories in them?", seven indicated that they did; however, the children thought the books at home rather than at school contained stories. One child made a precise differentiation: Books at home have stories and books at school do not. Harste, Burke, and Woodward (1981) found that after only 22 days of school, children responded to questions about print through instructional

strategies that were opposite from their perceptions prior to school entry.

These studies suggest that young readers growing-up in a literate environment perceive reading as one thing and reading instruction as something that does not build on their pre-entry concept of reading. Children in the discussed studies entered programs emphasizing letters, phonics, and words. Downing (1969) concluded that "...teachers' efforts should be directed more towards a concern for the child's own ways of thinking in learning to read" (p. 218) by providing

> ... rich and personally relevant language experiences and activities which a. orientate children correctly to the true purposes of reading and writing, and b. enable children's natural thinking processes to generate understanding of the technical concepts of language. (p. 228).

Denny and Weintraub's (1966) metacognitive investigation considered concepts of reading of 111 first graders from varying socio-economic backgrounds during their first week of school. Two predominant questions were asked and analyzed: (a) "Do you want to learn how to read?" and "Why?"; and (b) "What do you have to do to learn how to read in first grade?" (p. 441). Although one fourth of the responses to question one did not indicate that these children had a "...meaningful purpose for learning to read" (p. 447), one third of the responses

indicated that they, in fact, had an intrinsic purpose for learning. From this the authors concluded that "...children want to learn to read so that they can do something with reading." (p. 447). Responses to question two indicated that means to accomplish the reading task could not be verbalized by one third of the children. Responses also indicated a strong willingness to accept teacher-oriented influence (42%) when considering learning how to read. Data from both questions prompted the researchers to suggest that a need exists "...for helping pupils see a reason for learning to read and for gaining some insight into how it is going to be accomplished" (p. 447). The authors contended that reading is a "complex mental process" (p. 447) and should be presented in situations that have purpose and reason. These findings have been interpreted by Canney and Winograd (1979) to imply that instruction needs to reflect that reading is meaningful and requires thinking.

Mason (1967) individually interviewed 178 three- to five-year olds using the following metacognitively based questions: "Do you like to read?"; "Would you like to be able to read?"; "Does anyone in your family read?"; "Do you like him/her/them to read?" (p. 130). Children responded positively (90% or more) to all the questions. After half of the children had gone through the interview

session, the investigators realized that an additional question was necessary. Responses to the first question indicated that the children perceived themselves as readers when in fact they could not read. The additional question "Can you do it all by yourself?" (p. 131) posed to the remaining children produced a 90 per cent affirmative response. Mason (1967) concluded that "one of the first steps in actually learning to read is learning that one doesn't already know how." (p. 132). A preschooler's concept of reading may pass through a phase of "Yes, but I can't!" (p. 130). Reflected concepts about "reading" in this study indicated that children during the preschool years find reading experiences pleasurable.

Oliver (1975), assisted by 25 teacher aides, asked 78 Indian preschool children, age 3 to 5, to perform a variety of tasks including naming and pointing to letters; recitation of numerals and counting; describing and cutting a word from a sentence on a strip of paper; demonstrating and describing writing; and answering questions such as "What is reading?", "What do people do when they read?" (p. 866). Ability to recognize letters and count by reciting numerals increased with age, while confusion between letters and numbers decreased with age. Although the younger children were unable to verbally describe the term word, half of the three- and four-year

olds successfully cut a word from a sentence strip. Eighty-six per cent of the five-year olds managed this task and one-third gave explanations of the term word (e.g., "names of things," "a thing with lots of letters," p. 866). These children did not clearly differentiate between writing and drawing. The reading act was described by three- and four-year olds in terms of what they had observed people doing when they read (e.g., "talk, look to see what happens," "blow their nose, then read," "turn pages," p. 867). Five-year olds' definitions of reading focused more on print and books (e.g., "when people say words that they see," "know the words," "looking at pictures, and telling stories," p. 868). People's reading behavior was described by the five-year olds as "just sit down and look at words and read them" or "they read letters" (p. 868). Oliver suggested that "experience with books, learning activities, watching television, and interacting with other children seemed to have more effect on concept building than did age" (p. 868). An important part of concept formation appears to be directly related to prior experiences.

John and Ellis (1976) using the question "What is reading?" expanded Johns's (1972, 1974) previous work to include questions similar to Denny and Weintraub (1966) and Oliver (1975). These questions, "What do you do when

you read?" and "If someone didn't know how to read, what would you tell him/her that he/she would need to learn?", were analyzed from recorded interviews of 1,655 children, grades one through eight. Responses were placed in one of five categories: (a) vague, or "I don't know." (John & Ellis, 1976, p. 119ff); (b) classroom procedures (e.g., "Switch to a different class, do worksheets, read in books, workbooks, language workbooks, write it out."); (c) word recognition or decoding (e.g., "Sounding out words."); (d) meaning or understanding (e.g., "Enrich your mind by understanding what the author is trying to tell."); and (e) decoding and understanding (e.g., "Recognizing words and understanding what they mean."). Analysis indicated a significant difference ($p < .05$) between girls' and boys' responses across several categories. Results from the first and third questions, "What is reading?" and "If someone didn't know how to read, what would you tell him/her that he/she would need to learn?", indicated that a greater number of the boys' responses were categorized as vague/irrelevant while girls' responses to both of these questions were categorized as decoding/understanding. Significant differences were also found in responses to the second question. Girls gave more responses in the meaning/understanding and decoding/understanding

categories. Summary analysis of the question "What is reading?" indicated that 69 per cent of the subjects viewed the reading process in terms unrelated to meaning (responses were in the vague or procedure category). Fifty-seven per cent responded to the question "What do you do when you read?" in terms also categorized vague or procedural (e.g., workbooks, reading groups) and 56 per cent responded to the learning to read question in terms categorized as attending to word recognition or decoding skills. Johns and Ellis's findings were similar to those of Reid (1966) and Downing (1969): They concluded that children's understanding of reading is limited. The investigators found the most meaningful responses to be characterized as having a decoding emphasis, suggesting that teachers may be "over-emphasizing decoding or 'sounding-out' strategies" (p. 126) which would distract from meaning and "...what reading is all about" (p. 127).

Considering psycholinguistic assumptions of reading, Tovey (1976) investigated children's ability to demonstrate and verbalize reading concepts as meaning based. Data on four assumptions were collected from 30 subjects, first through sixth grades. To test the first assumption, "reading is a silent process" (p. 536), each subject was given three opportunities to read in the presence of the researcher. The investigator, noting that

only 20 per cent chose to read silently, concluded that most children perceived reading as an "oral activity" (p. 537). The second assumption, "reading is deriving meaning from written language" (p. 536) was tested by considering the responses that children gave to the question "What do you think you do when you read?". Twenty-eight per cent expressed that meaning was derived from print while 43 per cent indicated print had a word emphasis. The remaining 29 per cent gave erroneous responses (e.g., "spelling," "talking," "breathing," p. 537). Assumption three, "reading is a predictive process of selecting the fewest cues necessary to derive meaning from print" (p. 536), was determined by summary data from four questions relating to how much attention should be given to words and/or letters. Responses indicated that 59 per cent thought one needed to attend to all the letters, although additional testing suggested that three fourths of the children could successfully predict four out of five deleted words in context. The fourth assumption Tovey considered was that "...three cue systems operate during decoding of written messages-graphophonic, syntactic, and semantic" (p. 536). Subjects were asked to read an unfamiliar paragraph and explain their strategy for dealing with unknown words. Ninety-three per cent indicated that they utilized the graphophonic system exclusively. Tovey interpreted the

results to indicate that the model of reading being used by teachers reflects the way children think about the process. In this case reading was viewed as "a word calling process" (p. 540).

To examine metacognitive descriptions of reading provided by highly fluent readers, Hickman (1977) interviewed two mature readers and asked them to describe their reading practices. The interviews revealed that these two skilled readers had a meaning priority and that they chose reading materials based on purposefulness and usefulness. They expressed an ability to read critically based on experiences and yet they noted a tolerance and challenge to consider different viewpoints of authors. In addition, they expressed desires to pursue exciting interactive experiences with new authors. These readers reported the importance of using skimming and reflecting strategies, rereading for enjoyment, and use of a variety of reading materials to meet different needs. The investigator concluded that competent readers read "for a reason" (p. 375).

Concepts of Reading and Reading Achievement

Studies considered in this section were those that investigated possible relationships that exist between

students' concepts of reading and their reading achievement. These studies were particularly concerned with the way in which students' concepts affect reading behavior.

Edwards's (1962a) study was one of the first investigations that considered a possible relation between children's concepts of reading and reading achievement. He considered fifth-grade students' ability to distinguish between function, form, and neutral statements about reading. Subjects were asked to choose descriptions of "a good reader" from 20 triad statements. These statements were weighted according to meaning relevance. Function statements, pertaining to reading for meaning, were considered to be the most appropriate choices. Edwards hypothesized that students acquire reading concepts and that these concepts are reflected in reading achievement. However, instrument design and achievement scores did not provide conclusive results. He concluded that reading achievement measures need to relate to reading instruction. Edwards (1958) expressed concern that students' concepts of reading might be something other than "meaning-getting" and suggested that reading activities focusing on meaning be employed (Edwards, 1962b).

Using the question, "What is reading?", Johns (1972)

interviewed 53 fourth graders and related those findings to reading achievement. Responses to the question were categorized under five headings: (a) vague, or "I don't know."; (b) classroom procedures (e.g., "We take turns reading out loud in a circle."); (c) word recognition or decoding (e.g., "Saying words."); (d) meaning or understanding (e.g., "It's when you read a story and know what it's about."); and (e) meaning and word recognition (e.g., "You learn the words and read the story and you're supposed to know what it means.", pp. 56-57). Small positive correlations between the children's concepts of reading and their vocabulary (r = .31) and comprehension (r = .33) subtest scores on the Gates-MacGinitie Reading Test were found to exist at the $p < .05$ level. These subtests consisted of choosing synonyms and words that made sense within a given context. Johns concluded that "one of the contributing factors to children's reading achievement is their understanding of the reading process." (p. 57). Doubling his sample, Johns (1974) again considered the existence of a relationship between reading achievement and children's concepts of reading. Using the same question, "What is reading?", and response categories, he interviewed 103 fourth and fifth graders. He further classified the responses as nonmeaningful (categories a and b) or meaningful (categories c, d, and

e). Grade equivalent scores, derived from their comprehension test, served as a means for Johns to select a group of good readers and a group of poor readers. Thirty-six were found to be reading a year or more above grade level and 29 were considered to be reading a year or more below grade level. A chi-square analysis indicated that a significant number of good readers gave more meaningful concepts of reading than poor readers (X^2 = 6.04, $p < .05$). However, caution was suggested in the interpretations since one half of the responses given by the good readers had to be categorized as nonmeaningful. Johns concluded that a meaningful response to the question, "What is reading?" from a good reader can not be anticipated and that investigations considering children's concepts of reading need to make additional probes. He concluded that a more pertinent question (among others) might be to consider "What should a meaningful concept of reading include?" (p. 60).

A two phase study consisting of an interview and recognition of text alterations was conducted by investigators Canney and Winograd (1979) to determine how perceptions of "what reading is" influences reading strategies. Using Metropolitan Reading Test (1970) scores, three good readers and three poor readers were chosen from grades 2, 4, 6, and 8. The 12 good readers

averaged two years above grade level while the poor readers' test scores averaged one year below grade level. A questionnaire consisting of 15 items was administered in individual interview sessions. Designed to probe "...students' knowledge of the purposes and nature of reading" (p. 22), the questionnaire covered areas of interest in reading, personal perceptions, possible improvement tactics, reading materials outside school, and perceptions of the reading process. The investigators used this measure as a determinant of each students' foci or reading schemata. A summary of the responses to the question "What is reading?" indicated that above average readers focused on meaning in their responses and below level readers responded to decoding and mechanical aspects. Meaning awareness was found to increase among the better readers as their grade level increased. Students' perceptions on improving their performance indicated the same emphases. In addition, below average readers perceived themselves as less proficient but did not indicate an improvement strategy other than attending more to the mechanics of reading (e.g., punctuation, alphabet). Phase two of the study presented each subject with five paragraphs that had been extracted from the Silvaroli Classroom Reading Inventory (1976). Selections included a variety of content on preprimer, second, and

fourth grade reading levels. One passage was left intact, and the others were altered semantically, syntactically, lexically (a string of words selected randomly), and graphically. After an examination of the passages, subjects were asked to indicate if the passages could be read or could not be read and why. Differences between the below average readers and above average readers occured in the semantically, syntactically, and the lexically altered passages. Twenty-three per cent of the above average readers and 82 per cent of the below average readers considered the semantically altered passage readable. None of the above average readers considered the syntactically or lexically altered passage readable while 64 per cent and 45 per cent respectively of the below average readers indicated they were readable. Considerable percentage differences between the two groups of readers led Canney and Winograd to question instruction that promotes a heavy emphasis on the graphophonic system. The researchers' criticism of instructional practices stem from their hypothesis that

> ...the readers' perception of the tasks of reading -- his/her schema for reading-- guide his or her reading behavior and influence how a reader uses current knowledge, decoding proficiency, and study strategies. (p. 44).

Comprehension Monitoring in Good and Poor Readers

Metacognitive researchers in reading have considered students' knowledge (i.e., concepts) about the reading process and students' ability to monitor the reading process. Studies that have explored students' knowledge about reading were reviewed in the first two sections of this chapter. The literature review on comprehension monitoring included three types of investigations: (a) self-correction; (b) person, task, and strategy variables; and (c) materials in relation to good and poor readers' conceptualizations about reading.

Self-Correction in Good and Poor Readers

Clay (1969) recorded the reading behaviors of 100 five-year-old children for a one year period. Data were collected once a week from children as they read from their assigned reading material. Irregular responses were categorized as either errors or self-corrections. Of the 10,525 recorded errors, 26 per cent were spontaneous corrections. Children in the upper half of the class had a correction rate of 33 per cent while those in the lower half had only a 5 per cent rate. Extending the study with the same subjects over three years, Clay (1973) found that correction rate was related more to progress in reading

scores than to intelligence or readiness test scores. These findings indicate that children's success in learning to read is directly related to how they monitor the reading process.

Weber (1970) investigated correction errors of 19 first graders (mean age 6.3) who were one year older than Clay's (1969) subjects. Examining 1072 errors over an eight month period, Weber found that both good and poor readers showed a "growing efficiency" (p. 450) in dealing with letter-sound relations as the year progressed. Good readers' corrections, however, were found to more closely resemble the graphic representation or similarity of letters, letter order, and word configuration. Differences were not found between the two groups in their ability to make grammatically acceptable corrections. An examination of the data in 2 four-month periods indicated that grammatical acceptability dropped rather surprisingly from 93.8 to 91.0 per cent among the better readers and from 93.1 to 83.6 per cent among the poorer readers. A decrease in use of the syntactic system led the researcher to suggest that (a) greater attention to the graphics may interfere with "use of grammatical constraints" (p. 444) and (b) utilization of the grammatical system in reading is not learned.

Isakson and Miller (1976) investigated the syntactic

and semantic sensitivity of good and poor readers. The sample consisted of 48 fourth graders. The investigators controlled for variance in word recognition abilities among the sample by selecting only those students whose scores were within plus or minus one-half year of their grade placement. Good and poor comprehenders were determined from scores on the Iowa Test of Basic Skills. Twelve sentences of three types (normal, semantic alteration, and syntactic and semantic alteration) were presented to each subject. As subjects read the sentence cards, errors were recorded. A significant interaction was found between the subjects' comprehension level and types of sentences ($p < .05$). Poor comprehenders were less sensitive to errors within the context: "...they seem to ignore the cues [semantic and syntactic] and treat words as individual entities" (p. 791). Good comprehenders made more attempts to correct altered sentences and fewer errors ($p < .05$) on unaltered sentences than did the poor comprehenders.

Comprehension monitoring or actively processing the print is evidenced in young readers when they self-correct errors that do not make sense. Goodman (1976) suggested that the reader "...tests his choices against the developing meaning" (p. 483) "...so he can recognize his errors and gather more cues when needed." (p. 483). Brown

(1982) referred to this alertness to comprehension failure as being a metacognitive "triggering event" (p. 49) that demands consciousness. She suggested that less able readers "are not as aware of the need to be strategic, plan ahead, monitor, and check their own understanding." (p. 49). Her recommendation for remediation involved planned training in strategy development.

Task and Strategy Use in Good and Poor Readers

Smith (1967) interviewed thirty high school seniors, 15 good readers and 15 poor readers, after they had been asked to read a selection for "details" and a selection for "general impressions." Using a structured format, students were asked to describe their means of arriving at answers to questions. Subjects were also asked to explain the strategies they used to read for various purposes. Differences appeared between the good and poor readers' ability to adjust to the two different purposes. Good readers made more adjustments when different purposes were specified and used strategies of rereading, relating, and reviewing with greater efficiency. Over all stragegy responses given by the good readers were considered "superior" to those given by the poor readers.

Flavell and Wellman (1977) suggested that the factors that influence comprehension monitoring could be

classified as person, task, and strategy variables. Person variables are those concerned with knowledge that one can invoke in a given situation. These would include recognition and reflection on one's capabilities and cognitive processes (e.g., awareness of the reading activity). Task variables are defined as the available information that a person has and utilizes during a task. These include an active attempt to predict, test, and solve the unfamiliar by transferring known information from the familiar (e.g., monitoring the solving of a new problem by relating to similar previously solved problems). Strategy variables include monitoring for understanding and employment of conscious and unconscious techniques during reading. These capabilities include recognition of goals and employment of appropriate skills efficiently to particular tasks (e.g., the ability to implement remedial action when the reading activity is not progressing).

Using Flavell and Wellman's (1977) defined factors, Raphael, Myers, Tirre, Fritz, and Freebody (1981) examined the effects of three task variables on aspects of comprehension and metacomprehension. The investigators were interested in determining if an overlap or similar effect could be determined as the task factors of word frequency, familiarity with topic, and structure of text

were varied. Four themes were varied in each of eight ways to include: low frequency words in a good and a poor structured format; high frequency words in a good and poor structured format; and a familiar and unfamiliar version of each topic written to include either low frequency words or high frequency words. Using the scores in the top and bottom quartile of the Stanford Achievement Reading Test, 120 junior high school students were identified as either good or poor readers. Subjects were randomly assigned to read either (a) a set of four passages and rate them on a four-point scale according to their perceived difficulty and test performance possibility (metacognition aspect) or (b) a set of four passages and respond to ten questions (comprehension aspect). One distractor item was included in the set of multiple-choice comprehension questions to reveal a subjects' inability to deal with poor text structure. A correlation of .53 indicated that the two metacognition questions were viewed as similar types of assessment. This indicated that if the reader considered the passage more comprehensible, test performance could be better predicted. Subjects indicated that passages with familiar topics would be more comprehensible and more predictable on tests. There was no significance found in students' rating differentiation between the well structured and

poorly structured passages on the metacognitive aspects. Comprehension analysis indicated that a) the low and high word frequency factor did not produce differing effects for good or poor readers, b) both groups performed better on the high frequency word factor, and c) no effect for the good readers and little effect for the poor readers were found on the familiar and unfamiliar version factor. Scores were higher for both groups on the familiar and well structured passages. Passage structure, however, did negatively affect poor readers [M good structure = .167, SD = .383; M poor structure = .389, SD =.502] (p. 332). The study demonstrated that similar effects on performance of comprehension and metacomprehension can be found when the factors of familiarity of context, passage structure, and low and high frequency words are considered. The investigators suggested that good readers overlap and integrate the two areas. The authors concluded "What needs to be demonstrated is whether a good comprehender is also a good metacomprehender, and a poor comprehender also a poor metacomprehender." (p. 332).

Garner and Kraus (1982) questioned thirty, seventh graders about their knowledge and regulation of comprehension monitoring and then had them rate two altered passages on comprehension difficulty. One passage was altered on a single sentence; the second was altered

to contain inconsistencies throughout the five sentence passage. Analysis on the interview questions "What things does a person have to do to be a good reader?", "If I gave you something to read right now, how would you know if you were reading it well?", and "What makes something difficult to read?" indicated a significant difference in meaning emphasis responses between the poor and good comprehenders ($p < .001$). Poor comprehenders' responses focused on knowing all the words, reading fluently orally, and difficulties encountered with long, "weird" words while good comprehenders responses focused on understanding, getting the ideas, and difficulties encountered when unfamiliar ideas were presented in context. Passage inconsistencies were not detected by any of the poor comprehenders while a moderate number of the good comprehenders on the first passage (4 of 15) and a high number on the second passage (12 of 15) were able to detect text inconsistencies. No students in the study were considered to have problems in decoding words. Including this control variable eliminated any subject's attention to be unnecessarily drawn to the code emphasis. Garner and Kraus's study supported previous research speculations about comprehending differences being attributable to readers' focus and understanding of the reading process (meaning versus decoding). Their

investigation suggested that poor readers' inability to detect inconsistencies was a demonstration of their lack of monitoring for understanding.

Myers and Paris (1978) examined children's knowledge about reading by considering the three metacognitive categories or variables defined by Flavell and Wellman (1977) that are known to have an effect on comprehension performance. Twenty second graders and 20 sixth graders responded to an 18 item interview about their awareness of selected person, task, and strategy reading variables. The person variable consisted of questions related to the effects that skills, practice, and environment have on reading abilities. Analysis of the responses indicated that 70 per cent of the sixth-grade subjects considered skills and practice of reading necessary while 40 per cent of those in the second grade thought this would be important. When students were questioned about the effect of an environment with many books verses one with few books, 90 per cent of the younger children considering an environment with many books to promote better reading while 35 per cent of the older children held this view. The older children considered the value placed on books to be more important than the number of books available in the environment. Task knowledge related to questions concerning effects of story length, interest, familiarity

of content, context structure, and recall. A significant number of sixth graders were more aware of paragraph organization as well as the function of the first and last sentences. Responses relating to story recall and whether one should have a meaning or verbatim reproduction goal indicated that 95 per cent of the older subjects' responses were classified as meaning while 45 per cent of the second-graders' responses were classified as "verbatim." Additional questioning also did not indicate that prior knowledge of a goal would invoke the use of different strategies for the young readers. The strategy awareness variable involved in reading considered questions concerning effects of rereading, solving unknown words, and skimming. To clarify understanding of a word, 40 per cent of the younger children suggested "sounding out" and 35 per cent of older children suggested using the dictionary. To determine if this finding represented a tendency for young readers to attend to decoding, the subjects were asked what words they would read if they had to read a story quickly. Seventy per cent of the younger readers indicated that they would read the easy words. Sixty per cent of the older readers, however, perceived the skimming purpose as reading the words that provided information. Questioning the children on failure to comprehend sentences revealed that sixth-grade children

were more aware of the reasons behind the rereading strategy (i.e., to obtain more information, provide additional cues from the context), and therefore more sensitive to semantics. Myers and Paris's study revealed factors that children perceive as important when certain person, task, and stragegy variables are considered. Age appeared to be a factor in describing metacognitive awareness and speculating about good reader characteristics. The investigators concluded "they [second graders] seemed to be unaware of the special characteristics of good readers and the special strategies required for monitoring understanding." (p. 688). Further, the second graders "focused on decoding goals" (p. 688) while the sixth graders demonstrated an awareness "of meaning dimensions of paragraphs and of the skills required to achieve understanding." (p. 688). Included was a citation from a previous study (Paris, 1978), in which the investigators speculated again that

> ...children induce and abstract metacognitive knowledge from many settings and problem-solving situations and that greater awareness of means, goals, and task parameters about reading reflects a general developmental accomplishment. (p. 689).

This study, however, did not consider the subjects' ability in reading. Considering Myers and Paris's study and relating it to studies discussed in this section

(Raphael et al., 1981; Garner & Kraus, 1982; Gambrell & Heathington, 1981) it could be inferred that poor readers have not accomplished a general development or reading proficiency due to setting and/or situations. Nor have poor readers acquired or developed metacognitive knowledge.

Modifying Myers and Paris's (1978) interview to accomodate adults, Gambrell and Heathington (1981) examined knowledge that readers have about the underlying structure of reading. Twenty-eight good adult readers and 28 poor adult readers (defined as those with reading skills below the fifth-grade level) responded to questions about the task of reading and reading strategies. Questions about the reading task included motivation, importance of previous experiences, and text structure. Strategy questions included reading for meaning or word-for-word, silent and oral reading perceptions, perceptions of what makes a skilled reader, and strategies for unknown words. Responses were categorized to be a factor of either the task or strategy variable. Eighteen per cent of the good readers and 64 per cent of the poor readers responded that the person with fewer books would be able to read better. The poor readers considered motivation to be the important factor, not the number of books available. Both groups responded that they would

consider a selection that they were interested in to be a factor involved in a faster reading rate and greater recall. Previously read selections were also considered by both groups to be easier to read. Analysis of the three responses about text structure indicated that good adult readers (96%) related that paragraphs have structure while only 43 per cent of the poor readers gave this indication. A significant difference was found between the two groups (X^2= 15.56, $p < .001$). No significant difference was found between group responses on the first and last sentence of a paragraph. Analysis of the strategy variable indicated that all would relate the meaning if asked to tell a story. However, when asked if it would be easier to read for meaning or word-for-word, 89 per cent of the good readers indicated meaning while only 43 per cent of the poor readers gave this response (X^2 = 11.47, $p < .001$). Fifty-seven per cent, then, considered reading to be much easier if they concentrated on word-for-word strategies. In addition, 36 per cent of the poor readers considered reading orally to be a quicker process than reading silently; only 4 per cent of the good readers shared this view. A significant difference was found between the two groups (X^2 = 7.24, $p < .01$). A good reader was perceived by the poor readers to be one who "can pick out sounds," "reads quickly," and "practices a

lot" (p. 219). Only 21 per cent of the poor readers indicated that meaning was involved while 79 per cent of the good readers considered the main requirement of a good reader to be comprehension. This resulted in a significant difference between the two groups' perceptions ($X^2 = 16.07$, $p < .001$). One third of the poor readers' responses indicated that they had no way of solving for unknown words while all the better readers responded that they were capable of employing a strategy. A significant difference between the two groups was found to exist ($X^2 = 8.47$, $p < .005$). In summary, both groups of readers in this study responded similarly to questions regarding factors of interest (rate and recall), experience (easier), function of topic sentences, and relating of story (recall). Differences in responses were found on aspects dealing with access to books, paragraph structure, ease of attending, and perception of skilled readers. Significant differences between the readers were most observable in those responses categorized as strategy variables. Poor readers did not perceive reading as an internally monitored, meaning-oriented process. Referring to the subjects in Myers and Paris's (1978) study, the authors concluded: "Adult poor readers, like young beginning readers, appear to perceive reading as a decoding process rather than as a meaning construction or

comprehension task." (p. 220).

The studies reviewed acknowledged the importance of metacognitive knowledge. Myers and Paris (1978) defined metacognition as knowledge that "serves an executive function of coordinating and directing the learner's thinking and behavior" (p. 680). Whether it is necessary for metacognitive knowledge about reading to be conscious or unconscious, explicitly taught or implicitly acquired through meaningful reading experiences appears to be a matter that needs additional research. The relevance of the studies reviewed in this section to the present investigation was to determine whether older students' construct systems across achievement levels might suggest that the problem is not a developmental one, nor a conscious or unconscious matter but relates to one's concept of reading as either code-based or meaning based. Of particular relevance to the present investigation was Myers and Paris's (1978) suggestion to

> ...isolate the functional aspects of metacognitive knowledge that guide children's performance. Investigations that employ such converging operations may yield information regarding the cognitive processes and knowledge that underlie efficient reading. (p. 689).

Monitoring of Different Reading Materials

Research dealing with comprehension monitoring has been considered on good and poor readers' ability to

self-monitor and accommodate person, task, and strategy variables. This final section of the literature review considered studies that dealt with good and poor readers' interactions with varying reading materials.

Olshavsky (1978) examined good and poor readers' use of monitoring strategies on materials that were made increasingly more difficult. A sample of six poor eleventh-grade readers (stanine score of 3-4 on the Stanford Diagnostic Reading Test) and six good eleventh-grade readers (stanine score of 8-9) were asked to read silently excerpts from four stories. According to the Dale and Chall (1948) readability formula, stories were representative of levels 7-15. At marked intervals throughout the text, subjects were asked to pause and talk about story happenings as well as their own thoughts and reading behaviors. Eleven strategies (e.g., inference, prediction, problem of understanding) emerged from the verbalizations. It was hypothesized that good readers would employ more strategies as the difficulty of the material increased. However, no significant difference was found between the groups' strategies or regulations of the leveled materials. Both groups used fewer strategies as the material difficulty increased.

Stansell, Harste, and De Santi (1978) involved three groups of subjects in different types of reading materials

to determine cueing (graphophonic, syntactic, and semantic) system variations. The subjects consisted of 6 second graders who were selected from a rank order prepared by their teacher as representative of the top, middle, and lower students in the class. Instructional backgrounds of these students were determined to be similar. Reading materials for this group contained a social studies, science, and literature selection. The second group consisted of 6 ninth graders who were selected from a list of 10 that had been ranked by their teacher as being the best readers in the class. Four adults, judged to be mature readers, whose age range was 62-82 years, served as the third group in the study. It was determined through interview data that members of the second and third groups held similar views concerning perceptions and strategies of the reading process. Each of these groups read both a historical and a literary narrative. Through comparison analysis of each subject's oral performance (based on the categorization of oral miscues [Goodman & Burke, 1972]), interview data, and retelling or comprehension scores, it was determined that subjects maintained the same cueing system across the varying materials they were asked to read. Older readers' miscues were determined to be more syntactically and semantically acceptable (65%+). All age subjects with a

miscue preference for the graphophonic cueing system encountered interference and an inability to use other cueing systems. This preference was found to exist more among the younger, poor readers. The younger, good readers demonstrated more flexibility in utilizing the cueing systems and comprehension capabilities. The subjects' concepts about the reading process, collected from the interview data, were reflected in their oral reading performance as the reliance on the different cueing system was demonstrated. Varying materials did not cause the subjects to change their preferred cueing strategy. Interpretation of this finding suggested that subjects' views of the reading process are consistent across varying materials and/or subject matter.

Summary

The review of the literature considered metacognitive studies relating to concepts of reading, conceptual effects on achievement, and comprehension monitoring.

Studies concerned with metacognition and concepts of reading indicated students' conceptualizations about reading are in part formulated by their instruction (Reid, 1966; Denny & Weintraub, 1966; Downing, 1969; Weber, 1970; Tovey, 1976; Harste et al., 1981) and suggested that

reading instruction needs to be meaning based (Denny & Weintraub, 1966; Downing, 1969; Canney & Winograd, 1979). Inferences made in a social setting about what a "good reader is" were also found to have an influence on conceptualization (Edwards, 1958). Although older readers were found to be better able to describe their metacognitive awareness (Myers & Paris, 1978), verbalizations about what "reading is" were found to be limited and often defied explanation (Mason, 1967; Oliver, 1975; Johns & Ellis, 1976). Readers' views of the reading process were found to be consistent when different materials or subject matter were presented (Stansell et al., 1978).

Students' acquired reading concepts were found to be reflected in their achievement (Edwards, 1962a; Johns, 1972; Canney & Winograd, 1979). Researchers suggested that readers experiencing difficulty comprehending view reading as a code rather than a process of gaining meaning (Johns & Ellis, 1976; Tovey, 1976; Myers & Paris, 1978; Canney & Winograd, 1979; Gambrell & Heathington, 1981; Garner & Kraus, 1982). Code based readers attend to surface level cues such as letter-sound relationships and isolated words while meaning based readers attend to deep level cues such as understanding and prediction (Smith, 1975). Skilled readers have a meaning priority that is

based in purposefulness and usefulness (Hickman, 1977; Canney & Winograd, 1979).

Good readers were found to monitor context more efficiently and were better able to recognize text alterations (Smith, 1967; Isakson & Miller, 1976; Myers & Paris, 1978; Canney & Winograd, 1979; Raphael et al., 1981; Brown, 1982). In addition, better readers were more likely to self-correct (Clay, 1969) and their corrections were found to be better approximations of the graphic representations (Weber, 1970). Different types of readers from various age groups were not found to increase their reading strategies or regulations of reading as materials were increased in difficulty (Olshavsky, 1978).

Several questions that emerged from the reviewed studies which were pertinent to the present study included: (a) "What should a meaningful concept of reading include?" (Johns, 1974, p. 60) and (b) "What needs to be demonstrated is whether a good comprehender is also a good metacomprehender, and a poor comprehender also a poor metacomprehender." (Raphael et al., 1981, p. 332). Concerns that received further exploration included: (a) Does monitoring and success in reading appear to be related more to reading progress and achievement than intelligence? (Clay, 1973) and (b) Can it be further substantiated that achievement of above average readers is

related to a meaning focus or deep level structure and achievement of below average readers is related to a decoding focus or a surface level structure? (e.g., Canney & Winograd, 1979).

The present study investigated students' concepts about reading across defined achievement levels with a greater sample size and with obvious material differences. In addition, the present investigation considered one of the four expansions that Brown (1982) made on the Characteristics of the Learner model designed by Jenkins (1979). Brown (1982) suggested:

> Imagine expert learners designing a plan for learning from texts. First they might consider the nature of the material to be learned. They would examine the text itself and make decisions about what kind of material it is-is it a story, an expository text, an instruction book? Major forms of texts have standard structures that can be identified by astute learners to help them set up expectations to guide the reading process. (p. 43).

The exploratory question, then, that was posed in the present investigation was: How do readers at different levels of achievement differentiate among various types of reading materials? This metacognitive awareness could have a powerful influence on readers ability to utilize the reading process.

CHAPTER III

THEORETICAL FRAMEWORK

"...the differences between the personal viewpoints of different men correspond to the differences between the theoretical points of view of different scientists." (Kelly, 1955, p. 5)

The holistic view of reading and the personal construct theory of Kelly (1955) converge on many points. Both view the person as an intelligent, creative whole who is concerned with making sense of the world. Both begin with the person and the semantic realm in trying to gain an understanding of that individual. Psycholinguistic/holistic researchers (Smith, 1971; Goodman, 1976) considered reading to be a thought process in which the individual must interact with the print. Kelly considered the person to be a scientist actively involved in controlling and predicting events with the creative capacity to alter and represent the environment. Kelly suggested that, "Man looks at his world through

transparent patterns or templets which he creates and then attempts to fit over the realities of which the world is composed." (p. 8-9). It appears to the present researcher that the "transparent patterns or templets" which students create about the reading process affect and guide their reading performance.

Personal Construct Theory

Kelly (1955) set forth the major components of his personal construct theory in the form of a fundamental postulate and extended or elaborated it with eleven propositions or corollaries. The fundamental postulate reads: "A person's processes are psychologically channelized by the ways in which he anticipates events." (p. 46) Kelly considered a person to be a scientist actively involved in controlling and predicting events within a self-composed structure. He proposed that as a person seeks to make sense of the world, he develops a network of patterns that he uses to theorize and anticipate reality. A person's creative capacity makes it possible for him to place "alternative constructions" on the environment by changing, representing, or reacting to that environment through his personality or psychological processes. A person's perceptions in a given situation is determined by one's own unique construct system

(individual corollary). A person's cognitive system is composed of a finite number of dichotomous constructs (construction corollary). For example, a person may use constructs such as friendly/unfriendly or educated/uneducated to differentiate between and among individuals in his environment. The finite number deals with the known constructs that one has composed in his thinking (dichotomy corollary). As a construct is developed, a range of convenience is formed to refer to those elements for which the construct has some applicability (range corollary). Possibilities exist, within the range of convenience, to include new elements that would by their inclusion require extensions within the range (modulation corollary). Subsystems may have inconsistencies which would not allow generalizing in all instances. Minor anticipations, then, that a person predicts may not always work out as he intended. However, major anticipations that have the reliance capacity of superordinate and subordinate construct systems are assumed easily predicted (fragmentation corollary). A person's construct system (theory) continuously changes as he hypothesizes, tests with experience, reconstrues, and reconstructs his personal construct system. The reconstructions can enrich the system or stabilize the basic features in the psychological process (experience

corollary). An individual statement and brief elaboration of each corollary is presented in Appendix A.

Kelly's Method of Measuring Constructs

The Role Construct Repertory Test was the original personality measure devised by Kelly (1955) to gain insights into a person's interpersonal construing or ways of "placing an interpretation" (p. 50). It is a qualitative, nonparametric technique in which dichotomous poles of constructs are elicited about persons the subject has named who represent different role types. Having written the named persons, called elements, on cards, they are considered three at a time. The subject is asked to state "...in what important way are two of them alike but different from the third?" (p. 222). As the 20 to 30 elements are triadically sorted by comparisons and contrast, the subject's dichotomous poles or constructs are recorded and analyzed to determine the individual's construct patterns. Based on the organization corollary, examining a person's system of constructs through use of the grid can provide a way of gaining insights into a person's differentiation process using his own terms and his view of relationships. Kelly devised several forms of the Repertory Test to meet specific purposes. Several will be summarized at this point.

Minimum context stencil form. Kelly (1955) devised this form of the Repertory Test in which the subject is provided with a sheet on which the role titles (e.g., self, mother, threatening person, rejected teacher) are written across the top. A stencil is then placed over the title roles so that three are exposed. As constructs (placed down the side) are elicited, the subject places a tick or cross for comparisons and contrast in the appropriate cells.

Full context form. Kelly (1955) used this form of the Repertory Test when more information was needed. The procedure involved the use of cards in which the subject not only considered elements (persons) in triads but made an extended sort by placing the remaining elements into these groups according to their shared similarities and differences. As the sorting process progressed, the examiner elicited the constructs.

Sequential form. This form was suggested by Kelly when "functional adequacy" of the construct system was needed. A sequence of cards is presented to the subject in triads in which two remain constant for the next construct elicitation (i.e. cards 24,23,22 would become 23,22,21 in the next sort).

Self-identification form. This form is similar to the one described above except that a card named myself is

included as one of the three elements in each triad.

Other forms. Kelly (1955) devised several other slightly different forms of the Repertory Test other than those mentioned above including one that could be administered to a group. Since then, the group test has been modified and revised to exclude elements and to compare constructs with constructs (e.g., Hinkle's Implications Grid, 1965) and to provide insights into the superordinate and subordinate construct system, as in Landfield's Pyramid Technique (1971). Bannister and Mair (1968) developed a ranking form of the grid that was elaborated into a rating form (see Fransella & Bannister, 1977). In this form, the subject assigns numerical ratings to the element within the construct. Beginning with the emergent pole, the subject rates the element most representative of this pole with a number 1 and continues to rank each element along the "scaled" construct. The authors suggested that this grid provides finer discrimination than the dichotomous method.

Recently, grid techniques have been computerized (e.g., Shaw, 1980). It is possible on Shaw's (1980) program for the construct elicitation to be done on the computer. The program was devised so that the subject inputs elements. These are randomly displayed on the screen in triads. The subject is then asked to give

dichotomous constructs about the elements after which he assigns the elements to poles or a rating scale between the poles. After completion of the grid, a computer analysis is produced that re-orders the elements and constructs according to their similarities. Tree diagrams show the grouping and clustering of the elements. Percentage levels are printed beside the tree diagrams to indicate the degree the subject construed likenesses and differences in the elements. For this study the computer was used as a tool to help analyze the data.

Validity and Reliability

Assessing validity and reliability of the repertory grid in traditional terms can pose problems. Kelly's (1955) view of a person as "motion," continually processing and anticipating events, in an active, deliberate, creative fashion indicates that change is inevitable. Kelly has been quoted as "referring to reliability as 'a measure of the extent to which a test is insensitive to change'" (Bannister & Fransella, 1980, p. 72). Due to the varying forms and possible analyses of the grids as well as each consisting of different elements and constructs, it appears that the term "reliability" as used in quantitative research would not be applicable.

The task for the researcher is to learn how those

involved interpreted and gave meaning to the situation. The emphasis is on perceptions or "inner understanding" (Rist, 1977, p. 44) of another's frame of reference. The personal construct theory suggests that with each new experience and involvement a person is trying to impose meaning on experiences. This naturally creates a fluctuation within the construct system that is not stable over time. The researcher, then, is concerned with internal validity when seeking to reveal patterns and relationships, that give meaning to the data. There is not a specific content or "test" format. It is a qualitative measure that is theoretically based and has proven useful in that it can provide a way for researchers and subjects alike to increase their understanding of how reality can be represented. Ravenette (1977) suggested that "any statement about reliability and validity can only refer to the extent to which the child fitted himself to the task and intentions of the experimenter" (p. 257).

In summary, researchers have found the grid useful in determining the content of an individual's construct system, the tone of the system, and the degree of abstractness, flexibility, and interest of that system.

The grid appeared to be an appropriate means by which one might consider a person's constructs about reading. The purpose of this study was to investigate the construct

systems of students at varying reading achievement levels to determine to what extent reading materials were perceived in surface level and deep level terms and to describe any organizational patterns that might exist at these different levels.

A Selected Review of Related Studies

Kelly (1955) developed the personal construct theory to deal with problems he encountered in psychotherapeutic work that was conducted in a clinical setting. His work encompassed human personality with particular emphasis in interpersonal relationships, stress, and human readjustment. Research has continued in this area as well as expanding into diverse areas such as linguistics, business management, education, and anthropology. For a review of these studies see Bannister and Fransella (1980). Utilizing this review it seems particularly relevant to note the following studies that have dealt with construing in school age children and those studies that have related to the regular educational setting.

Brierley (1967) in her study of 7-, 10-, and 13-year olds from working- and middle-class homes sorted constructs of 90 children into six categories (kinship, social role, appearance, behavior, personality, and

literal). She found an increase in the number of behavioral and personality constructs with age and a decrease on all others except for kinship, which did not appear to vary. The seven-year olds used more kinship and social role constructs, the ten-year olds used more appearance and behavior constructs and the thirteen year olds used more personality constructs.

Applebee (1975, 1976) considered the organization and differentiation of the construct systems of children ages 6, 9, 13, and 17. He found that young children's construct systems of black or white, good or bad became more complex and discriminative as they grew older. Applebee concluded that the degree to which these systems were organized appeared to be small and did not appear to show marked differences according to age. Honess (1979), after a detailed analysis of 203 children from 8 to 14 years, also found differentiation complexity increasing with age.

Humphris's (1977) study dealt with pupil-teacher relations between children who were perceived by their teacher as having speech problems compared with children who did not. Six four-year-old boys were placed in each group. Comparative constructs between the children did not indicate that either group "saw" themselves as different; however, the teacher's constructs indicated

different perceptions of the two groups (e.g., cooperative versus uncooperative).

Micklem (1978) studied the construing of children who did not contribute to class discussions. He asked both talkative and silent children how they perceived themselves and each other. A consistency was found among their construing of who was silent and who was talkative. Although it was obvious that the talkative children did not sit near or have much to do with the silent children, the silent children did not perceive themselves as being separate or apart from the group determined to be talkative.

The teachers in Ravenette's (1968) study attributed children's deficiencies in reading to be due to their intelligence. However, Bannister and Fransella (1980) suggested that there needs to be further research to find out why children do not want to read by investigating their views "of what reading is" (p. 97) and their views of school and home environments.

Other relevant studies included those done by Bieri (1955) and Bieri, Atkins, Briar, Leadman, Miller, and Tripodi (1966). These studies investigated social cognitive structure. They determined that the subjects with more differentiation and integration in their construct systems had the ability to perceive the behavior

of others in a greater number of ways (frequency of constructs and dimensions). Thus they concluded that a measure of cognitive complexity would be to determine how a person viewed his associates. Canter (1970) extended this research into the area of architecture. He found that students who possessed complexity in their construal of buildings scored higher on architectural examinations. He found no relations between these students' complexity and conventional intelligence measures. Kleine (1967) suggested that by considering three of Kelly's (1955) corollaries (construction, organization, and fragmentation), an individual's cognitive structure and complexity could be inferred. Kelly (1955) theorized in these corollaries that a person, in order to make sense of the world, distinguishes reality by constructing a framework that characterizes likenesses and differences (construction corollary). A person then organizes the constructs into a hierarchical system (organization corollary) that consist of integrated subsystems (fragmentation corollary). Bannister and Fransella (1980) emphasized that within this theoretical framework individuals are thought to have a multiplicity of constructs that range from complex to simplistic. They cautioned that descriptions of construct systems be "...in relation to specific construct sub-systems" (p. 129) and

not generalized to the entire cognitive system.

Research related to cognitive structure, hierarchy of constructs, and subsystem content appeared potentially relevant in gaining insights into thought processes of different reading achievers. An assumption of the present study was that students' constructs about reading materials, in terms of likenesses and differences, and the relational strategies that they devise among these materials would provide another segment into the fields of metacognition and reading.

CHAPTER IV

METHOD

Subjects

The 35 subjects (16 girls and 19 boys) were selected from 398 junior high students between the ages of 11 and 12 who were currently enrolled in seventh grade in a central Oklahoma school district. Selection of the subjects was based on considerations made in grade placement, reading achievement scores, and parental consent. For the present study, students with a wide range of reading achievement scores were needed within the same age group. Reading achievement measured by a standardized test generally will show a three year spread by the end of second grade and will continue to increase until by the sixth grade a seven year spread exists (Zintz, 1980). Therefore, the seventh-grade level was selected for this study. The normal curve equivalent scale on the California Achievement Test (Tiegs & Clark, 1977) was used as a means of selecting subjects. The

scale range for this test is 1 to 99 with an average mean score of 50. The seventh-grade achievement score distribution (see Table 1) for the particular school from which the sample was drawn had a mean score of 64.4. Since adequate representation of the two lower deciles was not found, these groups were excluded. Thus, five students were randomly selected from each decile between 30 and 99. Consent forms (see Appendix B) were sent to the parents of the 35 selected students who represented a socioeconomic level of middle- to upper-middle class.

Materials

The Full Context Form of the repertory grid developed by Kelly (1955) was used to elicit dichotomous constructs about specified materials that involved print. The elicitation process is "...a technique that can quantify the subjective data from which human judgements and decisions are taken" (Easterby-Smith, 1981, p. 17) and helps the investigator to gain access to "...how a person categorizes his experiences and classifies his environment" (Shaw, 1981, p. 33). The purpose of this investigation was to consider concepts of reading from a metacognitive perspective that dealt with judgments and decisions about reading materials by determining how different achievers categorize and classify print related

Table 1

Seventh Graders Achievement Distribution

NCE Score	Frequency
10 - 19	2
20 - 29	2
30 - 39	21
40 - 49	59
50 - 59	78
60 - 69	84
70 - 79	77
80 - 89	48
90 - 98	31
N =	398

materials. This technique assumes that the subjects' expressed constructs are representative of their conceptual framework and the conceptual framework represents a finite system of categorizations based on predictions about life experiences. These predictions are derived from "...a concretistically pyramided or abstractly cross-referenced" (Kelly, 1955, p. 61) system that a person has constructed. Elements, which can include a set of people, objects, or situations (Ravenette, 1975), were represented in object form with nine types of reading materials. Care was taken to select printed materials (elements) found in the subjects' environment that would not be considered to represent either highly positive or negative connotations. Elements were selected according to the following basic criteria:

1. representative of different purposes and comprehension levels,

2. representative of materials in which possibilities exist for the subject to construe at the surface level and deep level structure,

3. representative of elaborated and concise reading materials,

4. representative of fiction and nonfiction reading materials, and

5. representative of one topic and many topic

materials.

Easterby-Smith (1981) recommended that one needs to include 7-12 elements for adequate topic coverage. The present study included nine elements in order that the above criteria be fulfilled. The types of materials selected are presented in Table 2.

Procedure

The nine types of reading materials were placed on a table in front of the subject in the order listed on the Elicitation Grid Sheet (see Appendix C). The subject was told that "the purpose of the game or puzzle is to explore your views about reading." The subject was then asked to name the items. The subject's attention was drawn to the first three items and was asked to say in what way two of them were alike (this became the emergent pole of the construct) and in what way the other element was different (this became the contrast pole of the construct). The subject was then asked to place the remaining items with either one or the other of the construct poles. The materials were physically placed at either extreme by the subject. Triads of elements used to elicit the sort were presented sequentially (see Appendix D). Frequently, in pilot data as well as the present study, the imposed preplanned elicitation was not suitable after the first

Table 2

Types of Materials Used in the Elicitation of Constructs

Item	Purpose	Comprehension Level
aspirin box	concise instructions	literal level
map	directions	literal level
storybook	entertainment-over time	interpretative/inferential level
encyclopedia	general information	literal level
dictionary	definition information	literal level
shell book	specific topic information	literal level
cartoon book	entertainment-short duration	inferential level
game book	elaborated instructions	literal, interpretative level
advertisement	specific information	evaluative level

few sorts. When it did not appear beneficial to continue the planned order of sorts, the researcher would ask "Are there any two items in these materials, that you can find, that are similar in some way?". After the two similar items were selected, the researcher asked the subject, "Can you find one that is different from those?". Providing students with this choice of triad selection generally increased the number of constructs. All subjects in the present study were asked sometime during the elicitation session to consider the first seven sorts (see Appendix D). This process continued until the subject could no longer identify any new constructs about the elements. The procedure lasted approximately 45 minutes.

Coding and Collecting the Data

Each subject's constructs were recorded on a single sheet that had been previously prepared (see Appendix C) to include the elements (nine representations of reading materials). These elements were placed across the top, and blanks on either side of the page served as a place to record the subject's dichotomous constructs. Blank boxes between the dichotomous constructs were used to record a ✓ or an x. If the element was representative of the emergent pole, a ✓ was placed in the appropriate grid box.

If the element was assigned to the contrasting pole, an x represented this choice. A dash (-) was recorded if the subject had difficulty applying a particular construct to an element.

In the elicitation process, each subject was asked to consider the first seven sorts listed on the presenting of elements chart (see Appendix D). A record of the sorts, placed on the left of the grid sheet, noted the triad that prompted the construct. However, a construct response was not always given. When this occurred, a slash was placed through the triad sort number and the subject was asked to consider the next sort. Additional triad selections that were spontaneously given by the subject were recorded by simply placing a dot by each element that initiated the construct. An example of a subject's protocol is shown in Figure 2.

Data Analysis

This section includes a separate discussion and illustration of how each research question was analyzed. Findings are presented in the next chapter.

Research question one: What is the frequency of constructs, categorized as to surface level or deep level, used by seventh-grade students to differentiate various forms of reading materials?

Part of this analysis was done on the computer using the Focus program devised by Shaw (1980). Elements,

Figure 2. Example of a subject's protocol.

1) This is a game (puzzle) about reading.

2) Let's name the items:

NAME _____

3) First Triad , etc. - "In what important way are two of them [these] alike but different from the third?" (Kelly, 1955, p. 222).

4) Could you place the other items in _____ and _____?

Sort	EMERGENT POLE ✓ (1)	E1 aspirin box	E2 map	E3 storybook	E4 encyclopedia	E5 dictionary	E6 shell book	E7 cartoon book	E8 game book	E9 advertisement	CONTRAST POLE X (3)
	Helps You	✓	✓	X	✓	✓	✓	X	✓	✓	Just to Read
	Non Fiction	✓	✓	X	✓	✓	✓	X	✓	✓	Fiction
2	Read Some of it	X	✓	✓	✓	✓	✓	X	—	X	Read All of it
5	Help Solve Something	✓	✓	°X	✓	°✓	✓	X	°✓	X	Doesn't Help Solve
4	Help You Find Something	✓	✓	X	✓	✓	✓	X	✓	✓	Don't Help You
6	Help You Write Report	X	✓	✓	✓	✓	✓	X	X	X	Won't Help You Write Report
1	Read for Fun	X	•X	°✓	X	X	✓	°✓	✓	X	Would not Read for Fun

constructs, and assigned pole information given by each subject were individually entered into the computer program. For purposes of comparisons, the emergent pole (✓) was assigned the numeral 1 and the contrast pole (x) was assigned the numeral 3. If the element received no placement (-), it was assigned the numeral 2. The constructs (rows) and elements (columns) were rearranged and the ✓ and x were reversed, when necessary, so that similar elements and constructs were placed closer together. Kelly (1955) refers to this reordering as "reflection" (p. 283). Reordering did not distort the data as the pole constructs, as well as the numerations, are reversed.

Each construct was determined to be unique by considering (a) the amount of differentiation used in comparing and contrasting the elements and (b) the verbal labels attached to the differentiation. Equivalent constructs, then, would be those in which the subject construed the elements exactly and/or restated or used similar verbal labels. Verbal labels or constructs, were then categorized as to their surface level or deep level. Surface level constructs were defined as those attending to visual observations and graphophonic representations of print (e.g., large print/small print, pictures/no pictures). Deep level constructs were defined as those

attending to inference, interpretation, and semantic observations (e.g., fiction/nonfiction, sequential character development/no character development). Individual differences in labeling are maintained on the computer print-out.

Three raters independently categorized the constructs as surface level or deep level yielding a mean percentage of agreement of 93.5.

Research question two: What are the (a) verbal content categories and (b) patterns of relations that exist within construct systems of seventh-grade readers of increasing reading achievement levels as they contrast and compare reading materials?

This analysis included a qualitative, descriptive examination of (a) the verbal labels given by each achievement level and (b) the cluster diagrams formed from each group's sorting patterns. The Sociogrid (Shaw, 1980) produced an ordering of each group's constructs relative to the shared agreement among the pattern sorts. Major groupings were identified by considering the strongest associations among the placements assigned to elements. This is theoretically based on Kelly's (1955) commonality corollary. The "commonality" of the group was determined by the overlap among the grids. Those patterns determined common above a given percentage were entered into the Focus program (Shaw, 1980) which reordered the patterns according to their similarity and produced construct and

element diagrams representative of the construed relationships.

The first part of the second research question specifically dealt with the verbal content categories which were determined by examining the constructs elicited from the 35 subjects and then extracting common themes through content analysis. Threads of commonality that were representative of the entire sample and representative of each achievement level were considered.

The second part of the research question considered the patterns of relations represented in the diagram clusters. These patterns were visually maximized by the computer program and were illustrated in element clusters and construct clusters. The clusters were analyzed by considering: (a) the abstraction or differentiation within the system (construction corollary); (b) the complexity of the clusters including the interrelations among the clusters and the hierarchical arrangement of the clusters (organization corollary); and (c) the integration of the elements within the subsystems (fragmentation corollary).

A specific illustration, relating to research questions one and two, of individual grid analysis will be given below. The data from the subjects are examples that were collected in the pilot study and are used for illustrative purposes only. These subjects were of the

age and grade level selected for the study. The data collected in the individual elicitation sessions from Subject A and Subject B were entered into the Focus program (Shaw, 1980) as described in the opening paragraph of the data analysis section of this chapter. The raw grid (see Figures 3 and 4) for each of the subjects is a direct representation of the elicitation session. The degree of differentiation used by each subject in comparing and contrasting the elements can be evidenced in the element tree diagrams (displayed vertically) and the construct tree diagrams (displayed horizontally). The percentage relationships between the elements and constructs decreases as one ascends the tree diagrams.

Subject A (Figure 3) gave 11 different constructs (ten deep level and one surface level) in describing the elements (see horizontal clustering). Constructs 3, 7, and 11 were not considered equivalent constructs since the subject's verbal labels were representative of additional dimensions of construing even though the elements were categorized exactly the same. Therefore, instead of counting these as one construct, they were counted individually. Constructs 4 and 5 were determined to be equivalent due to the similarity in the verbal labels and the lack of differentiation found among the elements as they were contrasted and compared. Construct 9 was

Figure 3. Raw grid and focus grid for subject A.

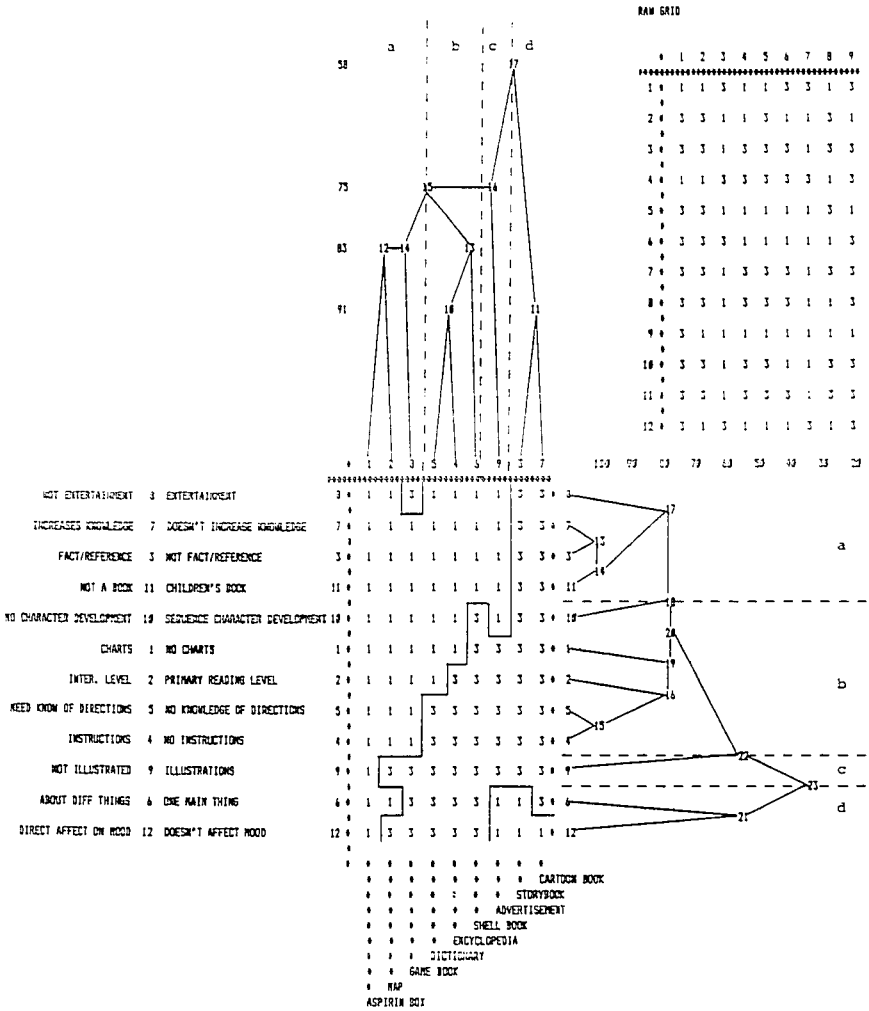
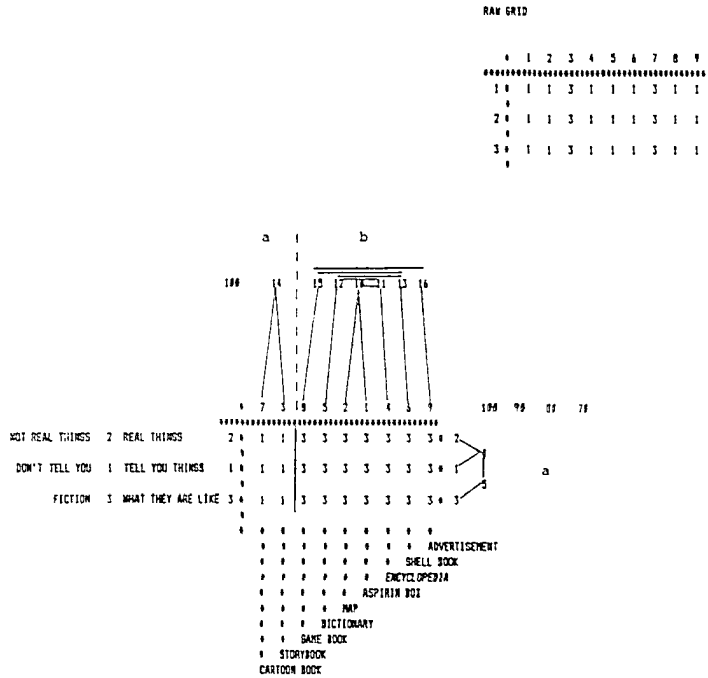


Figure 4. Raw grid and focus grid for subject B.



considered to be surface level since this construct was determined by a visible observation.

Subject B (Figure 4) gave three sets of verbal labels for the elements which resulted in one way of differentiating among the items. The verbal analysis would indicate that two deep level constructs exist. The similarity between verbal label sets 2 and 3 implied one construct. Three main clusters (i.e., a, b, and d) exist within the construct tree (see horizontal clustering) for Subject A while Subject B had one construct cluster.

The element trees (see vertical clustering) for Subject A indicated that no two items were construed to be exactly the same. One item (i.e., advertisement) was considered to have a low relationship to both clusters a and b. Three main element clusters exist: 1, 2, and 8; 5, 4, and 6; and 3 and 7. These would be considered the subsystems within the subject's cognitive system. In contrast, Subject B had one sort or way of comparing and contrasting the elements. This sorting pattern suggested a one-way, either-or, concrete subsystem for considering these elements. The two poles were determined to be related at the zero percentage level. While a hierarchical, abstract organizational system with integration and linkage was evidenced in the element clusters of Subject A, Subject B did not appear to have a

network or complexity within his cognitive system.

The present study examined individual grids to determine the frequencies of deep and surface level constructs (research question 1) and core verbal content categories (question 2a). Mode grids, discussed below, were examined to determine the patterns of relationships for constructs and elements for each reading achievement level (question 2b).

Sorting patterns from the raw grids of all 35 subjects (five subjects at each of the seven achievement levels) were entered into the Sociogrid progam. The Sociogrid considered each construct pattern given by individual group members and calculated the degree of shared agreement or overlap among the group's grids. A percentage ordering of shared patterns was produced in table form. The seven mode tables (one for each achievement level) contained an average match percentage, from the highest to the lowest, of the similar patterns that group members used as they contrasted and compared the reading materials. The common patterns for each group were then entered into the Focus computer program which produced element and construct clusters. Clusters within the mode grids were analyzed to determine: (a) the most common constructs of each achievement level; (b) the degree of commonality or the number of shared constructs

above a given percentage level (The percentage cut-off point was determined by the capacity of the computer.); (c) the number of group members that contributed to the construct cluster; (d) the deep or surface level content of the clusters; and (e) the relationships among types of reading materials. Each mode grid assisted in determining a profile for each achievement level and was interpreted as a representative introspection of each group's construct system. These patterns of relationships did not imply a state of cognitive structure within the subjects, but rather were interpreted to imply that a trait of cognitive complexity existed for construing the particular elements that were presented.

Research question three: What relationship, if any, exists between reading achievement and the number of surface level and deep level constructs utilized by students?

The 35 subjects, representing seven groups of achievement levels with a range of 10 deciles each, were divided into three groups (low, middle, and high). A mean score was derived for each of the defined groups on the number of total, deep level, and surface level constructs. Three one-way analyses of variance were used to determine if the means among the three ability groups were significantly different.

A Pearson correlation was used to determine the amount of relationship between: (a) achievement and total

constructs; (b) achievement and deep level constructs; and (c) achievement and surface level constructs.

Research question four: What relationship, if any, exists between levels of reading achievement and the organizational patterns of constructs used by students?

The 35 subjects, representing seven groups of achievement levels with a range of 10 deciles each, were again considered in three groups (low, middle, and high) to determine what relationship existed between reading achievement and organizational patterns. The Sociogrid (Shaw, 1980) calculated the shared agreement to determine the degree of commonality which existed among the group's members. The patterns considered common for each group were entered into the Focus program (Shaw, 1980). The computer program considered sorting patterns and built up a series of hierarchically arranged clusters. These major clusters were identified by considering the strongest associations among the placements assigned to elements. The commonality of each group was produced in mode grid form.

CHAPTER V

FINDINGS

The purpose of this study was to investigate the construct systems of seventh-grade students at varying reading achievement levels. The results of the investigation are presented in this chapter to correspond to the specific research questions posed in chapter 1.

Research Question One

What is the frequency of constructs, categorized as to surface level or deep level, used by seventh-grade students to differentiate various forms of reading materials?

The 35 seventh-grade students who participated in the study gave a total of 275 constructs. Sixty-eight per cent of the constructs were determined to be deep level and the remaining thirty-two per cent were considered surface level. The number of constructs given by the students ranged from 2 to 14. Table 3 presents the total

Table 3

Frequency Distribution of Constructs

	Constructs	Frequency
Total	2	1
	4	1
	5	2
	6	7
	7	9
	8	5
	9	2
	10	2
	11	1
	12	2
	13	1
	14	2
Deep level	1	1
	2	1
	3	4
	4	10
	5	7
	6	2
	7	3
	8	4
	9	1
	10	1
	13	1
Surface level	0	1
	1	9
	2	8
	3	11
	4	2
	5	3
	7	1
N = 275		

Note. N represents the total constructs elicited.

frequency distribution of constructs and the frequency of constructs for the categories of deep level and surface level.

The mean and standard deviation for the total constructs, deep level constructs, and surface level constructs are presented in Table 4.

Research Question Two (a)

What are the verbal content categories that exist within the construct system of seventh-grade readers of increasing reading achievement levels as they contrast and compare reading materials?

Verbal Content Categories

The verbal labels were sorted as to similarity of content. From the sorting process, categories were determined to reflect the core groupings the subjects used as they considered the various reading materials. The extent of conceptual overlap is unknown; therefore, the categories are not intended to represent distinct reading purposes. This investigation attempted to isolate categories that were distinct in the subjects' conceptualization as they differentiated between and among the reading materials. The verbal content analysis of the 275 constructs indicated that 10 core categories would account for the classification of 99.8 per cent of the

Table 4

Construct Means and Standard Deviations for Total Sample

	M	SD
Total	7.857	2.734
Deep level	5.342	2.436
Surface level	2.514	1.482

constructs. The following categories emerged from the verbal content analysis: (a) stories, (b) directions, (c) information, (d) advertisement, (e) provides help, (f) topics, (g) entertainment, (h) fiction, (i) pictures, and (j) materials. Each core category discussion includes the percentage of the subjects that contributed to the category and examples of specific verbal labels or constructs that exemplified each category.

Stories. Thirteen per cent of the 275 constructs elicited related to this core category. Of the 34 subjects that gave a construct in this category, 23 (66%) used the construct "story/not story" as a way of sorting the nine elements. The frequency of this construct did not differ by achievement levels but there were differences in qualitative aspects of how the construct was used by subjects at different reading levels. Elaboration, refinement, and complexity of the story category was given by the 70 to 99 achievement levels. For example, these higher achievement levels sorting the materials by: characterization (e.g., "real characters," "talking people in book"); setting (e.g., "gives background," "imaginary," "tells where"); and plot (e.g., "tells happening").

Directions. Eleven per cent of the constructs were related to sorting the reading materials into dichotomous

poles dealing with directions. Twelve subjects in the sample, representing all achievement levels, used the verbal labels "tells how to/not how to." Nine subjects in the sample (achievement levels 50 to 99) used the verbal labels, "directions or solutions/not directions or solutions." This core category was represented by 86 per cent of the sample.

Information. Nine and one-half per cent of the constructs were classified in the information core category. Twenty-six subjects (74%) in the sample, representing all the achievement levels, gave constructs included in this category. Some differences in verbal labels were observed as various achievement levels were examined. Verbal labels for the lower achievement range generally included "look up things" or "look up stuff" while the higher achievement range was characterized by "gives information."

Advertisement. Eight per cent of the constructs referred to the elements as selling, advertising, product related, and buying. Of the 22 subjects in the sample who used a construct representative of this category, 14 of these were used by the 70 to 99 achievement range.

Provides Help. Eight per cent of the constructs were classified in this category. The 90-99 achievement level was not represented in this category. All other

achievement levels, 30 to 80, used the construct "help you/doesn't help you" as well as other "help" constructs (e.g., "help you learn," "help you find something"). Twenty-two subjects in the sample used a construct representative of the "help you" category. A clustering of this construct, or 11 of the 22 constructs given, was found to exist at the lower range of the achievement distribution (30-50 levels).

Topics. This category represented 7.6 per cent of the total constructs. Eighteen of the 21 constructs given were used by subjects represented in the achievement range of 60 to 99. Twelve subjects within the achievement range of 50 to 99 used the construct "about different things/about one thing." Higher achievement levels (80 to 99), however, made additional classifications such as "detail/not as much detail" and "read for curiosity."

Entertainment. This core category represented 6.5 per cent of the 275 constructs. While all achievement levels were represented, 16 of the constructs given were used by subjects in the 50 and above achievement levels.

Fiction. Six per cent of the constructs related to this category (e.g., "not true"; "not facts"). Seven subjects in the sample, representing achievement levels from 80 through 99, used the construct fiction/nonfiction. Sixteen subjects in the sample used a construct

representative of this category.

Pictures. Six per cent of the constructs used by the subjects were related to pictures, diagrams, sketches, figures, and symbols. Twelve of the 17 constructs given were by subjects in the achievement levels from 70 to 99. Subjects within this range used verbal labels that differentiated the materials by "real pictures/illustrations," "diagrams or sketch/colored pictures," "pictures used to describe/more writing," and "figures or symbols/no figures." Other constructs, represented by all achievement levels, that were classified in this core category included: "many pictures"; "fun pictures"; and "no pictures."

Materials. For clarification, this core category contains three subheadings: (a) words, (b) format, and (c) subject matter. The constructs in the subcategory, words, represented 3.6 per cent. Although all achievement levels were represented, differences in verbal labels were noted. Achievement levels of 30 to 49, representing 5 of the 10 constructs given, sorted the materials by using constructs as "hard words" and "more words" while subjects in the 90 to 99 achievement range sorted according to "brief" and "more to read." Constructs in the subcategory format represented 11.6 per cent of the total constructs. Constructs in this category were not found to be

representative of any particular achievement level. The subjects sorted the materials by using constructs such as "book/not book" (7 subjects); "hard cover/paper cover" (5 subjects); and "one page/more than one page" (4 subjects). Additional constructs in this category that were used by one or two subjects referred to alphabetical order, page numbers, paragraphs, index, and sections. Nine per cent of the constructs were classified in the subject matter subheading. These constructs were cued by the selection of the reading materials and therefore are specific to the particular elements chosen. Seven subjects sorted the materials (see Appendix E) by using the construct "about sea/not about sea" and six subjects sorted the materials "comic/not comic." Additional examples of verbal labels used by the subjects to sort the materials were "games," "historical," and "about world."

Methodological Note

The verbal content in the category Materials was influenced to some extent by the 9 choices of reading materials. One concern in selecting the reading materials was that subjects might react to the specific item (e.g., jeans) rather than the type (e.g., advertising). This concern was apparently unnecessary in that 75.6 per cent of the constructs related to the type of reading material

represented rather than the specific item. However, the three subheadings under the materials category: words (3.6%); format (11.6%); and subject matter (9%) were found to contain specific references (e.g., about Indians/not about Indians, about sea/not about sea) to the characteristics of the particular items used in the study. These subheading categories would be expected to change or disappear in subsequent replication studies when different reading materials are used to elicit constructs.

Summary

Major differences in core categories were not found among the different achievement levels. Different achievement levels, then, did not necessitate the establishment of unique categories. However, some qualitative differences in verbal labels (constructs) were found within the categories which related to different achievement levels. For example, high level achievers (70 to 99) were found to use surface or low level constructs as well as deep, elaborated, complex, and refined constructs. However, the reverse was not true. Low level achievers were found to use surface level constructs but not elaborated deep level constructs. In other words, high achievers do not always give verbal labels representative of deep level constructs nor should verbal

labels representative of surface level constructs be used as a means of gaining insights into different achievement levels.

Discussion of Informal Observations During Data Collection and Construct Frequency

Informal observations made during the administration of the repertory grid were written on the construct elicitation sheet as the materials were sorted. The researcher noted particular patterns of behavior among different reading achievement levels.

The subjects whose achievement level range was 30 to 39 had considerable difficulty in differentiating among the various reading materials. Subjects often repeated constructs or one pole of the construct and sorted the reading materials in a different way. Differences in the sorting often involved the placement of one item. When verbal labels were repeated the researcher showed the subject the elicitation sheet and mentioned that these labels had been given before. The researcher then asked the subjects if they wanted to change the sort to the new one they had made or keep the previous one. If the subjects did not clarify their new sort with different verbal labels but retained the different sort, the construct was determined different. These inconsistencies

caused the frequency of constructs given by the 30 percentile level to be overestimated (see Table 5). When asked "In what important way are two of these alike but different from the third?" one subject in this achievement level considered the triad of elements on the table as first, second, and third. This student thought that third meant the order of elements on the table. In the 30 achievement level, subjects' attention had to be occasionally redirected to the triad sort before they considered the sorting of the complete set of elements. When subjects forgot the construct verbal labels or gave another construct as they sorted the complete set of materials, the researcher gently reminded them of their labels and noted the new construct to consider next. In summary, the 30-39 achievement level appeared to be characterized by a restricted ability to: differentiate among the materials, accurately sort materials into categories they had named, remember their constructs, and finish the sort they were on before stating a different construct.

Subjects in the 40-49 and 50-59 achievement levels demonstrated similar charcteristics to those found in the 30-39 achievement level. These levels were also characterized by a difference in sorting of one element on subsequent constructs. While subjects in the 30-39

Table 5

Frequency of Constructs for Achievement Levels

Achievement level	Surface level constructs	Deep level constructs
30-39	12	17
40-49	13	17
50-59	9	31
60-69	16	18
70-79	14	30
80-89	7	34
90-99	17	40

achievement level were characterized by indecisiveness, subjects in the 40 to 59 achievement levels seemed capable of clarifying their thoughts and appeared to be involved in a refining process. A chaining effect (i.e., part of the construct or one of the poles was retained and carried over and used in the next sort) was a characteristic for these achievement levels. This partially accounted for what appeared to be a large number of deep level constructs in the 50-59 achievement level (see Table 5). In addition, these levels appeared to be merging into formulating deep level constructs. Although sorting placements for some elements could be questioned (e.g., placement of a specific information book [shell book] with a narrative element [storybook]), constructs were classified deep level if they represented inference (e.g., fiction/nonfiction).

While all students, from the 30th through the 90th achievement levels, attended to sorting the materials with interest and cooperation, the higher levels took more time to consider or think about the task.

Research Question Two (b)

What are the patterns of relations that exist within the construct system of seventh-grade readers of increasing reading achievement levels as they contrast and

compare reading materials?

The patterns determined common by the Sociogrid program (Shaw, 1980) for each group at the average match value of 75 per cent and above were entered into the Focus program. The percentage cut-off point was determined by the capacity of the computer. By considering the element and construct clusters produced by the Focus program (Shaw, 1980) a descriptive profile was written for each achievement group. Clusters within the mode grids were analyzed to determine: (a) the most common constructs of each achievement group; (b) the degree of commonality or the number of shared constructs at the 75 per cent level and above; (c) the number of group members who contributed to the construct cluster; (d) the deep or surface level content of the clusters; and (e) the relationships formed in the clusters by the students' recognition of the represented purposes of the different types of reading materials (see Table 2). The reflected cluster complexity was then related to the construction, organization, and fragmentation corollaries.

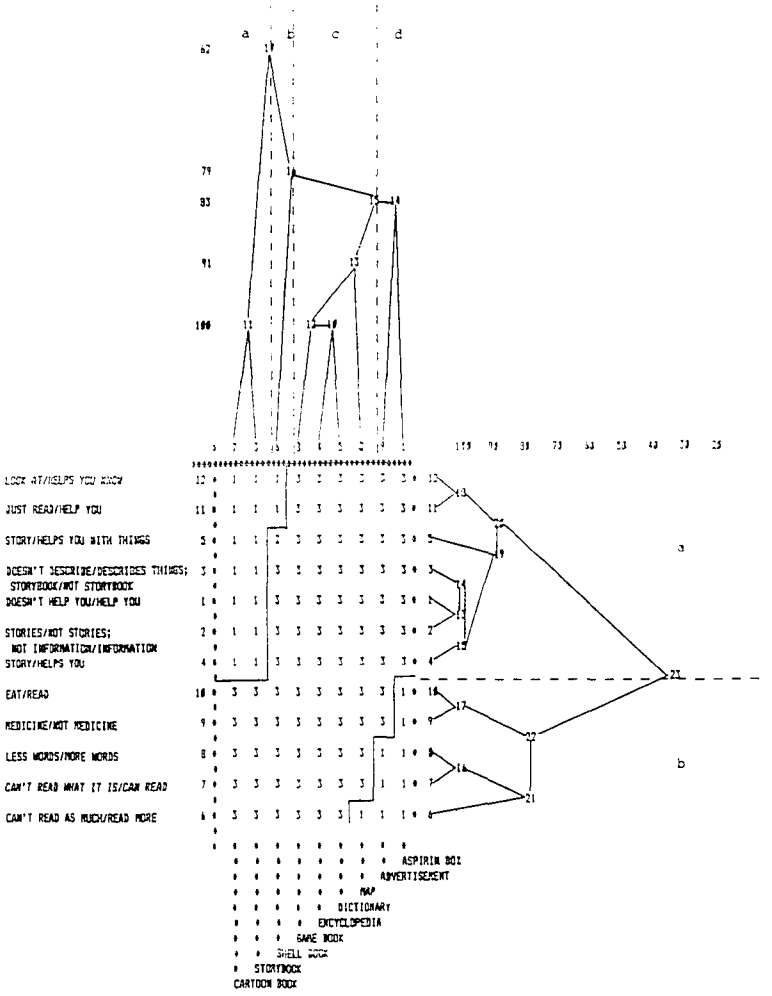
Replications of a sorting pattern given by the same individual were not entered into the Focus program so that a more accurate mode grid for the group might be obtained. However, the verbal labels used in these replicated patterns are included in the verbal construct columns (see

Figure 5). The pole rated 1 consistently appears on the left of the verbal label column and the pole rated 3 appears after the diagonal (/) mark.

Cluster profile for 30-39 achievement group. The 30 achievement group had 12 construct patterns (see horizontal diagrams in Figure 5) that contained an average match percentage of 75 per cent or above. Two main construct clusters exist (i.e., a and b). The first, a deep level, was represented by all group members. The second main construct cluster (i.e., b), having surface level content, was composed of two small patterns to which all members of the group contributed.

The element clusters (see vertical diagram) were determined by calculating the amount of agreement vertically in the focused grid. Considering the 12 most shared patterns, the 30 achievement group strongly associated the storybook and cartoon book pair (100%) and the game book, encyclopedia, and dictionary traid (100%). The mode grid, representing the group's similarity of construing above the 75 per cent average match value, indicated the group's lack of differentiation among the types of materials matched at the 100 per cent level. Linkage included the map to the triad cluster at a relatively high level (91%) and the aspirin box and advertisement pair joined at the 83 per cent level. The

Figure 5. Focus mode grid of 30-39 achievement group.

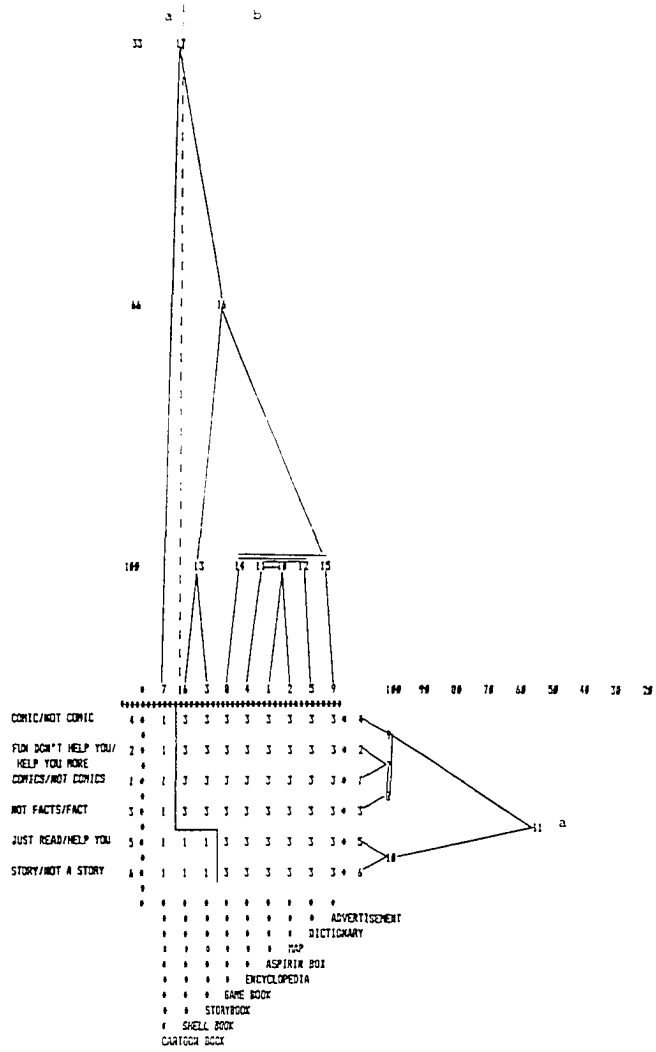


shell book related to cluster c and d at the 79 per cent level was considered to have the least relationship to the other reading materials.

The construct diagram for the 30 achievement group indicated a similarity of sorting patterns and verbal labels among the group members on two constructs. Based on the commonality patterns, the element diagram indicated a lack of complexity in abstraction or differentiation among the types of reading materials. Although different verbal labels were used, the element clusters indicated that the 30 achievement group made a distinction between fictional and nonfictional materials.

Cluster profile for 40-49 achievement group. Subjects with achievement scores in the 40-49 range had 6 common constructs with a 75 per cent average match value and above. One construct subcluster (i.e., 4, 2, 3, and 1), represented by four members of the group, and one small cluster (i.e., 6 and 5) were found to exist (see Figure 6). The patterns that composed the two clusters were characterized by constructs of both deep (4) and surface (2) level. Agreement was not found among the members of this group on their verbal labels and sorting patterns. For example, one member of the group placed the narrative or storybook in the construct pole fact while another member of the group placed the storybook, the shell book,

Figure 6. Focus mode grid of 40-49 achievement group.



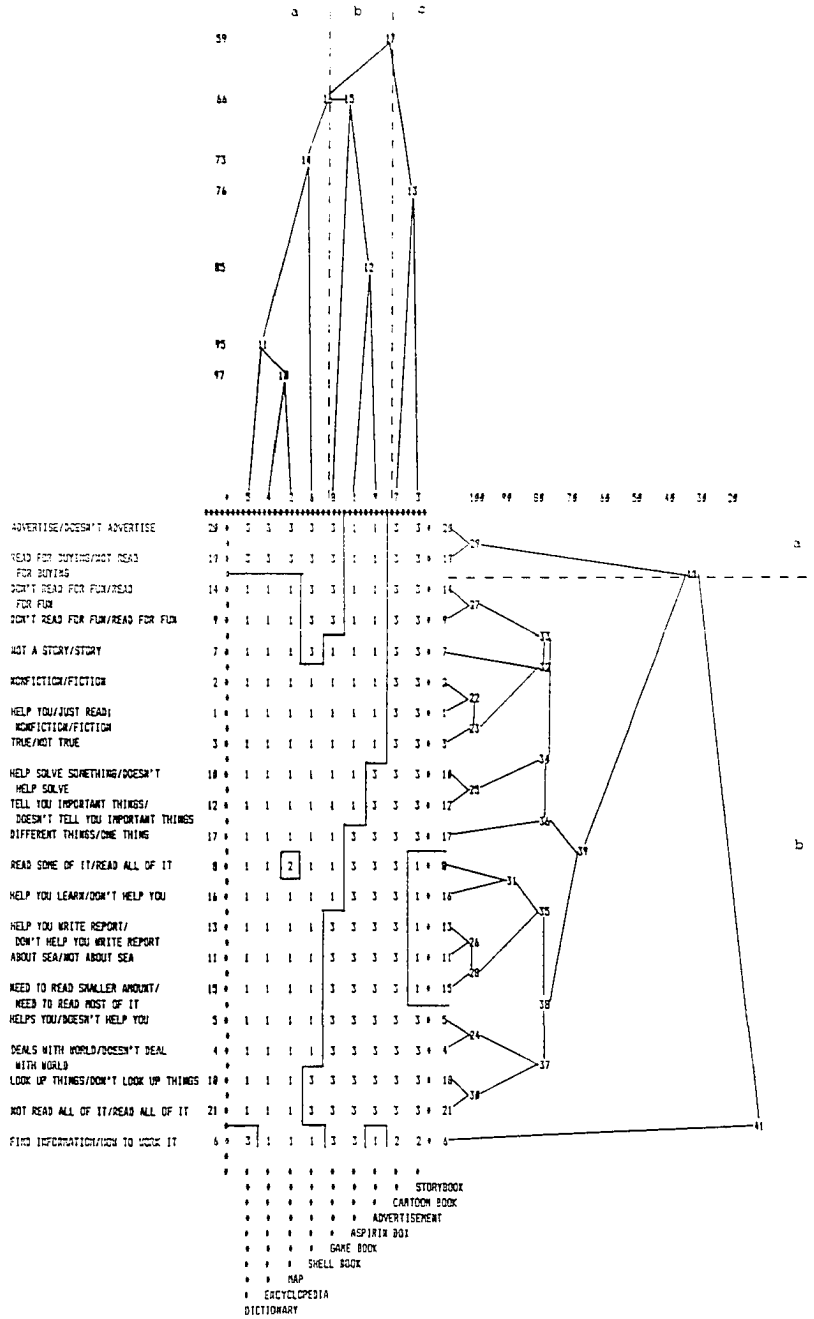
and the cartoon book in the construct pole story. The group, then, appeared to have sorting inconsistencies representing only one construct cluster.

Element clusters (see vertical diagrams) indicated that the group paired the shell book and the storybook as highly similar (100%) and associated the advertisement, dictionary, map, aspirin box, encyclopedia, and game book without differentiation (100%). The cartoon book (element cluster a) was determined by the group to have a very low relationship (33%) to the other types of reading materials.

The 40 achievement group, then, was determined to have commonality only on two sorting patterns and these patterns did not include a representation from all the group members. Element clusters were not characterized by sorting materials according to purposes or represented characteristics.

Cluster profile for 50-59 achievement group. No strong agreement within the 50's group on any sorting pattern was found to exist. Agreement in sorting patterns was between 2 or among 3 group members. Within the two main construct clusters (see Figure 7) the strongest agreement in both sorting and verbal labels was in the 2, 1, and 3 construct subcluster. Construct cluster a with surface level content had agreement between two members

Figure 7. Focus mode grid of 50-59 achievement group.



who sorted the materials alike and gave verbal labels pertaining to advertising and buying. The second main cluster (i.e., b), considered deep level, represented nineteen of the twenty-one constructs. One item differentiation and chaining can be noted in the sorting patterns by examining the line that separated the 1 and 3 poles on the grid. All of the members of the 50's group, contributing from 2 to 5 constructs each, were represented in the mode grid.

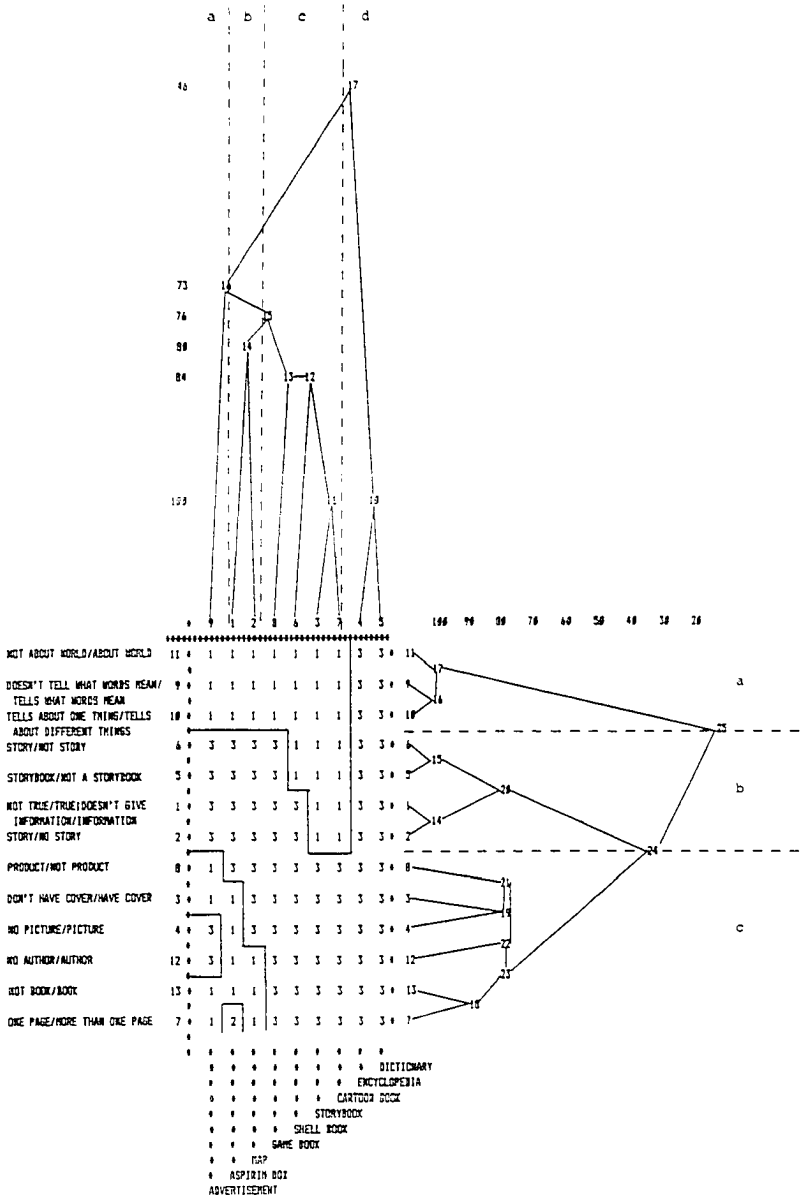
The element clusters indicated the group construed relationships among the following materials: (a) encyclopedia and map, paired (97%) and linked with the dictionary (95%) and the shell book (73%); (b) aspirin box and advertisement, paired (85%) and linked with the game book (66%); and (c) cartoon book and storybook (76%). A low level of agreement among the group's members was represented in a lack of integration in the cluster formations and accounted for the single lines and low relational percentages on paired elements. Considering the group's inconsistencies in verbal labels and lack of agreement in sorting, the clusters were not determined to reflect complexity within the members' organizational systems for sorting materials according to reading purposes.

Cluster profile for 60-69 achievement group. The 60

achievement group had 13 similar construct patterns at the average match value of 75 per cent and above (see Figure 8). Although verbal labels and sorting patterns were not found to be consistent among the group's members, there appeared to be three construct clusters, two deep (i.e., a and b) and one surface (i.e., c).

The element clusters analysis determined the group to construe a high relationship between the following elements: encyclopedia and dictionary (100%); storybook and cartoon book (100%) with linkage to the shell book (84%) and game book (84%); and the aspirin box and map (80%). The group did not pair the advertisement to any of the other types of materials: however, the encyclopedia and dictionary pair was considered to have the least relationship to the total group of elements (46%). Although not stated in the verbal constructs, pairing the aspirin box and map and the encyclopedia and dictionary indicated that the group construed a relationship between materials with instructions and/or directions as well as relationships among information type materials. Awareness of reading purposes in previous groups was generally limited to the more obvious sort of separating the entertainment or narrative materials (i.e., storybook and cartoon book) from the other types of materials. The 60's group paired the storybook and cartoon book but did not

Figure 8. Focus mode grid of 60-69 achievement group.



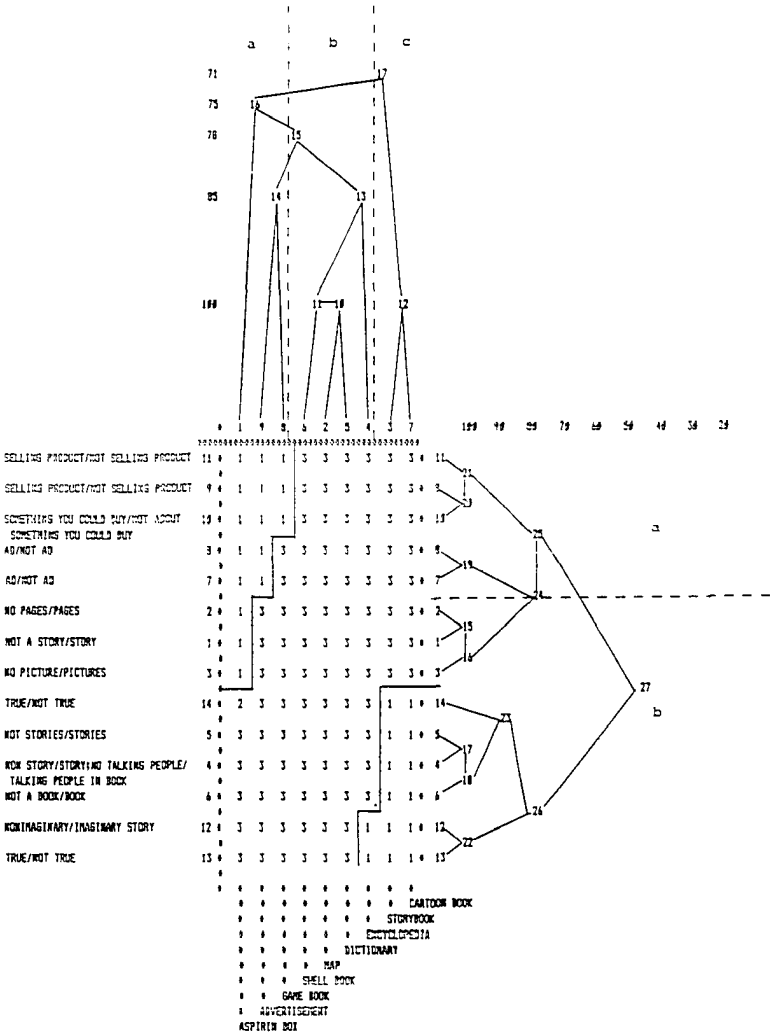
sort these materials into distinct clusters as did previous groups.

This 60 achievement group was characterized by an initial awareness of sorting materials according to three different purposes. Although awareness indicated a moderate organization capability within the cognitive system that was not evidenced in lower achievement levels, a degree of confusion and inconsistency was noted in the lack of integration and construction of the subsystem formations.

Cluster profile for 70-79 achievement group. Fourteen constructs were found to have an average match value of 75 per cent and above. These represented a mixture of surface (6) and deep (8) level content scattered throughout the focused grid. However, examination of the verbal labels and sorting clusters (see Figure 9) indicated that the two main clusters had a degree of consistency. The subcluster 2, 1, and 3 was considered as part of the second main cluster (i.e., b) due to the content of the verbal labels. Four members of the group contributed to the first construct cluster and all members contributed to the second.

The element clusters for the 70's group indicated high relational construing between the storybook and cartoon book (100%) and among the shell book, map, and

Figure 9. Focus mode grid of 70-79 achievement group.

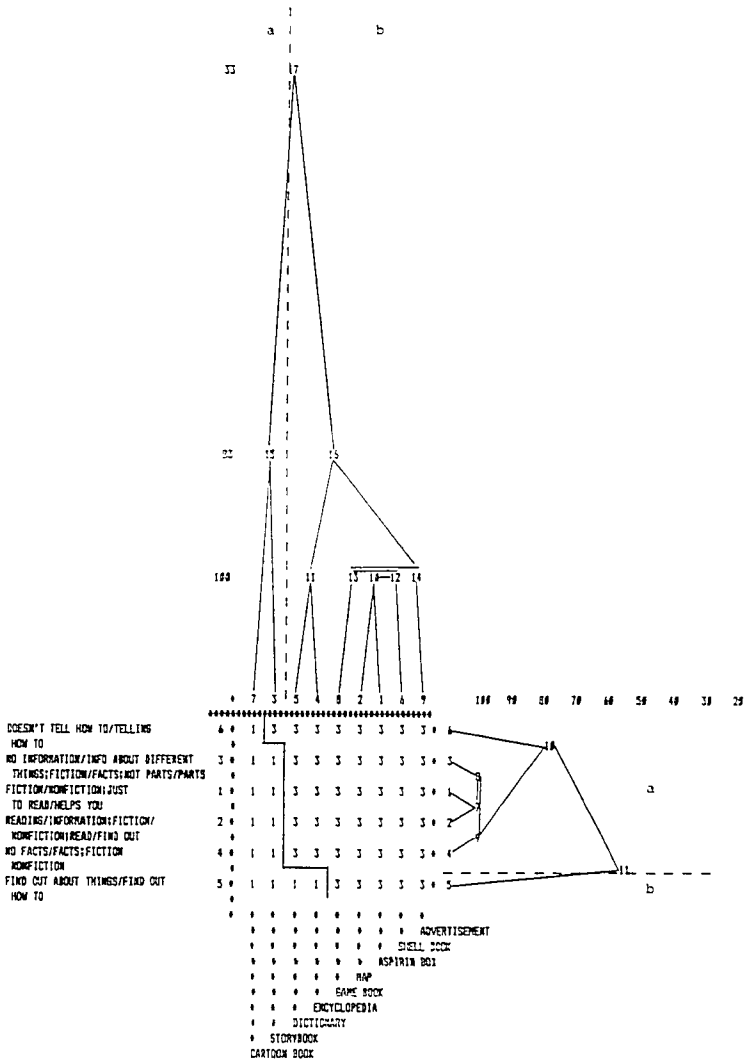


dictionary (100%), with a lower relational link from this triad to the *encyclopedia* (85%). Considering the characteristics and purposes of these materials, the 70's group sorted the materials according to information and direction purposes (i.e., element cluster b) and entertainment, fiction purposes (i.e., element cluster c). The group also construed a relationship (85%) between the advertisement (specific information) and the game book (elaborated instructions). The aspirin box (concise instructions) was considered to be related to the informational and instructional materials at the 75 per cent level.

The 70 achievement group appeared to extend the information cluster and more specifically separated the entertainment cluster than did the members of the 60 group. In addition, clusters were better integrated and represented by this group in consistency of sorting patterns and verbal labels.

Cluster profile of 80-89 achievement group. The 80's group (see Figure 10) had 6 deep level constructs determined to have an average match value of 75 per cent and above. Four members of the group contributed to the first construct cluster (i.e., a) and one member contributed to the second construct cluster. Both clusters were considered deep level. Constructs that

Figure 10. Focus mode grid of 80-89 achievement group.



instigated the pattern sorts were generally characterized by group members consistently giving verbal labels relating to information and fiction.

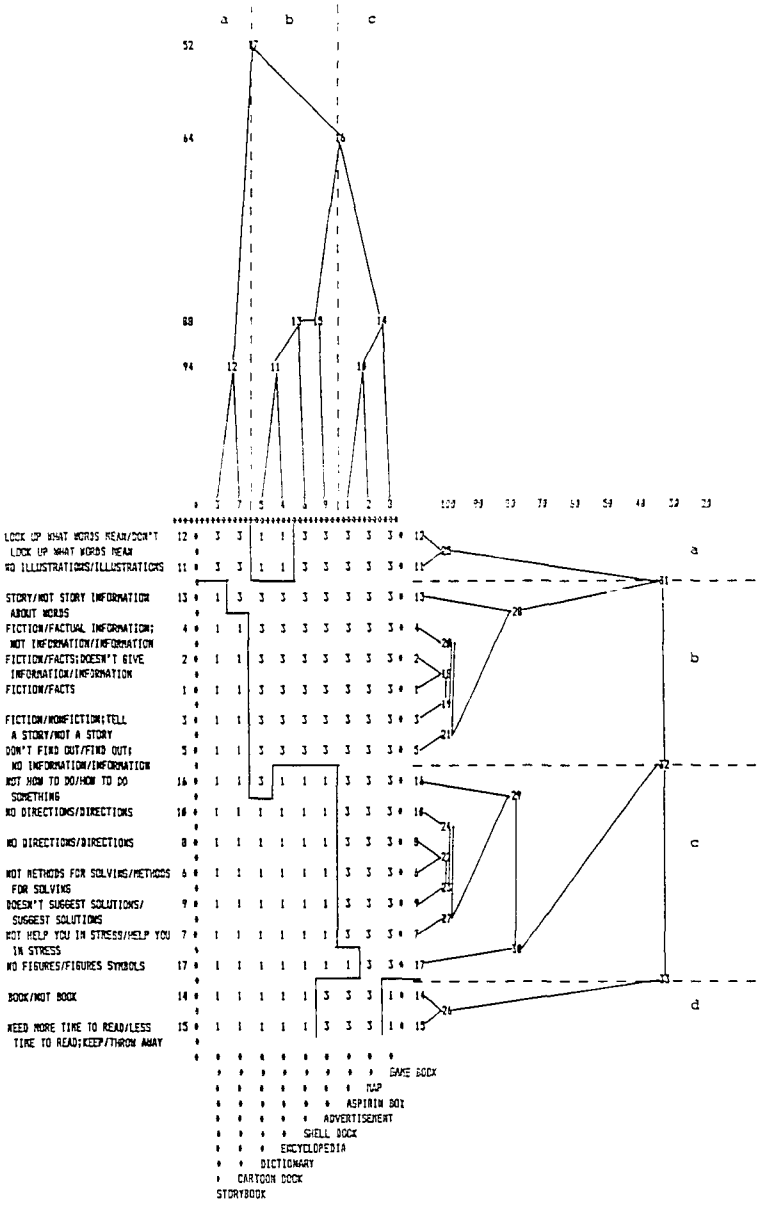
The element clusters for the 80's group represented unique cluster formations contrasting entertainment or fiction books with information type materials. One subject within this group accounted for the refinement in the information cluster (i.e., element cluster b) which separated the dictionary and encyclopedia from the other similarly construed materials.

The 80's group was characterized by a lack of agreement or commonality in their sorting patterns. Therefore, the mode grid did not indicate additional complexity within the subclusters or overall organizational framework beyond those found in the 70 group.

Cluster profile for 90-99 achievement group. The 90 achievement group had 17 construct patterns (4 surface and 13 deep level) that composed two deep level clusters (i.e., b and c), one surface level cluster (i.e., d), and one mixed surface and deep level cluster (i.e., a). Strong agreement among all group members was found to exist within the two deep level clusters in sorting patterns and verbal labels (see Figure 11).

Analysis of the three element clusters indicated that

Figure 11. Focus mode grid of 90-99 achievement group.



the group construed relationships between: (a) storybook and cartoon book pair (94%); (b) dictionary and encyclopedia pair (94%) with linkage to the shell book (88%) and advertisement (88%); and (c) aspirin box and map pair (94%) with a link to the game book (88%). The cluster containing the storybook and cartoon book was determined by the group to have the least relationship to the other clusters. This group differentiated among all elements as evidenced in no two elements being related in the clusters at the 100 per cent level. The clusters formed by the construct patterns of the 90's group clearly represented purposeful relationships among the elements. Clusters represented: (a) entertainment, fictional books (storybook and cartoon); (b) general information, factual books (encyclopedia and dictionary) with linkage and integration at a highly related level to types of materials providing specific information (shell book and advertisement); and (c) materials with concise instructions or directions (map and aspirin box) with linkage and integration to a type of reading material providing elaborated instructions (game book). Cognitive complexity, then, was evidenced in (a) construction, represented by the differentiation or abstraction which formed the element clusters; (b) organization, characterized by an hierarchical system composed of

interrelated subclusters; and (c) fragmentation, represented by the integration of all elements into the subsystems.

Summary

The mode grids were examined to determine the degree of commonality within each achievement level 30 through 90. Construct clusters found to be common ranged from two to four and were composed of deep and surface level content. Common element sorts included storybook and cartoon book (paired and clustered separately by six of the seven groups) and encyclopedia and dictionary (either paired or cluster related by all groups). Clusters that represented organization, determined by sorting materials according to similarity of reading purposes, were found in a moderate degree at the 60-69 achievement level. Complexity of organization, construction, and integration, however, was only evidenced in the 90-99 mode grid.

Research Question Three

What relationship, if any, exists between reading achievement and the number of surface level and deep level structure of constructs utilized by students?

This research question considered the relationship between achievement groups and levels of constructs used

by the subjects. The 35 subjects, representing seven achievement levels, were divided into three groups (low, middle, and high). The groups were determined from the distribution found within the seventh grade from which the sample was drawn (see Table 1). The low group represented achievement scores that ranged from 30 to 49, the middle group ranged from 50 to 79, and the high group ranged from 80 to 99. The levels of constructs were determined by categorizing the constructs as either deep level or surface level. Percentage of agreement among three raters for determining the construct placement was 93.5. Table 6 presents the mean scores for each group on total, deep level, and surface level constructs.

A one-way ANOVA was performed on the total, deep level, and surface level constructs for each of the achievement groups. Significant differences were found on the total constructs ($F = 6.5$, $p < .01$) and the deep level constructs ($F = 10.5$, $p < .01$) among the three groups of readers. A significant difference was not found to exist among the three groups on surface level constructs ($F = .05$, $p > .05$). A Newman-Keuls test, based on 10 in each group, indicated significant differences ($p < .05$) in deep level constructs between the low and middle groups and the middle and high groups.

Correlation provided a better estimate of the

Table 6

Comparison of Achievement Groups on Total, Deep, and Surface Level Constructs

	Achievement groups		
	Low	Middle	High
	M	M	M
Total constructs	5.9	7.9	9.7
Deep level constructs	3.4	5.3	7.4
Surface level constructs	2.5	2.6	2.4

magnitude of the relationships between achievement and the levels of constructs. Pearson's coefficient of correlation revealed the relationship between achievement and total constructs to be r = .592 and between achievement and deep level constructs to be r = .611. These correlations were statistically significant with a probability of less than .001. No correlation was found to exist between achievement and surface level constructs (r = .088).

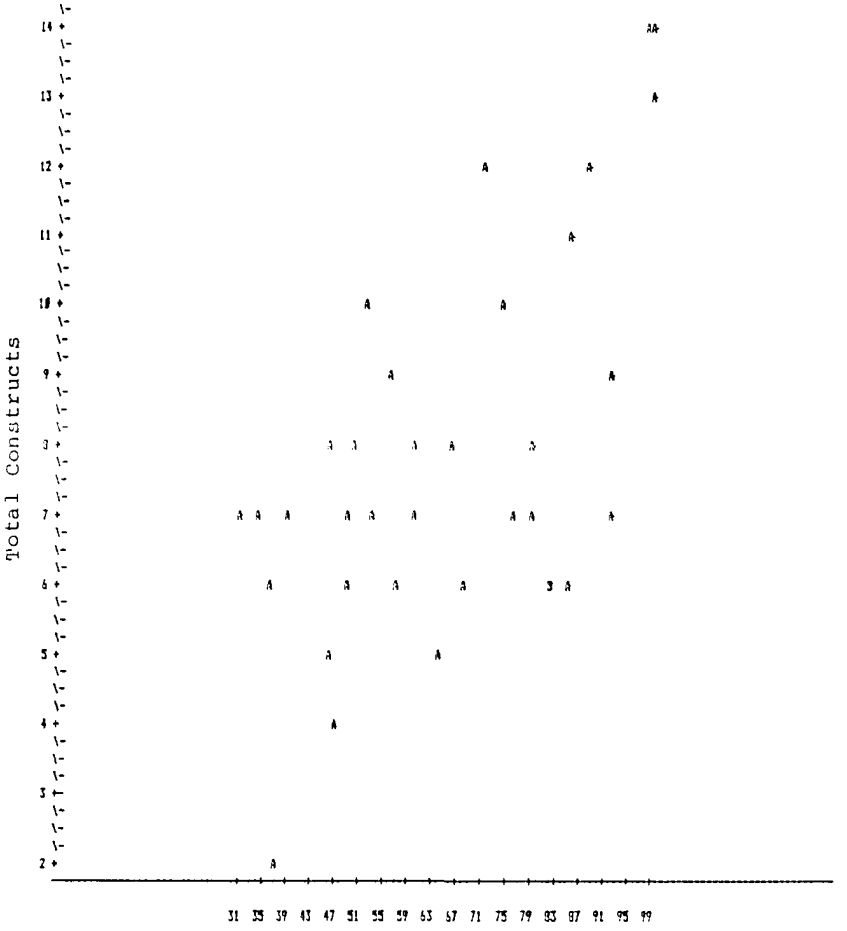
Figures 12, 13, and 14 present scatter plots of the total sample for achievement and total constructs; achievement and deep level constructs; and achievement and surface level constructs, respectively.

Research Question Four

What relationship, if any, exist between levels of reading achievement and the organizational patterns of constructs used by students?

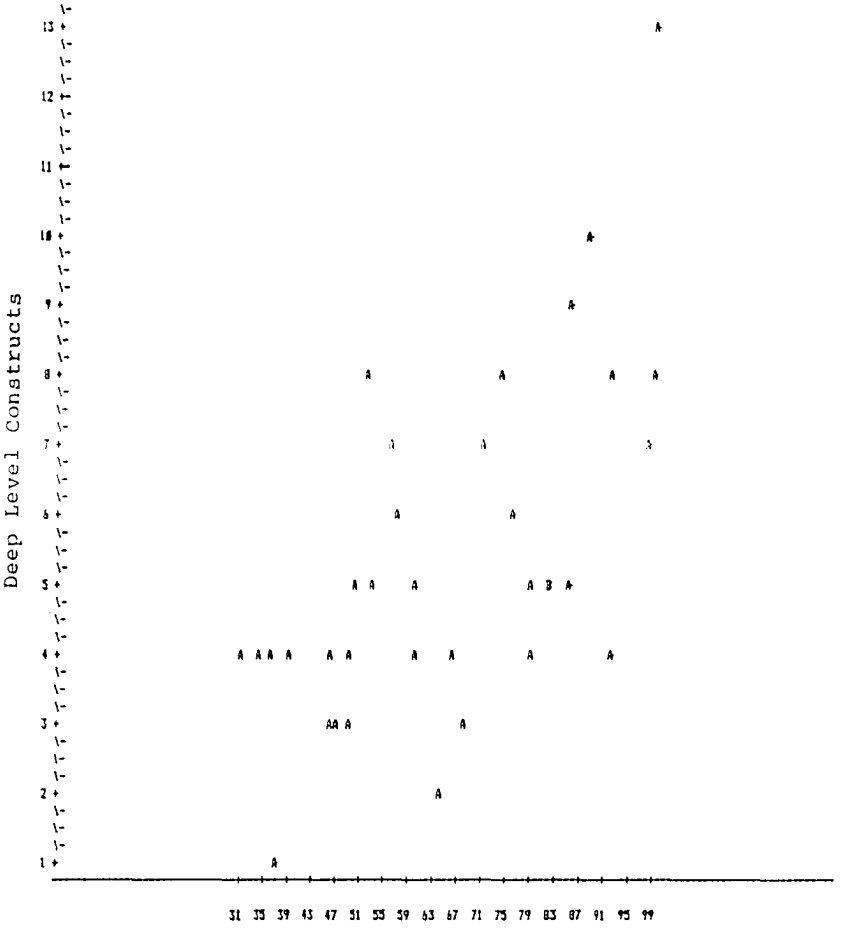
Data in raw grid form from each of the three reading achievement groups (low, middle, and high) were entered into the Sociogrid program to determine the shared agreement or overlap among each group's grids. Constructs with an average match percentage of 73.8 per cent and above were then entered into the Focus program which re-ordered the elements and constructs according to

Figure 12. Scatter plot of total constructs versus achievement.



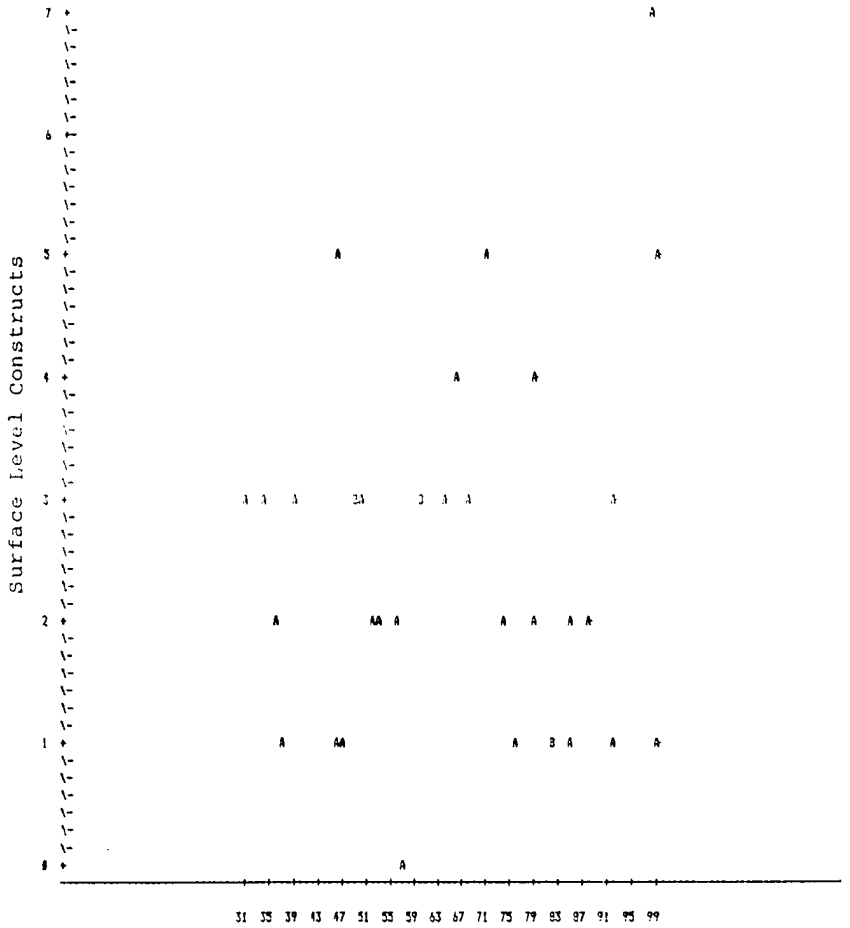
Note. A represents one observation; B represents two observations.

Figure 13. Scatter plot of deep level constructs versus achievement.



Note. A represents one observation; B represents two observations.

Figure 14. Scatter plot of surface level constructs versus achievement.



Note. A represents one observation; B represents two observations.

similarity. The cut-off percentage level was determined by the capability of the computer.

Cluster organization of low group. Nine of the 10 subjects' grids were found to have 23 common sorting patterns above the average match value of 73.8 per cent. Two main construct clusters (see Figure 15), one surface and one deep level, were composed of subclusters representing from two to five group members. Verbal content of the clusters was moderately consistent among the different members. Subjects in the low achievement group organized and related the materials into the following clusters:

cluster c. game book, encyclopedia, and dictionary (100%) with a relational link to the map (91%)

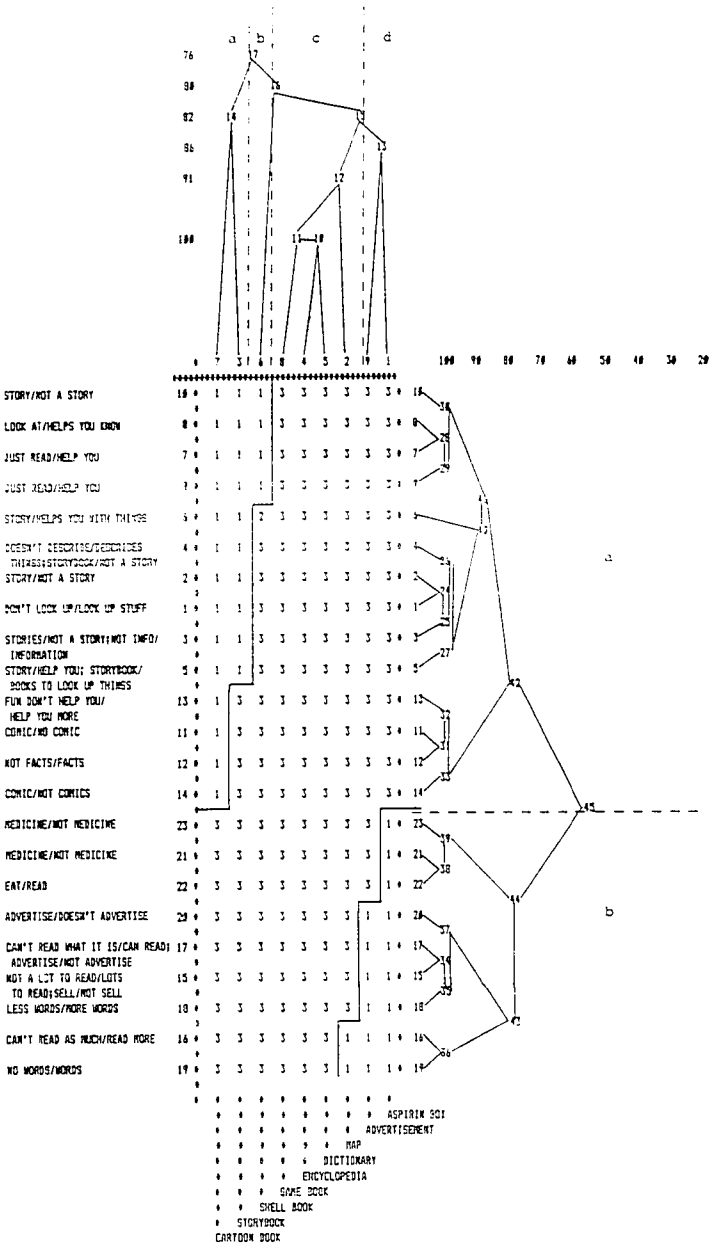
cluster d. advertisement and aspirin box (86%)

cluster a. storybook and cartoon book (82%)

The shell book was related to cluster c and d at the 80 per cent level.

The organization of the element clusters was found to be limited in: (a) abstraction (e.g., did not differentiate among the types of materials in cluster b); (b) integration (e.g., did not relate specific topic book or shell book to similar elements), (c) organization (e.g., did not recognize likenesses and differences in the materials' structure and arrange in clusters); and (d)

Figure 15. Focus mode grid of low achievement group.



inference (e.g., did not infer underlying purposes, instead, paired the unusual materials, advertisement and aspirin box on concrete characteristics).

Cluster organization of middle group. Fourteen of the 15 subjects' grids in the 50 to 70 groups were found to have 28 similar constructs. The two main construct clusters (see Figure 16) were composed of sorting patterns that differed by the placement of one element. The first cluster (i.e., a), a surface level, was not as consistent in verbal content as the second deep level construct (i.e., b). Subjects in the middle achievement group organized and related the materials into the following clusters:

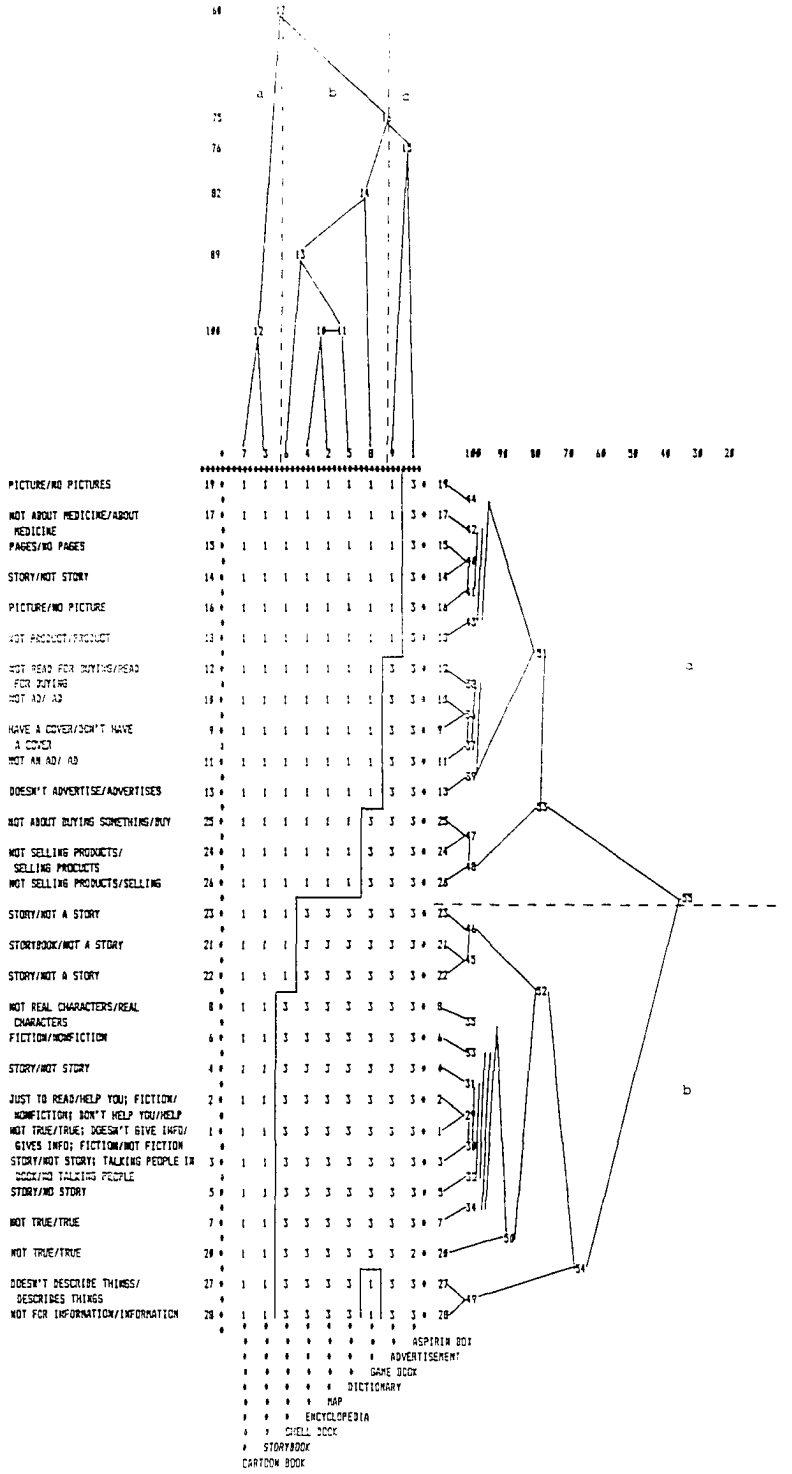
cluster a. storybook and cartoon book (100%)

cluster b. encyclopedia, map, and dictionary (100%)
with a relational link to the shell book (89%)
and to the game book (82%)

cluster c. advertisement and aspirin box (76%)

Except for differences in percentage of relationships, the organization of the element clusters was very similar to the low achievement group. Relations construed in element cluster b among the encyclopedia, dictionary, and shell book indicated an additional awareness of similar types of information materials. Organization of the cognitive system, however, was found

Figure 16. Focus mode grid of middle achievement group.



to be limited in abstraction, integration, construction, and inference.

Cluster organization of high group. Twenty-four constructs (3 surface and 21 deep level), represented by all group members in the 80 and 90 achievement levels, had a match value of 73.8 per cent and above. Four main deep level construct clusters were found to exist (see Figure 17). There was a high level of verbal consistency within the construct clusters. The high achievement group organized and related the materials into the following clusters:

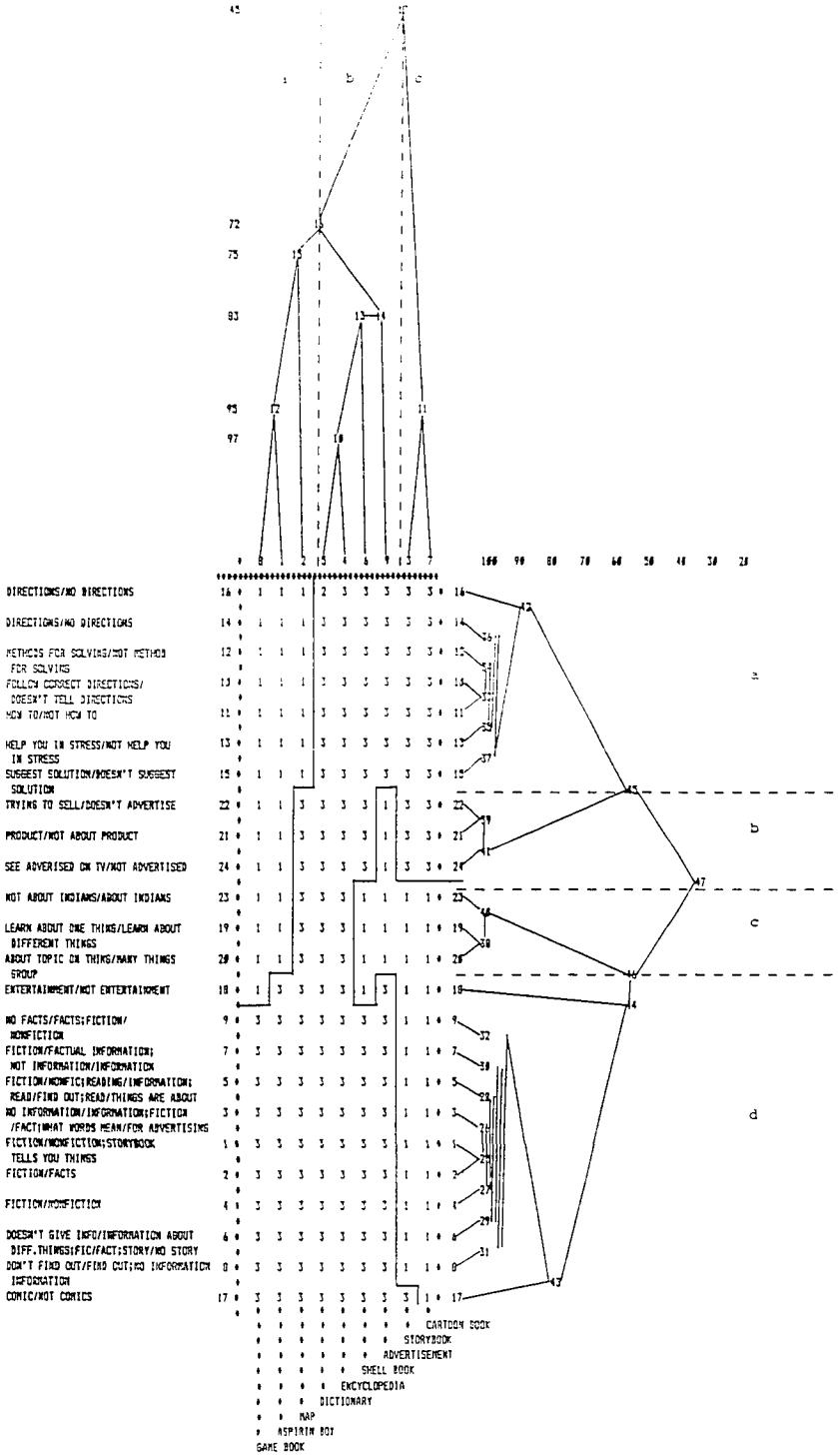
cluster a. game book and aspirin box (95%)
with a relational link to the map (75%)

cluster b. dictionary and encyclopedia (97%)
with a relational link to the shell book (83%)
and advertisement (83%)

cluster c. storybook and cartoon book (95%)

The high achievement group's mode grid was highly similar to the 90's mode grid. However, a less precise relationship was construed among the reading materials in element cluster a. As stated earlier, the 90 group related the map (concise directions) and aspirin box (concise instruction) at the 94 per cent level and then linked the game book (elaborated instructions) at the 88 per cent level.

Figure 17. Focus mode grid of high achievement group.



The high group's organization of the elements indicated cognitive complexity in (a) construction (e.g., differentiation and abstraction was evidenced in the verbal labels and sorting patterns); (b) organization (e.g., evidenced in the arrangement of the elements in the clusters according to their represented purposes and linkage between these clusters within an hierarchical system); and (c) content (e.g., sorting patterns based on deep level construing or inference).

Summary

Differences among the achievement groups were found to exist in the number of construct clusters, the content of those clusters, and the element organizational patterns determined by the constructs. High achievers were found to have more construct clusters and a higher degree of consistency among the group members between deep level constructs and sorting patterns. Low and middle group achievers' organizational patterns indicated a restricted ability to recognize likenesses and differences among similar types of reading materials. High level achievers, however, inferred underlying structures of all represented material types and sorted the materials into organized clusters.

CHAPTER VI

CONCLUSIONS

This chapter includes a discussion of three major findings about metacognitive awareness which appeared to be the most important of the study. Additional discussion includes speculations, possible implications for classroom instruction, and research recommendations.

The first finding to be discussed is the relationship that was found to exist between frequency of deep level constructs and reading achievement as evidenced by a correlation of $r = .611$, $p < .001$. While not surprising, this correlation led the present researcher to question the nature of the relationship between the students' constructs and their reading achievement. This finding is comparable to those of Canney and Winograd (1979), Gambrell and Heathington (1981), and Garner and Kraus (1982) who probed the relationship between concepts about reading and achievement and found that better readers focused on meaning in their responses while poorer readers

focused on decoding and mechanical aspects. In the present study, a significant difference (F = 10.5, p < .01) was found among the low, middle, and high achievement groups on their use of deep level or inferential constructs. Differences between the low and middle groups and the middle and high groups were statistically significant at the p > .05. Therefore, the frequency of deep level structure constructs could be predicted to increase significantly from low to middle achievement groups and from middle to high achievement groups.

The second finding is related to subjects' use of deep and surface level constructs. Although high level achievers in the present study were found to use significantly more elaborated and refined deep level constructs than the middle or low achievers, they did not reduce their number of surface or low level constructs. The difference among the low, middle, and high achievement groups on their use of surface level constructs was nonexistent (F = .05, p > .05). A speculative note drawn from Kelly's (1955) organization corollary about this finding would be that as students' cognitive systems develop they do not lose their ability to differentiate in simple concrete terms, but they extend their range of differentiation. This increased differentiation as evidenced by the students' use of deep level constructs

allowed the students to approach the reading task with a more complex set of constructs. This second finding is similar to the results Johns's (1972) reported in which half of the better readers' responses were categorized as nonmeaningful. Johns (1974) noted these variations of better readers to give meaningful and nonmeaningful responses and posed a question as to what a meaningful concept of reading should include. The present researcher would suggest that high achievers do not always give verbal labels representative of meaning or deep level. However, based on the results of the present study, high achievers could be expected to give more deep level constructs than surface level constructs. The ratio of deep level constructs to surface level constructs was 3:1 for the high achievement group, 2:1 for the middle achievement group, and 1.4:1 for the low achievement group.

The third major finding relates to differences found between better and poorer readers' capacities to recognize underlying purposes of the reading materials represented by the elements in the study. The cluster diagrams formed from the sorting patterns of the subjects in the 60 achievement group and above included recognition of material purposes. For example, a cluster that emerged in the 90's grid contained the elements encyclopedia,

dictionary, shell book, and advertisement. The group construed the encyclopedia and dictionary to be similar or related at the 94 per cent level with relational links to the shell book and advertisement at the 88 per cent level. Thus, when these high achievers were asked to compare and contrast the different types of reading materials, they clustered the elements containing factual information together. Each element was considered unique in that no two were construed to be similar at the 100 per cent level. General information books were paired together (encyclopedia and dictionary) and then related to an element providing specific information (shell book) with further linkage to an element containing concise information (jean advertisement). In contrast, subjects in the low and middle achievement groups were restricted in their ability to construe similarities among the various types of reading materials. They often paired the unusual elements (i.e., aspirin box and advertisement) and grouped the same pair or triad of elements together on all sorts without distinctly differentiating between each item. This finding is consistent with those of Canney and Winograd (1979) and Hickman (1977) who found that skilled readers had a meaning priority based in purposefulness and usefulness. Smith (1967) found that good readers made more strategy adjustments when different reading purposes

were specified. Brown (1982) suggested that less able readers do not sense the need to be strategic or plan ahead so helpful "expectations to guide the reading process" (p. 43) can be determined prior to the reading act. A relationship, then, appears to exist between reading achievement and the ability to identify and relate different types of materials according to their purpose, features, or structure.

Speculating on the question proposed by Raphael et al. (1981) as to the relationship between comprehension and metacomprehension, the present researcher would suggest that a relationship between the two does exist. Better comprehenders in the present study, as measured by the achievement test, were consciously able to implement strategies involved in contrasting and comparing the different types of reading materials according to their purposes. A related study by Clay (1973) suggested that comprehension monitoring or self-correction was related more to reading scores than to intelligence. Task awareness, in the present study, was also found to be related to achievement scores. Therefore, students' metacognitive awareness of text characteristics and text monitoring appear to be related to achievement. Myers and Paris (1978) suggested that awareness of task parameters (i.e., information that a person has and utilizes during

an activity) in reading "reflects a general developmental accomplishment" (p. 689) acquired in settings, situations, and with age. While age may well correlate with increased task awareness, the relationship is clearly more complicated than that statement would suggest. The present study controlled for age by limiting the subjects to seventh graders and yet dramatic differences in metacognitive awareness were found to exist. The present researcher found deficiencies related to the content of the metacognitive awareness. Subjects who gave more semantic descriptions of the materials (i.e., deep level constructs) were found to have higher reading achievement scores. Therefore, the content of the metacognitive awareness appears to (a) guide the intentionality by which students approach different reading materials and (b) ultimately affect students' reading achievement.

Implications For Instruction

A pressing question which is currently being considered is whether metacognitive knowledge about reading should be explicitly taught in training sessions or implicitly acquired through meaningful reading experiences (Kendall & Mason, 1982). The present researcher would not advocate training students to

consciously sort reading materials according to their purposes in order to increase their reading achievement and/or metacognitive awareness. The necessity of training students in metacognitive awareness would, in this researcher's opinion, be a superficial means of glossing over deeper inadequacies. In the present study, low achievers' construct systems appeared to lack complexity in organization, construction, and integration. An assumption of the present study was that subjects' constructs reflected the networks that they have developed in making sense of previous reading tasks. Kelly (1955) implies in his corollaries (e.g., experience, modulation, and choice corollaries) that change within individuals' cognitive systems occurs when understanding takes place. In other words, if students have not understood that the reading process is an interactive process used to gain meaning, they are restricted in their ability to approach reading tasks. One main influence from which students derive their constructs of reading is through classroom instruction (e.g., Reid, 1966; Downing, 1969; Tovey, 1976; Harste et al., 1981). Some researchers have suggested that reading instruction needs to be meaning based where students are actively involved in a thinking process (e.g., Denny & Weintraub, 1966; Downing, 1969; Canney & Winograd, 1979). Other researchers have suggested that

reading instruction needs to emphasize skills (e.g., Holmes, 1953; Samuels, 1977). Clay (1979) in a review of the effects of reading programs on different types of students, suggested that poor readers' problems appeared to be related to being unable to put it all together rather than to learning a particular reading skill. Findings of the present study would support this premise. Low achievers' interpretations of the sorting task reflected limited conceptualizations which were inconsistent in inference or deep level structure. The present researcher would suggest that reading instruction with a meaning emphasis would reduce uncertainty about the reading process and would promote the formulation of constructs reflecting reading purposes, inference, and predicting capabilities. Support for this suggestion can be found among researchers who have suggested that readers' constructs or acquired knowledge determine strategies used to make sense of the context (Armbruster, Echols, & Brown, 1983) and strategy intentions in turn guide the reading process with prediction and control (Gambrell & Heathington, 1981). The restricted ability of the low achievers in the present study to sort the materials according to purpose indicated a deficiency that would appear to limit the way they approach reading tasks. Success in reading, therefore, appears to be related to

readers' constructs which guide their strategies.

Recommendations For Research

The present study represents a step toward needed research in the application of the Kelly construct methodology and theory to the area of reading. Specific research recommendations are as follows:

1. A replication of the present study using different elements could provide generalizability for the content categories that were found to exist within the students' construct systems. Also, studies involving larger samples at each achievement level might clarify the variance in commonality found in the mode grids of the present study.

2. Another recommendation would involve utilization of the computerized program as an interactive tool. Element and/or construct elicitation could be done directly on the computer by students or elicitation information could be immediately entered into the computer program after a session. Discussion of the cluster groupings which visually represent contrued relationships among the elements could be shared with the subjects to determine if awareness of relational patterns has an effect on their cognitive systems.

3. A series of comprehensive studies comparing low, middle, and high readers at third, fifth, seventh, and ninth grades could present educators with a developmental matrix of metacognitive awareness.

4. A study considering reading and constructs of students in the 99+ achievement level could further extend what a meaningful concept of reading should include.

5. Exploration in the areas of metacognition and reading is needed in order to determine the extent to which meaning based instruction influences readers' constructs. Investigations that probe relationships between the influences that different reading approaches have on students' unconsciously acquired knowledge about the reading process and their conscious intentions on reading tasks should provide needed information about instructional practices.

The possibilities inherent in the application of Kellyian theory and methodology to the area of reading have hardly been explored. The possibilities of a better understanding of the cognitive processes involved in reading are enhanced by new approaches and new methodologies: Thus, in this researcher's view, the work of George Kelly provides an excellent opportunity for such exploration.

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Appendix A

Corollary Statements and Summaries

Corollary Statements and Summaries

In the following section, each of the corollaries (Kelly, 1955) is stated and followed by a brief summary.

1. Construction corollary: A person anticipates events by construing their replications. (p. 50)

A person, in order to make sense of the world, distinguishes substance or reality by constructing a framework that characterizes likenesses and differences. Within this personal interpretation scheme lies the capacity to recognize replications. Through construing replications and determining what characteristics are similar and contrasting, a repertoire is built that enables a person to anticipate events with precise "scientific" approximations.

2. Individuality corollary: Persons differ from each other in their construction of events. (p. 55)

A person's ability to perceive, how one perceives, and what one perceives in a given situation is determined by ones own unique construct system.

3. Organization corollary: Each person characteristically evolves, for his convenience in anticipating events, a construction system embracing ordinal relationships between constructs. (p. 56)

In an attempt to eliminate contradictions and

conflicts among constructs, a person organizes an interrelated hierarchical system. This system "characterizes the personality" (p. 56) of the individual in that it is shaped by the perspective taken, the choice of the arrangement within the system, the abstract expansion of the concrete constructs and the flexibility of the system. The system is preserved to the extent that the individual finds necessary in order to anticipate events.

4. Dichotomy corollary: A person's construction system is composed of a finite number of dichotomous constructs. (p. 59)

The finite number deals with the known constructs that one has composed in his thinking. In order to create new constructs, one has to follow the channels of the previous constructs and recombine the channels. Constructs are created when two elements are viewed as similar and in contrast to a third within a range of convenience. The relationship that exists between the bipolar constucts may be correlational, logical, or scalar.

5. Choice corollary: A person chooses for himself that alternative in a dichotomized construct through which he anticipates the greater possibility for extension and definition of his system. (p. 64)

The construct system of a person becomes comprehensive as one chooses to extend and define the system that has proven useful in anticipating event. As the "range of convenience" of the constructs is increased, the person's ability to gain meaning from experiences is increased.

6. Range corollary: A construct is convenient for the anticipation of a finite range of events only. (p. 68)

As a construct is developed a range of convenience is formed to refer to those elements that the person finds the construct has some applicability. This theory necessitates one to consider the "similarity-contrast dimension" (p. 71) of a person's field in order to better understand a person's thinking.

7. Experience corollary: A person's construction system varies as he successively construes the replications of events. (p. 72)

A person's construct system (theory) continuously changes as one validates the accuracy of his anticipations. Hypotheses, tests of experience, reconstrual, and reconstruction of the system either enrich or stabilize the basic features in the psychological process. As the construct system changes, the person changes.

8. Modulation corollary: The variation in a person's

construction system is limited by the permeability of the constructs within whose range of convenience the variants lie. (p. 77)

A person has within the range of convenience of a construct possibilities to include new elements. The inclusion of new elements requires extensions within the range. This dynamic or transfixed range of convenience determines the variability of the person's construct system.

9. Fragmentation corollary: A person may successively employ a variety of construction subsystems which are inferentially incompatible with each other. (p. 83)

The subsystems that exist in the hierarchical system of constructs may have inconsistencies which would not allow generalizing in all instances. However, this tolerance between the different subsystems' incompatibility is possibly due to consistency that exist in the superordinate system. Minor anticipations that a person predicts may not always work out as he intended; however, major anticipations that have the reliance capacity of superordinate and subordinate constructs systems are assumed to be easily predicted.

10. Commonality corollary: To the extent that one person employs a construction of experience which is similar to that employed by another, his psychological

processes are similar to those of the other person. (p. 90)

Stimulus-response psychology suggests that persons experiencing the same stimulus or events will develop the same responses or psychological processes. Kelly argued that a "commonality" may be possible among persons not because of similar experiences, age, behavioral characteristics, or use of similar verbal symbols but because their construction, (i.e., their discriminations, interpretations, and implications they derive) of experience is similar.

11. Sociality corollary: To the extent that one person construes the construction processes of another, he may play a role in a social process involving the other person. (p. 95)

This corollary has several facets. One facet is that a person can interact with another person in a social context and not understand or relate to that person. Another facet may be that a person accepts another's viewpoint with understanding but maintains a distinctly different viewpoint. Still another facet would be that a person is capable of subsuming another person's particular construct and have a mutual understanding within that construct's range of convenience.

Appendix B

Parent Permission Form

Central Junior High School
Putnam City Schools
ADMINISTRATIVE OFFICE
4020 NORTH GROVE
Oklahoma City, Oklahoma 73122

JIM CAPPS
PRINCIPAL

JOHN SAVAGE
GENE ANDRUSS
ASSISTANT PRINCIPALS

October 31, 1983

Dear Parents,

We are requesting permission for to participate in a research study in cooperation with the University of Oklahoma.

The purpose of the study is to consider children's concepts about reading. Each student selected will be asked in an individual session to compare different reading materials. The session will last approximately 30 minutes. Confidentiality of each child's remarks will be assured.

Please sign the form below and return it in the self-addressed envelope by November 5, 1983. If this form is not returned by this date, it will indicate that you are not willing for to participate and another child will be selected.

Additional information about this project can be obtained by calling the principal investigator, Rena Walker, at or Ext. . Your cooperation will be greatly appreciated.

Thank you,

Jim Capps
Principal

I give my permission for _____ to participate.

_____
Parent Signature

Appendix C

Elicitation Grid Sheet

1) This is a game (puzzle) about reading.

2) Let's name the items:

NAME _____

3) First Triad , etc. - "In what important way are two of them [these] alike but different from the third?" (Kelly, 1955, p. 222).

4) Could you place the other items in _____ and _____?

EMERGENT POLE ✓ (1)	aspirin box E1	map E2	storybook E3	encyclopedia E4	dictionary E5	shell book E6	cartoon book E7	game book E8	advertisement E9	CONTRAST POLE X (3)

Appendix D

Examiner's Presenting of Elements Chart

1) This is a game (puzzle) about reading.

2) Let's name the items:

NAME _____

3) First Triad , etc. - "In what important way are two of them (these) alike but different from the third?" (Kelly, 1955, p. 222).

4) Could you place the other items in _____ and _____?

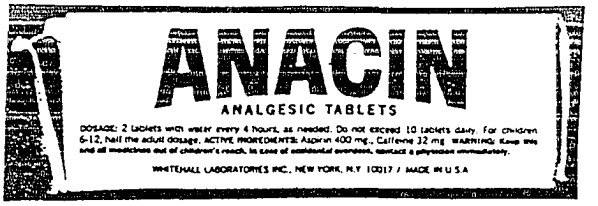
ORDER OF ELEMENT PRESENTATION

EMERGENT POLE ✓ (1)	E1 aspirin box	E2 map	E3 storybook	E4 encyclopedia	E5 dictionary	E6 shell book	E7 cartoon book	E8 game book	E9 advertisement	CONTRAST POLE X (3)
	1	1	1							
			2	2	2					
					3	3		3		
		4		4			4			
							5	5	5	
	6	6		6						
						7		7	7	
	8		8				8			
					9	9			9	

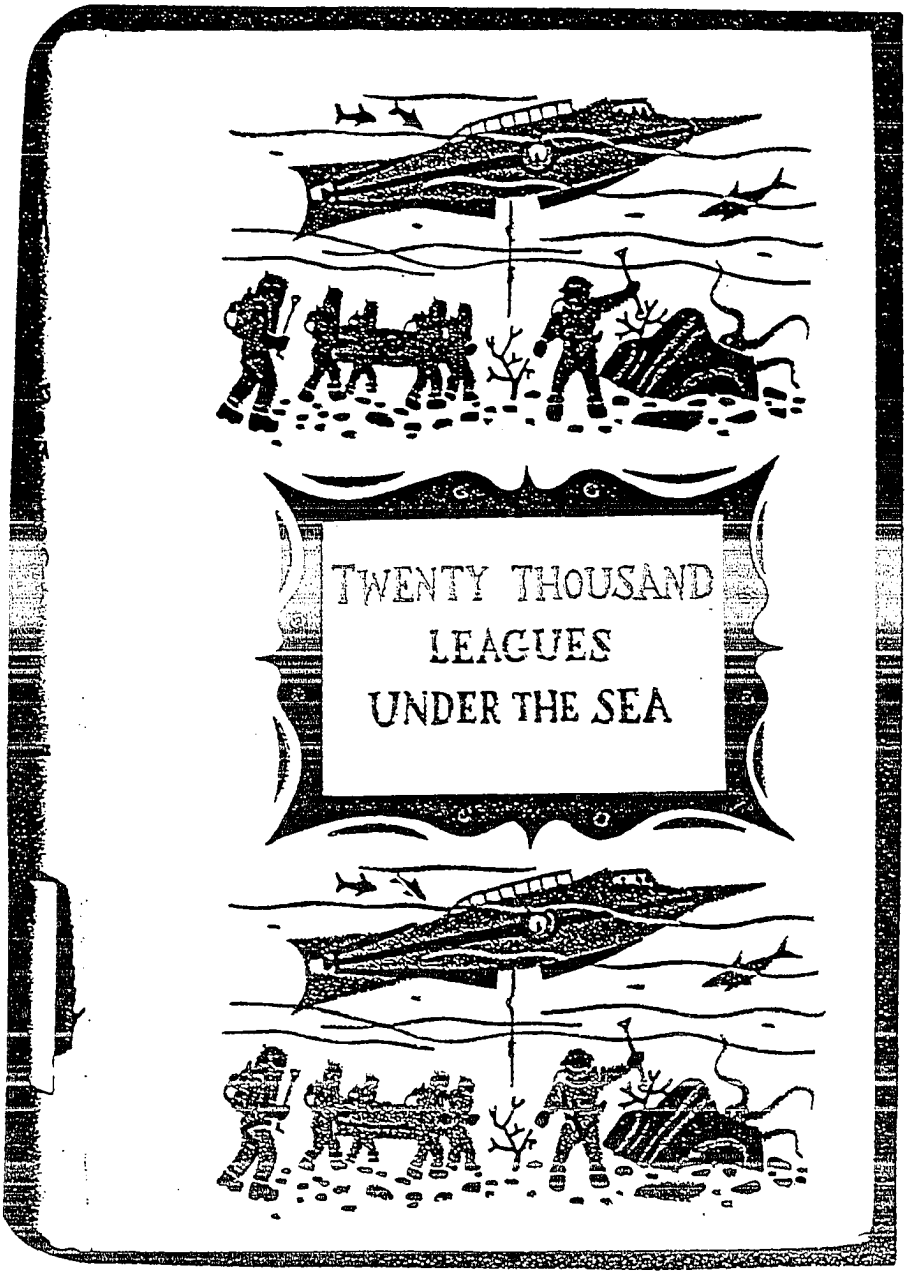
Appendix E

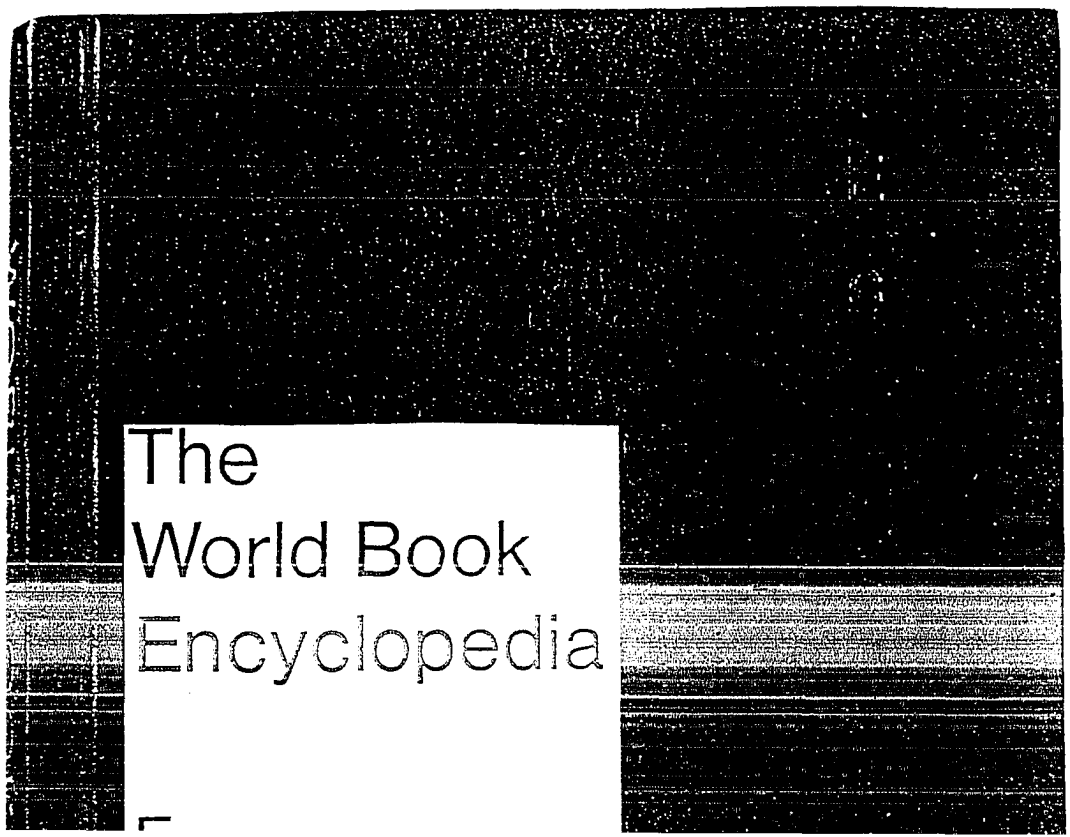
A Two Dimension Representation of the Reading Materials

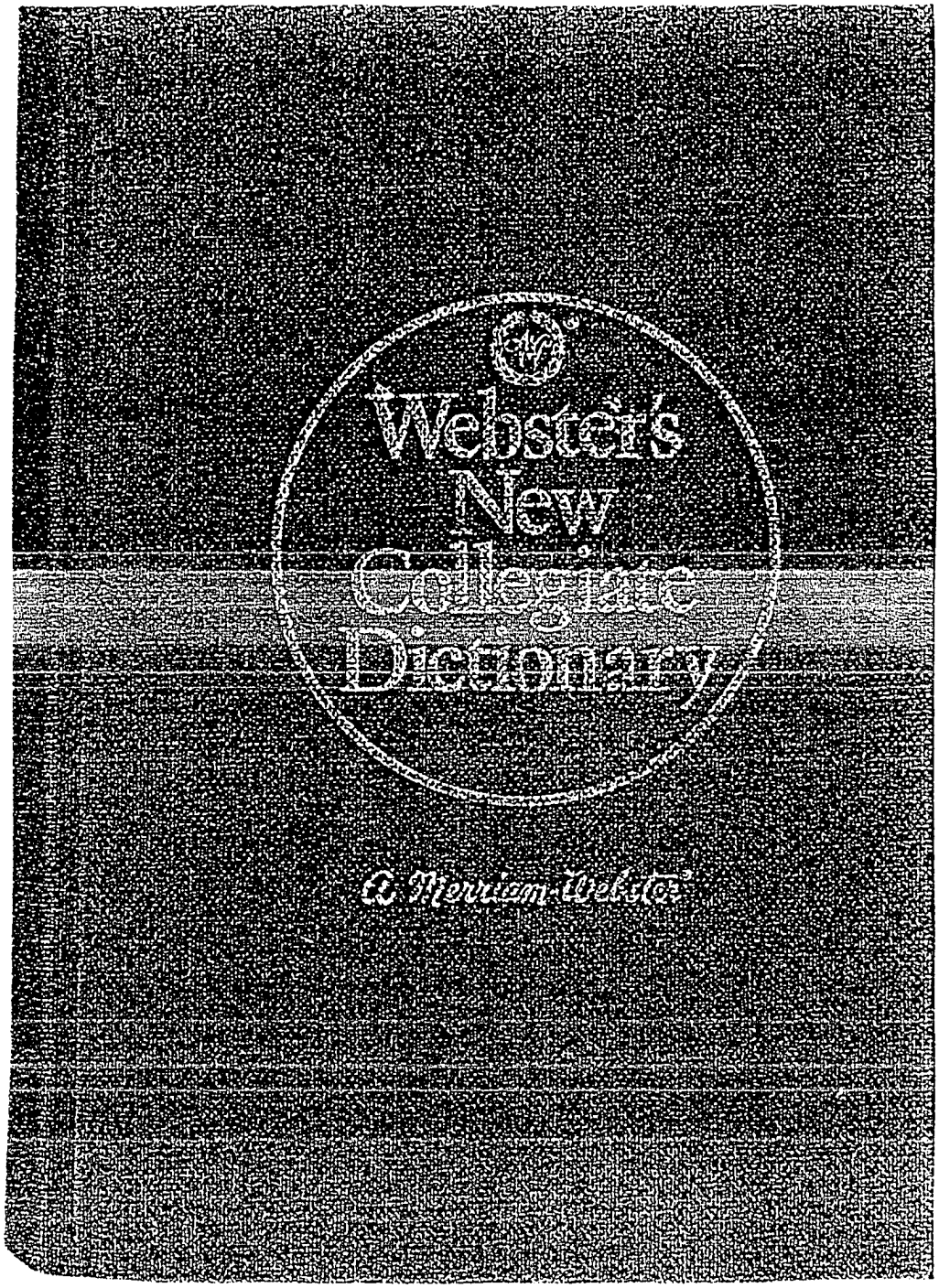

ANACIN
FAST PAIN RELIEF
HEADACHE/COLDS/BODY ACHE/NEURALGIA
50
ANALGESIC
TABLETS

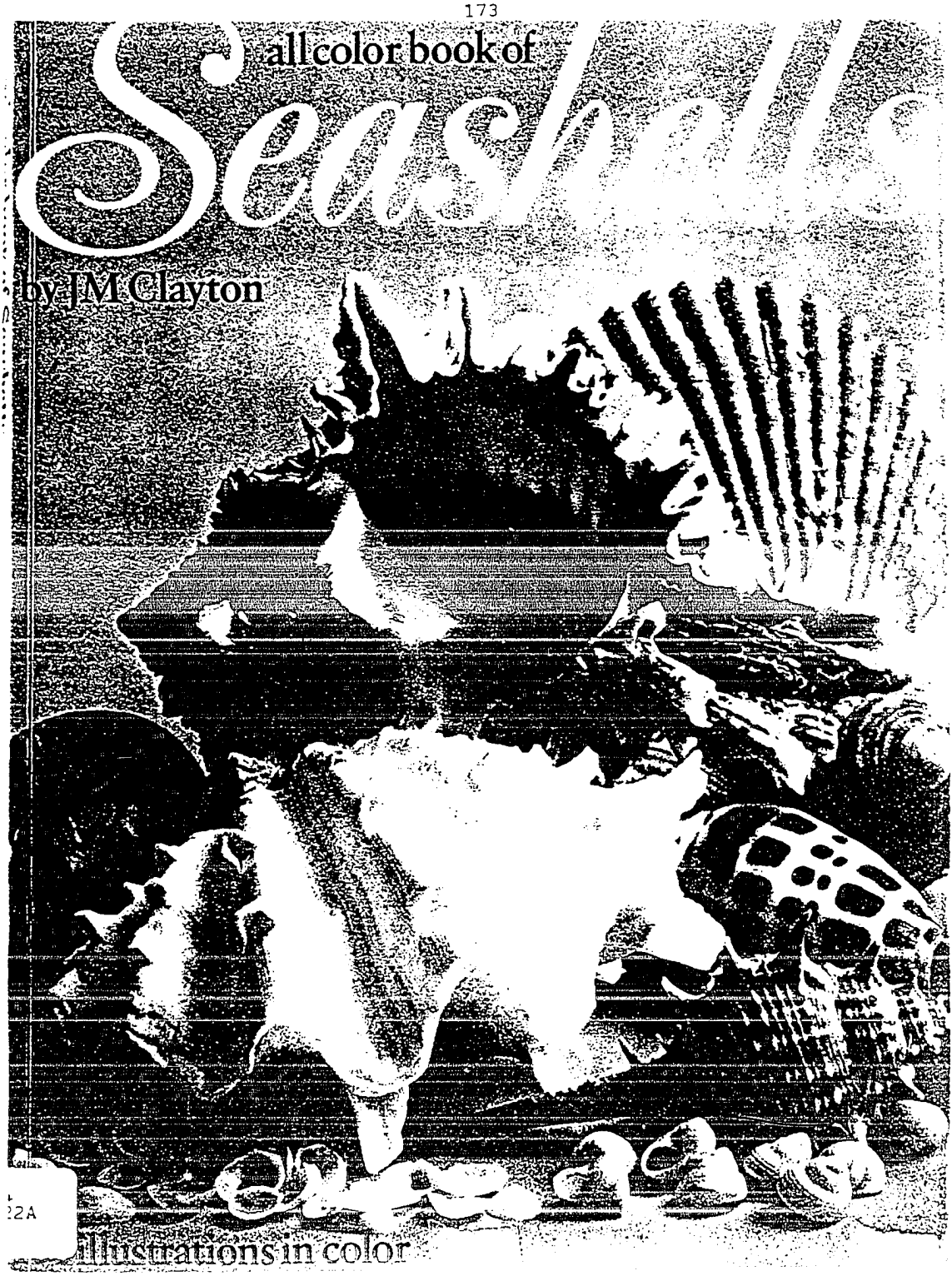

ANACIN
ANALGESIC TABLETS
DOSAGE: 2 tablets with water every 4 hours, as needed. Do not exceed 10 tablets daily. For children 6-12, half the adult dosage. ACTIVE INGREDIENTS: Aspirin 400 mg., Caffeine 32 mg. WARNING: Keep this and all medicines out of children's reach. In case of accidental overdose, contact a physician immediately.
WHITEHALL LABORATORIES INC., NEW YORK, N.Y. 10017 / MADE IN U.S.A.


OKLAHOMA
1981 Map
OFFICIAL STATE TRANSPORTATION MAP
FOR FREE DISTRIBUTION


TWENTY THOUSAND
LEAGUES
UNDER THE SEA


The
World Book
Encyclopedia
1


Webster's
New
Collegiate
Dictionary
G. & C. Merriam Co.

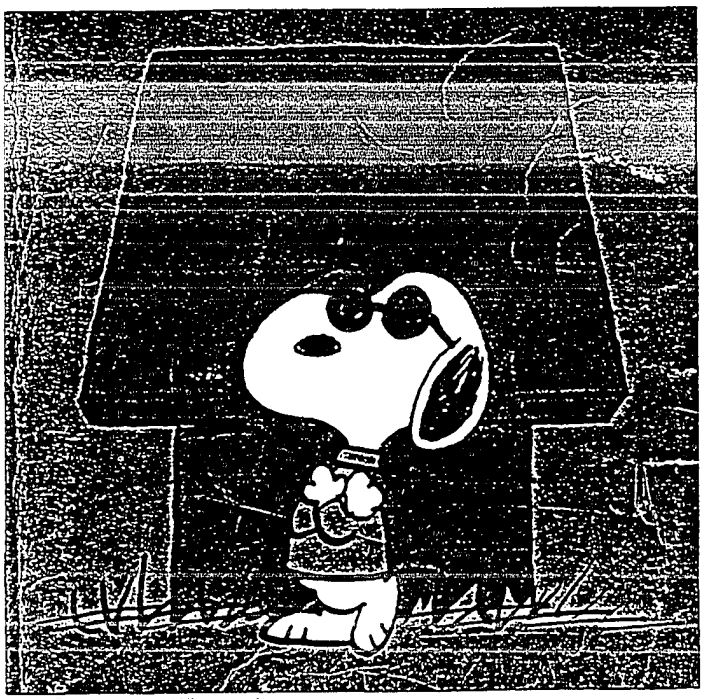

all color book of
Seashells
by JM Clayton
illustrations in color

22A

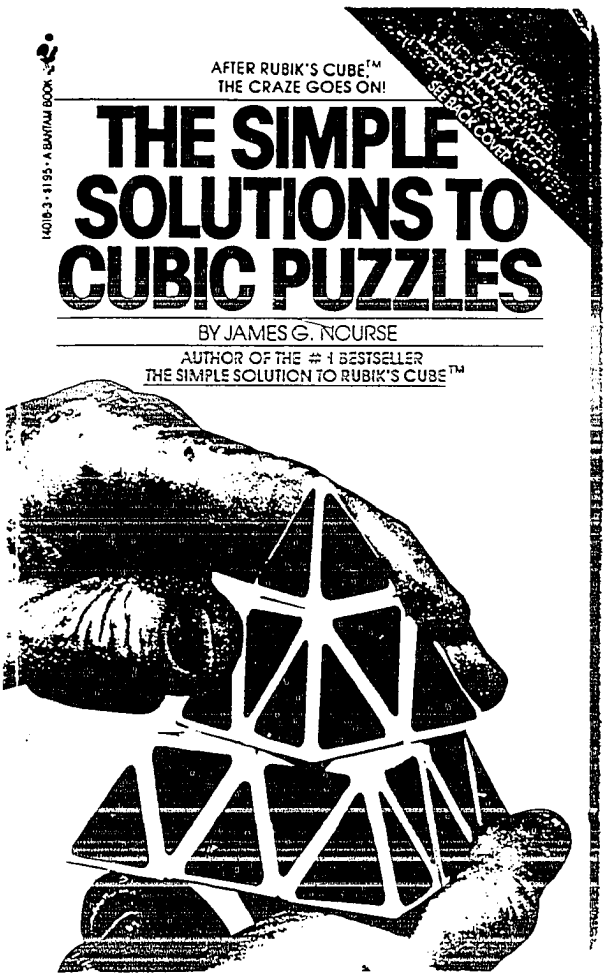
"Ha Ha, Herman," Charlie Brown

$1.25

a *PEANUTS*® book by Charles M. Schulz



Holt, Rinehart and Winston, Inc.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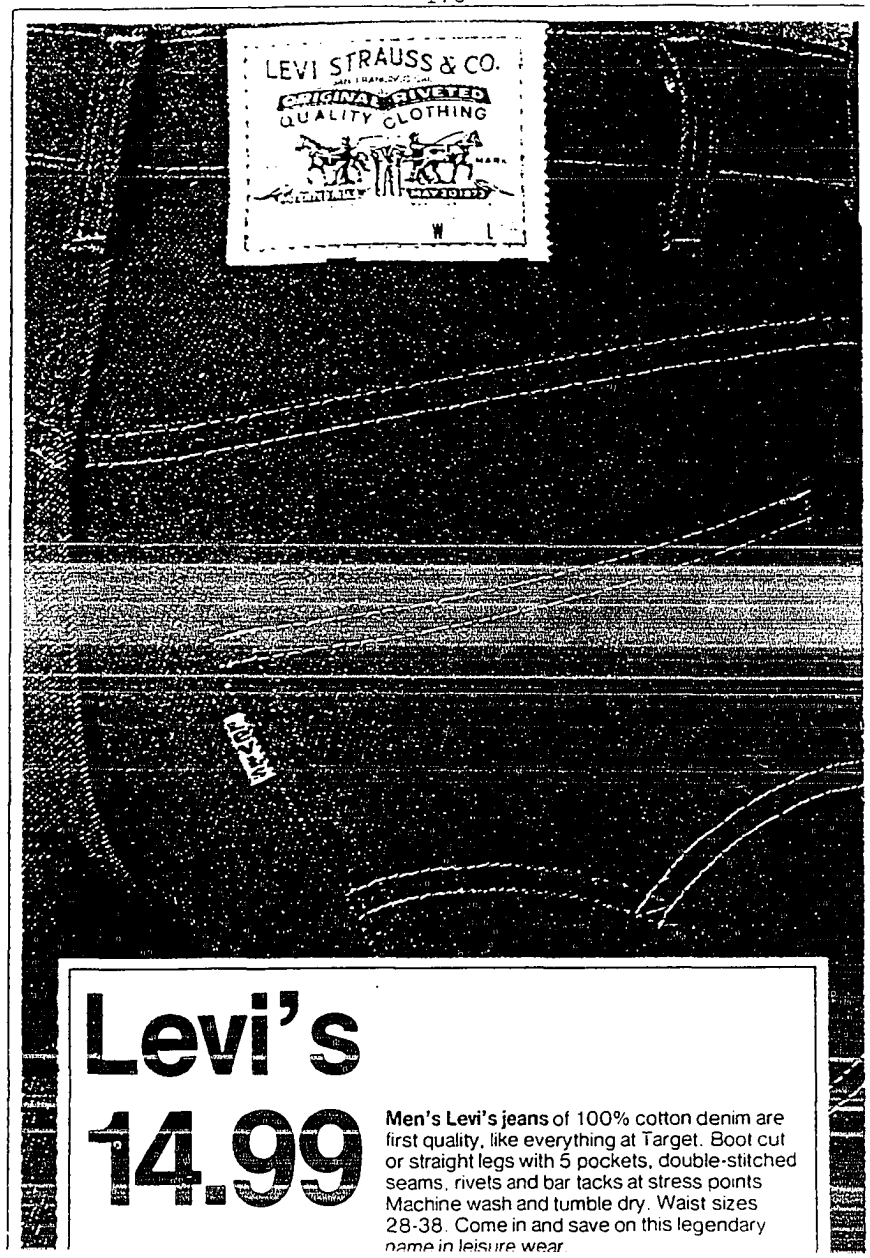

Levi's

14.99

Men's Levi's jeans of 100% cotton denim are first quality, like everything at Target. Boot cut or straight legs with 5 pockets, double-stitched seams, rivets and bar tacks at stress points Machine wash and tumble dry. Waist sizes 28-38. Come in and save on this legendary name in leisure wear.