

Literal and Inferential English Reading Comprehension Skills Among Multilingual Filipino Elementary School Children

Anna Miren Gonzalez-Intal
Ateneo de Manila University

The first part of the article presents an overview of the cognitive, psycholinguistic, and educational psychology research literature on basic reading and reading comprehension processes and skills which can serve as a resource for those who wish an introduction to the field. The second part of the article presents data on a study of the literal and inferential English reading comprehension skills of 553 Grade One to Grade Six multilingual Filipino elementary school children. The subjects read 12 passages that were constructed to approximate the difficulty levels of reading materials in the DECS prescribed English reading textbooks for the different grade levels in the Philippines. Each passage was followed by five questions, some literal and some inferential, which sought to determine the children's English reading comprehension skills. At the literal comprehension skills level, the questions dealt with remembering details read and remembering the sequence of events in the story. At the inferential comprehension skills level the questions dealt mainly with finding the main idea or theme of the passage, inferring character emotional reaction and characteristics of story character, drawing logical conclusions, determining word meaning from context, and inferring causal antecedents and causal consequences. The performance of the children in these skills across grade levels and passage difficulty levels is compared and insights are drawn on the development of these reading comprehension skills among the children.

The development of English reading comprehension skills is one of the important goals of elementary school education in the Philippines. Thus, Reading is a subject area in all grade levels of the elementary curriculum. The development of English reading comprehension skills in the elementary grades is important because much of the material that is learned in other subject areas throughout the span of education from elementary through college is read through texts written in English.

There are two major parts to becoming a skilled reader. The first is the development of word recognition or decoding skills. The second is going beyond decoding and extracting meaning from the material read. Psychological research on reading has been done mainly in three fields: psycholinguistics, cognitive psychology, and educational psychology. Much of the reading research work in these fields has largely focused on the development of word recognition skills. In contrast, reading comprehension or the processes of understanding the meaning of written material has not received as much attention. Word recognition, being the first hurdle in reading, is an important issue. Problems in word recognition are easy to see and as such have been widely recognized. Nevertheless, problems in reading comprehension are, in some ways, the more serious problem because they are more difficult to spot and because in general, the purpose of reading is to understand the meaning of the written material (Oakhill & Garnham, 1988).

The problem of reading comprehension is compounded when children are reading material that is not in their native tongue, as in the case of Filipino children trying to read English texts. Moreover, many Filipino children are not only bilingual but also multilingual—they not only speak their local dialect, they also speak Filipino (which is mostly Tagalog), and have to speak and read in English. How do English reading comprehension skills develop among these children? The present research seeks to shed some light on this issue.

This article has two objectives. The first is to present an overview of the psychological research literature on basic reading and reading

comprehension processes and skills. This research literature is large and dispersed in the psycholinguistics, cognitive psychology, and educational psychology fields and is not readily available in the Philippines. Moreover, the literature is often highly technical (in the psycholinguistic and cognitive psychology parlance) and difficult to understand. Thus, it is hoped that this article can serve as a resource for those who wish an introduction to the field. The second objective is to present data on a study of the literal and inferential English reading comprehension skills of 553 Grade One to Grade Six multilingual Filipino elementary school children which may provide some insights on understanding the development of these skills among many of our elementary school students.

OVERVIEW OF THE LITERATURE

Basic reading processes

Eye movements in reading. During reading, the eye does not move smoothly across the page. Instead, the eye moves in rapid jerks known as *saccades* which are approximately 10-20 milliseconds long followed by pauses between them called *fixations*. Reading is done only during the fixations when the eyes are not moving.

Research on the issue of *perceptual span*, or the amount of text that can be perceived during each fixation, indicate that although the perceptual span is influenced to some extent by factors such as the size of the print and the difficulty of the material read, in general, the perceptual span is very small, roughly about 15 letters to the right of the fixation point and about 3 or 4 letters to the left. Good readers have a longer perceptual span of about 17 to 19 letters from the fixation point (Rayner, 1993). According to O'Regan and Levy-Schoen's (1987) cognitive guidance theory, fixations tend to occur on words or parts of words that would be maximally informative. Hence, fixations tend to fall on longer words which are generally more informative than shorter words and they generally do not fall on punctuation marks and spaces.

Word recognition. The first step in reading is decoding or recognizing the individual words in the sentences. This involves perceiving the visual features of the written text and using these features to identify the letters and words in the text. Research evidence indicates that among literate adults, recognition of familiar words is generally a relatively automatic process (Rayner & Sereno, 1994); beginning and poor readers, however, experience difficulty in this phase and perform it very slowly.

Word recognition essentially consists of determining if the current visual pattern is an instance of a word that one knows. This postulates the existence of a *mental lexicon* or a mental store of information about words. The mental lexicon contains all of the words in the person's vocabulary as well as information about how the words are spelled and pronounced, what they mean, whether they are verbs, nouns, adjectives, etc., and all other information that the person knows about the words. However, unlike a dictionary which is organized alphabetically, the mental lexicon is organized in many different ways at once (e.g., according to how the words are spelled, how common the words are, the number of syllables they have, similarity in meaning to other words, etc.).

A number of models of word recognition have been proposed (with Morton's *logogen model*, 1970, and McClelland and Rumelhart's *interactive activation model*, 1981, among the best known). These models posit the kinds of processes that lead to the location of words in the mental lexicon from their visual properties. Basically, the models postulate that when the person reads a word, a search and recognition process is activated. Words are recognized through the reaching of some threshold level for recognition of the word. With the word's recognition, its meaning and other information contained in the mental lexicon is accessed and used to make sense of what is read.

Much experimental research has been conducted on the processes of word recognition and the variables that influence it. Two variables that have been studied are word frequency and contextual information supplied with the word. Results indicate that word frequency and familiarity facilitate recognition (e.g., Rubin & Friendly, 1986). The evidence also indicates

that the presence of relevant information in the context facilitates word recognition while irrelevant information hinders it (e.g., Tulving & Gold, 1963).

Reading comprehension processes

After word recognition, reading comprehension processes follow. These are the processes of understanding the meaning of written material. Several models of reading comprehension have been proposed in the cognitive psychology, psycholinguistics, and reading education fields. Among the more prominent ones are those of Just and Carpenter (1980, 1992), Kintsch (1988, 1992, 1994), Kintsch and van Dijk (1978), Rayner and Pollatsek (1989), and van Dijk and Kintsch (1983). A review of the models and empirical research on reading comprehension indicates that reading comprehension is a series of very complex processes that take place almost simultaneously and that there is continual interplay among the processes. It is perhaps because of the complexity of the processes involved in reading comprehension that relatively fewer research has been done in this area compared with research on the processes of word recognition.

In general, the cognitive processes of reading comprehension that have been proposed and studied can be summarized as follows:

Sentence processing. Broadly speaking, these processes involve analysis of the syntactical or grammatical structure of sentences which includes chunking or grouping words into meaningful phrases and selective recall of individual idea units, analysis of the literal meaning of the sentence, and interpretation of the intended meaning of the sentence which may or may not be the same as the literal meaning. The precise sequencing and interrelationships among these processes remains an empirical question.

To illustrate, let us take the following sentences:

- 1a. The fat boy quickly entered the candy store.
- 1b. Later, he came out smiling happily.

In chunking, the words in sentence 1a above are grouped as *the fat boy/ quickly entered/ the candy store* and not some other way such as *the fat/ boy quickly/entered the candy/store*. Similarly, the words in sentence 1b above are grouped as *later/ he came out/ smiling happily* instead of *later he came/ out smiling/ happily* or some other way. In other words, chunking requires some basic understanding of syntax or grammar and how it is used in written language.

As the text being read increases in length, it soon becomes impossible to remember every detail. The reader has to select which idea units to remember within individual sentences. Using our example above, the reader may select to remember only that a boy entered a candy store. If, however, the boy's being fat is important to the narrative, it may also be remembered. Good readers are able to select and retain in memory information that is important in each sentence (Kintsch & van Dijk, 1978).

The literal meaning of a sentence consists of the meanings of words in the sentence. However, words usually have a number of meanings depending on the context or combination of words in the sentence. Consider, for example the meanings of the word *closed* in the sentences "Lourdes closed the door" and "Lourdes closed the deal." In these cases, the intended meaning of the word and consequently of the sentence is derived from its interpretation against general knowledge in long term memory. The interpretation of metaphors (e.g., "He slept like a log") and indirect requests (e.g., "I'm so thirsty" meaning "Please get me a glass of water") similarly involves determining intended meaning through accessing general knowledge in long term memory. Research evidence suggests that it is not necessary for the reader to work out first the literal interpretation before interpreting and recognizing the intended meaning (Sanford, 1994).

Drawing of inferences. The filling in of gaps and going beyond the explicit information is an important part of reading comprehension processes. As Schank (1976, p. 168) points out, it is "the core of the understanding process." Inference drawing is essential in reading comprehension because, otherwise, written text would be very lengthy if everything were to be made explicit. Indeed, even very simple texts require inferences in order to

be understood. For example, in sentence 1a and 1b above, inferences that the fat boy likes candy and that he was able to buy some from the store and hence his coming out of the store smiling happily, facilitates understanding of the text.

There are two general kinds of inferences made during reading: *necessary inferences* and *elaborative inferences*. Necessary inferences are those which are essential for a coherent interpretation of the text. These inferences include bridging inferences which serve to link the part of the text presently being read with the preceding text, *anaphora* or the processes whereby a noun or pronoun is identified with a previously stated noun or noun phrase, and the use of causal relations that enable a text to cohere. For example, consider the following sentences:

2a. Teresa brought her friends Josie and Nena to the mall.

2b. She had extra money so she invited them to see the movie with her.

Understanding these two sentences requires the following necessary inferences: that (1) "She" in sentence 2b refers to Teresa in sentence 1a, (2) "them" in sentence 2b refers to Josie and Nena in sentence 2a, (3) the mall has a movie theater, and (3) having extra money enabled Teresa to bring her friends with her to the mall.

Elaborative inferences, on the other hand, are those which are not essential for understanding the text but instead embellish it. Examples of elaborative inferences are drawing causal antecedents, predicting outcomes or drawing causal consequences, and inferring character emotional reaction and characteristics of story character. The following sentences can be used to illustrate these:

3a. Ramon wanted to get a good grade so he studied hard for the exam.

3b. He found the test easy.

Predicting that Ramon got a good grade, inferring that Ramon was pleased with his performance, and inferring that Ramon is studious and likes getting good grades which is why he studied hard for the exam are examples of elaborative inferences that may be drawn from the text. These inferences are not essential to text understanding but nevertheless contribute to a fuller interpretation of the text.

In general, theorists and researchers are in agreement that people make a variety of inferences while reading texts. But which of these inferences are normally or spontaneously drawn in the process of reading a text has been the subject of some controversy. The *constructionist* theorists (e.g., Bransford, Barclay, & Franks, 1972; Johnson-Laird, 1980; van Dijk & Kintsch, 1983) postulate that the reader actively supplies information that is not explicitly included in the text in the process of comprehending it. Johnson-Laird (1980), for instance, proposes that readers usually construct a "mental model" of the events and situation described in the text. This implies that not only necessary but also elaborative inferences are normally drawn while reading a text. The *minimalist* theorists, on the other hand, assert that only two kinds of inferences are spontaneously drawn while reading: "those that establish locally coherent representations of the parts of a text that are processed concurrently [in working memory] and those that rely on information that is quickly and easily available" (McKoon & Ratcliff, 1992, p. 440). Additionally, the minimalist theorists propose that readers make strategic inferences or inferences that serve the reader's intentions or goals. Results of research have not provided unequivocal support for either position.

One of the major weaknesses of the constructionist approach is that it does not specify which particular inferences are drawn during text comprehension. Graesser, Singer and Trabasso (1994) proposed a *search-after-meaning* theory which attempts to eliminate this weakness. According to the theory, the meaning that a reader constructs for a text is one that (1) meets the reader's goals, (2) provides both local (between nearby sentences) and global (overall) coherence, and (3) explains the actions, events, and states presented in the text. Results of research tend to support the predictions of search-after-meaning theory.

Text and story processing. Research on text and story processing indicate that these are selectively comprehended and remembered: important information is retained while unimportant information is forgotten. Moreover, text and story memory revolves around its major themes and events.

One of the most influential models of text and story processing is that proposed by Kintsch and van Dijk (1978) which was later modified by van Dijk and Kintsch (1983). According to the model, the interpretation of the surface structure of text is done in terms of a set of propositions. For example, the sentence "Mr. Santos, the math teacher, gave the students a difficult exam" consists of four propositions: (1) Mr. Santos is a teacher, (2) he teaches math, (3) he gave students an exam, and (4) the exam is difficult. The processing of text or story consists of forming a microstructure and a macrostructure. The microstructure consists of the individual propositions extracted from the text and their relations at the local level. The macrostructure is the global organization of the propositions (akin to a summary). When a number of propositions enter working memory, the reader tries to link them together in a coherent manner. Because of the limited capacity of working memory, propositions that are not essential for interpreting subsequent propositions are deleted from working memory. Moreover, a more general proposition may be substituted for a sequence of propositions in working memory. A sequence of propositions may also be substituted by a proposition that denotes the necessary consequence of the series of propositions. More important propositions are remembered better than less important propositions because they remain in working memory longer and are more likely to become part of the macrostructure. Research evidence provide support for the proposal of a microstructure and a macrostructure (e.g., Kintsch, 1974) as well as the proposal that text is represented in memory as propositions (e.g., Kintsch & Keenan, 1973).

The use of schemas has also been proposed in explaining the processes of text and story comprehension. A schema is an organized group of concepts that comprise a person's knowledge about people, actions, events, and the world. Schemas determine the kinds of expectations the person forms about the phenomenon for which there is a schema. For example, when we go to a

restaurant, our restaurant script (a type of schema) is activated (Schank & Abelson, 1977). We expect to be seated, to be given a menu by a waiter, to order food, to pay the bill, etc. Our processing of the event is guided by our expectations based on our schema of a restaurant.

Bransford and Johnson (1972) present evidence on the effect of schemas on text and story comprehension. Subjects were presented with a passage that was very difficult to comprehend without a title (i.e., schema absent). Other subjects were presented the passage with its title "Washing clothes" (schema present). Those who read the passage without the title found it incomprehensible and recalled few idea units whereas subjects who were supplied with the title found the passage easy to understand and recalled more idea units. In another study (Anderson & Pichert, 1978), subjects were asked to read a story about the house of a rich family from the perspective of a burglar or of a prospective home buyer. Those who took the point of view of the burglar concentrated on what could be stolen and recalled more of these items whereas those who took the point of view of the prospective home buyer focused on the condition of the house and likewise recalled more of this information.

Comprehension capacity. Just and Carpenter (1992) proposed a *capacity theory* that deals with individual differences in working memory and its effects on comprehension. According to the theory, the limited capacity of working memory, which is used for both processing and storage during comprehension, necessitates that storage needs to be reduced to manageable proportions. This is accomplished in a number of ways such as processing a word thoroughly upon entry in working memory instead of storing it for processing later, discarding information that is no longer needed, etc. In line with this, individual differences exist in working memory capacity which impact on comprehension. For example, Just and Carpenter point to studies which indicate that working memory capacity as measured by reading span generally correlates about .80 with the ability to answer questions related to comprehension of a passage and about .60 with verbal intelligence. Individuals with high working memory capacity are able to read difficult parts of a text faster than those with low working memory capacity.

Metacognitive processing. Metacognition refers to knowledge about one's cognitive processes. Metacognitive processing is the use of this knowledge to adjust or regulate cognitive activities. Metacognitive processing in reading comprehension consists of the use of various strategies for controlling comprehension and long term recall in order to achieve a cognitive goal, say, studying for an exam as opposed to reading for pleasure. Skilled readers are able to adjust their reading strategies depending on the purpose of reading. Younger children have difficulty doing this (Myers & Paris, 1978). Likewise, good comprehenders have better metacognition skills than poor comprehenders (e.g., Golinkoff, 1975-76; Garner, 1980).

Development of basic reading and reading comprehension skills

According to Chall (1979), children's reading development is characterized by five stages. During Stage 0, which is from birth to the beginning of first grade, children learn a number of prerequisite skills to reading such as discriminating among letters of the alphabet, writing their name, and even reading a few words. Between Grades One and Two, which comprise Stage 1, children acquire *phonological recoding skills* whereby they are able to translate letters into sounds which are then used in identifying words. The learning of names of letters and their corresponding sounds is also completed at this stage. In Stage 2, which spans grades three and four, children learn to read fluently. Word recognition is easier; nevertheless, it still makes a substantial demand on children's mental processes so that the acquisition of new information remains difficult at this stage. In Stage 3, which corresponds to the fourth to eighth grades, children develop the ability to derive new information from written material, but only from a single perspective. Finally, in Stage 4, which covers the high school years, the ability to comprehend information written from different perspectives is developed.

Chall's proposal on the stages of reading development underscores the importance of word recognition in reading comprehension. Word recognition is the first reading skill that children develop. The speed at which

words are recognized greatly influences reading comprehension. Slow word recognition can hinder comprehension in that the slow reader spends more time and mental energy on the identity and meaning of individual words rather than focusing on comprehension processes. Given the limited storage capacity of working memory, with slow word recognition, information from earlier in the sentence or text is soon lost and hence cannot be integrated with later information. Thus, the slower word recognition of younger children may be an important factor that limits their comprehension (Gitomer, Pellegrino, & Bisanz, 1983).

The language and writing system used also affects the processes by which a child learns to read. When the language is *orthographically regular*, i.e., the relationship between spelling and sound is consistent (as in the Filipino language), the child can use the rules for converting letters to sounds in recognizing words. But where the language is *orthographically irregular* (the relationship between spelling and sound is inconsistent as in the English language), the child has to use a *lexical procedure* rather than a *phonological procedure* in word recognition. With a lexical procedure, letter to sound conversion is not used; instead, the whole word is recognized as a known word in the mental lexicon.

Frith (1985) proposed a three-phase theory of reading development that is able to account for how a child learns to read both orthographically regular and orthographically irregular languages. According to Frith, during the first phase, the child develops a sight vocabulary consisting of familiar words using a strategy by which a word is recognized as a whole (e.g., the child recognizes the word "Jollibee" from frequenting the restaurant bearing its name). In the second or *alphabetic* phase, the child develops the ability to convert graphemes (letter(s) that constitute a single phoneme in speech) into phonemes. The child uses this ability to pronounce unfamiliar words. For example, the grapheme /ph/ is converted into its corresponding phoneme /f/ in pronouncing the word "phone." Thus, in this phase, reading is mainly based on phonological recoding (word recognition by sound). This procedure works for words that are orthographically regular but leads to mispronunciations for unfamiliar, orthographically irregular words. In the third or *orthographic* phase, the child develops a strategy

wherein words are broken down into strings of letters called orthographic units which are not converted into phonemes. This orthographic strategy is used by the child in trying to pronounce orthographically irregular words.

Doctor and Coltheart (1980) present evidence that phonological recoding is important early in the child's reading development but that later they depend less on it. In their study, 6- to 10-year olds read short sentences after which they had to decide if the sentence made sense. There were two kinds of meaningless sentences presented to the children: in one, the sentence would sound meaningful if read by a grapheme-phoneme conversion procedure (e.g., Tell me wear he went); in the other, the sentence was not phonologically meaningful (e.g., Tell me knew he went). Results indicate that six-year old children tended to think that sentences which sounded meaningful like "Tell me wear he went" were meaningful; they also were able to correctly decide that the other kind of sentences were not meaningful. The older children were able to correctly decide that both kinds of sentences were meaningless. The results suggest that by the age of seven, most of the children were no longer using phonological recoding in their reading. Nevertheless, research evidence indicates that the ability to divide words into their constituent sounds among pre-reading children facilitates reading development. For instance, Bradley and Bryant (1983) found that pre-reading children who were good at analyzing words into their constituent sounds ended up being better readers after three years of schooling than those who were not good at it.

It appears that word recognition among children is also influenced by context, particularly among younger children and poor readers. Weber (1970), for instance, found in an analysis of first grader's word substitution errors in reading (i.e., a word is substituted for another word) that the surrounding grammatical context helped the children identify words. Patberg, Dewitz and Samuels (1981) found that in the presence of a supporting context, poor readers used visual retrieval in word recognition; they, however, resorted to phonological recoding when such context was absent. In contrast, good readers were able to identify words using visual retrieval even without a supporting context.

Development of reading comprehension skills. The development of reading comprehension skills lies at the heart of children's educational development. As Siegler (1986, p. 327) points out, "Reading comprehension is one of the most complex cognitive activities that is humanly possible. It also is one of the most important cognitive activities in children's lives. It allows them to acquire new information, to pursue all kinds of interests, and, perhaps most important for many children, to escape from boredom." Unfortunately, compared to word recognition, there has not been much research conducted in the area of children's development of reading comprehension skills.

Siegler (1986, p. 329) asserts that four types of development are important to children's reading comprehension. These are "automatization of lexical access, ability to hold longer phrases in short-term memory, greater prior knowledge of the material being read, and ability to flexibly adapt reading procedures to the demands of particular tasks."

Automatization of lexical access refers to the word recognition process becoming more automatic so that larger amounts of the child's attention and memory capacity can be directed towards the task of comprehension. Siegler points out that the combined demands during reading of accessing the mental lexicon for word recognition and of higher-level comprehension processes often go beyond the child's mental capacity. For instance, Siegler cites Wilkinson's (1980) study in which children found a task that required both memory for literal statements and deeper comprehension of the material read to be more difficult than tasks that required only one or the other. This points to the importance of word recognition processes becoming more automatic so that mental energy can be directed towards comprehension processes.

The ability to hold longer phrases in working memory is important because it provides a greater opportunity for the reader to integrate new ideas with previously read ideas in the written text and to infer connections among them (Siegler 1986). As children grow older, the

amount of information that they are able to keep in working memory increases. The increased capacity enables them to engage in more comprehension processes thereby increasing their comprehension skills. For instance, Danner (1976) found that most Grade Two children are able, to some extent, to grasp the main ideas in a passage but that the ability to group sentences in terms of topic increased with age. Similarly, Yussen (1982) found that among second, fifth, and eighth graders, older children could select the main idea of a story better than younger children.

Siegler (1986) points out that the role in comprehension of organized prior knowledge related to the material being read can be seen in situations where even young readers are able to comprehend written text well because they possess such knowledge. Siegler cites Mandler and Johnson's (1977) and Stein and Glenn's (1979) studies in which six- and seven-year-old children were able to recall well written material read which followed the standard fairy tale format. The fairy tale schema which children have enables them to draw reasonable inferences about the causes of a character's actions as well as about the likely future events in stories with a fairy tale format.

Skilled readers are able to adjust their reading strategies for different purposes. Younger children are less able to do this. But with increasing age, metacognitive skills develop and children learn to read differently depending on the purpose of the reading activity. For instance, Myers and Paris (1978), in a study of 8- and 12-year olds, report that only a third of the 8-year olds compared with four-fifths of the 12-year olds said they use a different reading strategy if they need to remember the exact words of the story than if they only need to remember the story's gist. Kobasigawa, Ransom and Holland (1980) as cited by Siegler (1986) report that 12- and 14-year-old children were able to skim a paragraph when achievement of the goal of the reading task would be facilitated by it. Ten-year olds, however, were able to do it only when they were given explicit instructions that suggested skimming.

Reading comprehension skills

The analysis of reading comprehension into a series of skills has also been undertaken (e.g., Collins & Cheek, 1993; Davis, 1972; Rubin, 1993; Ruddell, 1978; Smith & Barret, 1974). In general, the skills that have been proposed and examined can be grouped into three categories: (1) literal comprehension skills, (2) inferential comprehension skills, and (3) critical comprehension skills.

Literal comprehension skills. These skills involve memory for information explicitly stated in the text such as remembering details read and remembering the sequence of events in the story.

Inferential comprehension skills. These skills are at the core of the process of understanding what is read. They encompass the ability to integrate ideas and the ability to make necessary and elaborative inferences. The specific subskills in this category include finding the main idea or theme of the selection, extracting the author's purpose, determining the general mood or tone of the story, inferring character emotional reactions and characteristics of story character, drawing logical conclusions, determining word meaning from context, and inferring causal antecedents and causal consequences.

Critical comprehension skills. These skills involve making evaluative judgments on the accuracy, validity, and truthfulness of what is read. Among the specific subskills in this category are differentiating between fact and opinion, perceiving bias and propaganda, and understanding fallacies in reasoning. Critical comprehension skills go beyond inference making and involve critical thinking and reasoning, areas that cognitive psychology research and theorizing have barely even scratched the surface of.

Relatively few research has been done on the development of children's reading comprehension skills. Oakhill and Garnham (1988) provide a review of studies done in this area. Among the studies they cite are as follows.

Finding the main idea. A study by Otto and Barrett (1968: cited by Yussen, Mathews and Hiebert, 1982) found that from grades two to six, children markedly increased in ability to state the main topic of short

paragraphs. Danner (1976) found that Grade Two children could, to a limited extent, derive the main ideas from a text. Yussen (1982) reports that among second, fifth, and eighth graders, older children are better able than younger children to select a statement that represents the main idea of a story. Brown and Smiley (1977) asked 8-, 10-, 12-, and 18-year olds to classify the ideas in long and complex folk tales in terms of four levels of importance. The 18-year olds had high levels agreement in their classification. The 8-year olds were generally not able to do the task while the 12-year olds were able to distinguish only between the very important and very unimportant ideas. Nevertheless, for all age groups, memory for ideas was greatly influenced by the idea's importance with the more important ideas being remembered more.

Other inferential comprehension skills. Paris and Lindauer (1976) presented children with a series of sentences in which the instrument used was not explicitly mentioned (e.g., The workman dug a hole in the ground). The results suggest that the 11- to 12-year olds spontaneously inferred the highly probable instrument (e.g., a shovel) in the process of reading but not the 6- to 7-year olds. Nonetheless, subsequent direct questioning revealed that even the 6-year olds are able to choose the correct instrument when they were asked directly. Paris, Lindauer and Cox (1977) examined the ability of 8-year olds, 12 year-olds, and college students to infer causal consequences. The ability to make these inferences increased with age. Nevertheless, in a second experiment, the researchers were able to induce 6-year olds to make inferences by instructing them to make up stories related to the sentences presented. The Paris and Lindauer (1976) and Paris, Lindauer and Cox (1977) studies suggest that younger children are capable of inferential comprehension but do not do so spontaneously (Oakhill & Garnham, 1988)

The study

The study examined literal and inferential English reading comprehension skills among multilingual Filipino elementary school children. The literal comprehension skills dealt with remembering details read and remembering the sequence of events in the story. The inferential comprehension skills dealt with finding the main idea or theme of the passage, inferring character

emotional reaction and characteristics of story character, drawing logical conclusions, determining word meaning from context, and inferring causal antecedents and causal consequences. The performance of the children in these skills across grade levels and passage difficulty levels is compared and insights are drawn on the development of these reading comprehension skills among the children.

Subjects

The subjects are 553 elementary students in two schools in Cebu. Of these, 284 students come from a private elementary school while 269 come from a public elementary school. All of the students are *average* with respect to their academic performance. All are also multilingual: they speak Cebuano, Filipino, and are able to speak and read English. Average students were selected for participation in the study because the interest is in the English reading comprehension of "typical" multilingual students rather than of special groups (i.e., the gifted or the slow learners). The distribution of subjects across grade levels and schools is presented in Table 1.

Table 1. Distribution of Subjects by Grade Level and School

Grade Level	Public School	Private School	Total
One	50	48	98
Two	43	44	87
Three	50	46	96
Four	39	54	93
Five	46	47	93
Six	41	45	86
Total	269	284	553

Materials

Twelve passages were constructed. The passages were constructed in conjunction with the development of The Philippine Elementary Achievement Test (Gonzalez-Intal, 1995). The passages were constructed such that the length of the passages, the length and complexity of sentences, the difficulty

of vocabulary, and complexity of ideas approximate the difficulty levels of reading materials in the DECS (Department of Education, Culture and Sports) prescribed English reading textbooks for the different grade levels in the Philippines. Two passages were constructed for each of the six elementary grade levels. Passages 1 and 2 were constructed for Grade One reading level, Passages 3 and 4 for Grade Two reading level, Passages 5 and 6 for Grade Three reading level, Passages 7 and 8 for Grade Four reading level, Passages 9 and 10 for Grade Five reading level, and Passages 11 and 12 for Grade Six reading level.

Each passage is followed by five questions which assess the children's English reading comprehension skills. The questions tap two levels of reading comprehension skills: literal comprehension and inferential comprehension. At the literal comprehension skills level, the questions deal with remembering details read and remembering the sequence of events in the story. At the inferential comprehension skills level, the questions deal mainly with finding the main idea or theme of the passage, inferring character emotional reaction and characteristics of story character, drawing logical conclusions, determining word meaning from context, and inferring causal antecedents and causal consequences. All of the questions are in the form of multiple-choice with four alternatives to choose from, one of which is the correct answer. While guessing cannot be eliminated in this type of measure, it is not deemed problematic because the interest in the analysis is not in the absolute number of correct answers for a particular question item but in the comparison of recognition rates across different item types (e.g., literal vs. inferential comprehension) across the various grade levels. Assuming that the probability of guessing the correct answer is the same across these conditions, then the *differences* in recognition rates across conditions will provide an adequate comparative measure of comprehension (Lockhart, 1992). The Appendix presents three of the passages—a Grade Two level passage, a Grade Four level passage, and a Grade Six level passage—together with the respective comprehension questions asked.

Procedure

The study was conducted during the children's regular class period. Each student was given a booklet containing the 12 passages with the

questions after each passage. The research assistant introduced the task to the children as follows: "You will be reading some short stories. After each story, there will be some questions about the story. I will give each one of you a booklet. Do not open it yet until I tell you to do so." The research assistant then distributed the booklets after which she and the children together read aloud the instructions, which were written on the cover page of each booklet. The instructions stated: "Read each story. Then read each question about the story. Select the best answer to the question. Put a circle around the letter for that answer. Now look at the sample. Susan and Janet are friends. One day they played with a ball in school. Then they ate some candy." This short passage was followed by three questions about the passage in the same multiple-choice format as the questions to the passages inside the booklet. The research assistant demonstrated to the children how to answer the multiple-choice questions. She made sure that all children understood the instructions before letting them read the first passage. The children were given one hour to read the 12 passages and answer the questions. In general, the children completed the task in less than an hour.

Results

Table 2 presents the percentage of correct answers to the reading comprehension questions for each passage for each grade level. In the table, as well as for the succeeding analyses conducted, data for the private and public school students have been combined. The figures in the cells of Table 2 are the average of the percent correct answers across the five comprehension questions for each passage. Thus, the 54 percent for Passage 1, Grade 1 means that the Grade 1 subjects had an average of 54 percent correct answers for the five comprehension questions of Passage 1.

Moving vertically and horizontally across Table 2 it can be seen that the percentage of correct answers increases from Grade 1 to Grade 6 at the same time that it decreases from Passage 1 to Passage 12. Using 50 percent correct answers as a cut-off value, Table 2 reveals that in general, the Grades One, Two, Three, and Five subjects were able to answer correctly at least 50 percent of the questions for the passages constructed for their respective grade levels. The Grades Four and Six subjects fall below the cut-off value.

The majority of the Grade One subjects read only up to Passage 6; no one read beyond Passage 8.

It can be noted from Table 2 that the subjects generally fare poorly in passages for grade levels higher than their own grade level. Table 2 also shows that even the higher grade levels do not perform well in the last six passages (Passages 7 to 12). For instance, the Grade Six subjects achieved only 52 percent and 62 percent correct answers in Passages 7 and 8, respectively (Grade Four level passages) and only 54 percent and 62 percent correct answers in Passages 9 and 10, respectively (Grade Five level passages). Thus, it appears from Table 2 that subjects in the higher grades perform reasonably well in the easier passages (Passages 1 to 6) but comprehension declines with the more difficult passages (Passages 7 to 12).

Table 2. Percent Correct Answers to Reading Comprehension Questions by Grade Level and Passage

Subjects' Difficulty Level of Passage	Grade Level					
	1	2	3	4	5	6
A. Grade One level						
Passage 1	54	69	91	88	96	96
Passage 2	74	77	90	90	97	97
B. Grade Two level						
Passage 3	35	51	67	72	80	81
Passage 4	57	68	77	83	88	85
C. Grade Three level						
Passage 5	23	46	57	66	76	71
Passage 6	17	35	42	58	65	74
D. Grade Four level						
Passage 7	11	27	31	36	57	52
Passage 8	5	26	36	44	55	62
E. Grade Five level						
Passage 9	-	26	35	45	60	54
Passage 10	-	25	34	43	61	62
F. Grade Six level						
Passage 11	-	22	28	33	49	44
Passage 12	-	18	17	24	37	35

Note. The figures are the average of the percent correct answers across the five comprehension questions for each passage.

Table 3 presents a tabulation of the children's reading comprehension skills across the six elementary grade levels, disaggregated by type of skill and level of difficulty of the passage. In Table 3, the passages have been grouped into three levels of difficulty: Level 1 consisting of passages constructed for Grades One and Two; Level 2 consisting of passages for Grades Three and Four; and Level 3 consisting of passages for Grades Five and Six. It must be noted that the passages presented in Table 3 are not the only passages in which the various skills were measured. For brevity of presentation, these passages were chosen as exemplars of the children's performance on the different reading comprehension skills. Nevertheless, the passages selected for presentation typify the general trends of the children's performance across skill type, passage difficulty level, and grade level.

Again, using 50 percent correct answers as cut-off value, a number of observations can be noted from Table 3. Generally, across the six grade levels, the percentage of correct answers is higher for literal comprehension questions than for inferential comprehension questions, particularly for Levels 1 and 2 passages. For Level 3 passages, performance in literal comprehension questions does not appear to be much better than performance in inferential comprehension questions.

Grade One subjects are able to tackle Level 1 literal comprehension questions but do poorly in Level 1 inferential comprehension questions, except for inferring emotional reaction/characteristics of story character which 69 percent are able to do. By Grade Two, majority of the subjects are able to tackle other Level 1 inferential comprehension questions such as inferring the main idea, drawing logical conclusions, and determining meaning from context. The Grade Two subjects still exhibit difficulty, however, in Level 1 inferential comprehension questions involving causal reasoning, i.e., inferring causal antecedents and causal consequences. The Grade Three and Grade Four subjects do better in causal reasoning. Majority are able to infer causal antecedents in Level 1 passages and to infer causal consequences in both Level 1 and Level 2 passages.

Table 3. Children's Reading Comprehension Skills (Percent Correct Answers)

Type of Skill and Passage Difficulty	Grade Level					
	1	2	3	4	5	6
A. Literal Comprehension Skills						
1. Remembering details read						
Level 1(Passage 2)	93	86	98	97	99	99
Level 2(Passage 7)	17	44	68	64	84	81
Level 3(Passage 12)	-	34	29	28	50	44
2. Remembering sequence of events						
Level 1(Passage 2)	71	85	92	94	99	100
Level 2(Passage 6)	17	42	35	68	64	79
Level 3(Passage 9)	-	26	25	41	69	50
B. Inferential Comprehension Skills						
1. Finding main idea/theme						
Level 1 (Passage 2)	45	54	71	68	89	85
Level 2(Passage 7)	10	23	8	19	32	31
Level 3(Passage 12)	-	1	4	16	25	19
2. Inferring emotional reaction/ characteristics of story character						
Level 1(Passage 2)	69	70	91	96	98	100
Level 2(Passage 6)	28	47	64	71	81	71
Level 3(Passage 9)	-	39	58	73	77	77
3. Drawing logical conclusions						
Level 1(Passage 1)	41	70	90	83	96	94
Level 2(Passage 5)	4	36	34	56	67	59
Level 3(Passage 11)	-	16	28	31	36	38
4. Determining meaning from context						
Level 1(Passage 3)	29	51	69	77	83	83
Level 2(Passage 5)	16	32	58	63	72	55
Level 3(Passage 10)	-	17	20	31	47	42
5. Inferring causal antecedent						
Level 1(Passage 3)	36	48	62	76	81	83
Level 2(Passage 6)	6	16	29	39	40	65
Level 3(Passage 11)	-	26	19	32	38	40
6. Inferring causal consequence						
Level 1(Passage 3)	32	47	79	71	81	84
Level 2(Passage 6)	17	38	50	68	78	90
Level 3(Passage 11)	-	32	40	31	53	51

Across grade levels, inferring the main idea or theme appears to be a difficult inferential comprehension skill for the subjects; even subjects in the higher grade levels do poorly in inferring the main idea or theme in passages beyond Level 1 difficulty. Inferring causal antecedents likewise appears to be a difficult inferential comprehension skill for the subjects. Subjects in higher grade levels also do poorly in this skill in passages beyond Level 1 difficulty. In contrast, inferring emotional reaction/characteristics of story character appears to be relatively easy for the subjects. Across grade levels, majority of the subjects are able to answer this type of inferential comprehension question in passages corresponding to their grade level and, in the case of the Grade Three and Grade Four subjects, even at passage difficulty levels beyond their grade level. At the higher grade levels (Grades Three to Six), but not for Grades One and Two, inferring causal consequences appears to be relatively easy also, with a majority of the subjects being able to answer this type of question in passages appropriate to their grade level. In between the more difficult and the more easy inferential comprehension skills for the subjects are drawing logical conclusions and determining meaning from context; nevertheless, majority of the higher grade level subjects (i.e., Grades Five and Six) are able to tackle these only until Level 2 difficulty passages (i.e., for Grades Three and Four).

Thus, from Table 3, it appears that the order of difficulty of the various reading comprehension skills from relatively easier to more difficult for the subjects is roughly as follows: remembering details read, remembering sequence of events, inferring emotional reaction/characteristics of story character, and inferring causal consequences are the relatively easier skills while drawing logical conclusions, determining meaning from context, inferring causal antecedents, and inferring the main idea or theme are the more difficult skills.

Table 4 provides a more stringent comparison of the difficulty for subjects of the different reading comprehension skills by testing for the significance of differences in performance between skills across passages and grade levels using paired *t*-tests. For example, in comparing the performance of the subjects on literal comprehension skill vs. finding the main idea skill, a total of 58 pairs of percentages were compared. The percentage pairs in this comparison consisted of the percent correct answers

Table 4. Comparison of Reading Comprehension Skills

	Pairs	Cor	Sig	Mean	t-value	Sig
1. Literal comprehension vs. Finding the main idea	58	.82	.000	65.0	8.38	.000 46.3
2. Literal comprehension vs. Inferences about character	46	.81	.000	70.6	-1.94	.058 65.7
3. Literal comprehension vs. Drawing logical conclusions	28	.86	.000	62.0	-5.40	.000 47.9
4. Literal comprehension vs. Inferring causal antecedent	18	.94	.000	64.7	-9.44	.000 45.4
5. Literal comprehension vs. Inferring causal consequence	42	.84	.000	62.9	-1.68	.101 58.8
6. Finding the main idea vs. Inferences about character	28	.94	.000	37.0	9.67	.000 54.6
7. Finding the main idea vs. Drawing logical conclusions	26	.91	.000	40.3	1.53	.137 43.5
8. Finding the main idea vs. Inferring causal antecedent	18	.75	.000	45.3	0.22	.828 46.3
9. Finding the main idea vs. Inferring causal consequence	34	.89	.000	53.3	1.98	.056 57.2
10. Inferences about character vs. Drawing logical conclusions	10	.86	.001	45.8	2.77	.022 35.4
11. Inferences about character vs. Inferring causal antecedent	18	.68	.002	55.2	-2.14	.047 45.4
12. Inferences about character vs. Inferring causal consequence	12	.82	.001	67.4	-1.12	.289 71.9
13. Inferring causal antecedent vs. Inferring causal consequence	18	.83	.000	52.8	-5.39	.000 69.8

for each type of question or skill (i.e., literal comprehension vs. finding the main idea) matched according to the passage in which the skills were measured and the subjects' grade level. Thus, for instance, the first percentage pair consists of the percent of Grade One subjects who answered correctly the literal comprehension question and the percent who answered correctly the finding the main idea question in Passage 1. The second percentage pair consists of the percent of Grade Two subjects who answered correctly the literal comprehension question and the percent who answered correctly the

finding the main idea question in Passage 1. The fifty-eight percentage pair consists of the percent of Grade Six subjects who answered correctly the literal comprehension question and the percent who answered correctly the finding the mainidea question in Passage 12. The paired *t*-tests were run to determine the significance of differences between the mean percent correct answers for the two types of comprehension skills being compared across passages and grade levels.

From Table 4, we see that across subject grade levels and passages, literal comprehension questions are by far easier to answer than questions having to do with finding the main idea ($t = 8.38, p < .000$). Similarly, literal comprehension questions are much easier to answer than questions involving drawing logical conclusions and questions dealing with inferring causal antecedents ($t = -5.40, p < .000$ and $t = -9.44, p < .000$, respectively). The *t*-tests also indicate that across subject grade levels and passages, questions dealing with making inferences about emotional reaction/characteristics of story character and about inferring causal consequences are not more difficult to answer than literal comprehension questions (the *t*-values for these comparisons are not significant).

The comparison of inferential comprehension skills in Table 4 indicates that across grade levels and passages, finding the main idea is much more difficult than making inferences about emotional reaction/characteristics of story character ($t = 9.67, p < .000$). It is also somewhat more difficult than inferring causal consequences ($t = 1.98, p < .056$). Finding the main idea, however, is not significantly more difficult than drawing logical conclusions and inferring causal antecedents (the *t*-values are not significant). Inferring emotional reaction/characteristics of story character is easier than drawing logical conclusions ($t = 2.77, p < .022$) and inferring causal antecedents ($t = -2.14, p < .047$) but is not easier than inferring causal consequences. Table 4 also shows that inferring causal antecedents is significantly more difficult than inferring causal consequences ($t = -5.39, p < .000$).

The high and significant positive correlations between the comprehension skill pairs in Table 4 indicate that performance on the skills correspondingly increase the higher the subjects' grade level. That is, the higher the child's grade level, the better is the performance on both of the skills being compared, indicating a general improvement across the various reading comprehension skills as children move higher up the grade levels.

The results of the study indicate that in general, the children are able to answer at least half of the comprehension questions for the passages appropriate to their respective grade levels. Nevertheless, the children's performance declines drastically in passages above their grade level. Moreover, beyond the 50 percent cut-off value used, the higher grade levels (Grades Four, Five, and Six) generally do not do well in Passages 7 to 12, even if the passage is below their grade level, as in the case of Grade Six students answering Passages 7 to 10, which are Grades Four and Five level passages. These results suggest that the higher grade level children are able to cope with relatively easy reading material (Grades One to Three level) but are not able to cope adequately with material appropriate for their higher grade levels. Thus, it seems that while, in general, reading comprehension performance increases the higher the grade level, nevertheless, the improvement in performance does not appear to be commensurate with the increase in reading comprehension demands in the higher grade levels. This implies the need to improve training in English reading comprehension skills at the higher grade levels as the material that children read become more complex and difficult.

The results indicate that in general, across grade levels, literal comprehension is easier than inferential comprehension, particularly for the easier passages. As passages become more difficult, literal comprehension becomes likewise more difficult to do even for the older children reading passages appropriate to their grade level.

Discussion

With respect to inferential comprehension, the Grade One subjects generally do poorly, even on the easy passages, except with respect to inferences about emotional reaction/characteristics of story character in passages appropriate to their grade level. By Grade Two, the children's inferential comprehension skills have developed to some extent so that in addition to inferences about character emotional reaction/characteristics of character, majority are also able to infer the main idea or theme, draw logical conclusions, and determine meaning from context in Level 1 passages. By Grade Three and Grade Four, the children are better at causal reasoning, being able to infer causal antecedents in the easier Level 1 passages and to infer causal consequences in both Level 1 and Level 2 passages.

Finding the main idea or theme appears to be quite difficult for the subjects across grade levels, especially as passages increase in difficulty. Results show that subjects in the higher grade levels (Grades Three to Six) do not perform well on questions involving this skill in passages beyond Level 1 difficulty. This problem is a serious one when seen in the light of the fact that probably, the most important skill in understanding the meaning of material read (i.e., in comprehension) is grasping the main idea or theme. Inferring causal antecedents is also difficult for the children. In this regard, it may be noted that finding the main idea or theme and inferring causal antecedents both basically involve inductive reasoning. Finding the main idea or theme essentially consists of abstracting a generalization from particulars while inferring causal antecedents involves searching among a number of possible causes that which is the more probable cause. This difficulty with inductive reasoning contrasts with the greater ease with which the children are able to infer causal consequences, which is basically a deductive task. Finally, the relative ease with which the children are able to infer character emotional reaction and characteristics of story character may be a reflection of better-developed schemas or knowledge-base among the children on these aspects which may be due to the emphasis that socialization in Philippine culture gives to the development of sensitivity to persons and emotional reactions.

References

- Anderson, R.C., & Pichert, J.W. (1978). Recall of previously unrecallable information following a shift in perspective. *Journal of Verbal Learning and Verbal Behavior*, 17, 1-12.
- Bradley, P., & Bryant, L. (1983). Categorizing sounds and learning to read: A causal connection. *Nature*, 301, 419-421.
- Bransford, J.D., Barclay, J.R., & Franks, J.J. (1972). Sentence memory: A constructive versus interpretive approach. *Cognitive Psychology*, 3, 193-209.
- _____, & Johnson, M.K. (1972). Contextual prerequisites for understanding: Some investigations of comprehension and recall. *Journal of Verbal Learning and Verbal Behavior*, 11, 717-726.
- Brown, A.L., & Smiley, S.S. (1977). Rating the importance of structural units of prose passages: A problem of metacognition development. *Child Development*, 48, 1-8.
- Chall, J.S. (1979). The great debate: Ten years later, with a modest proposal for reading stages. In L.B. Resnick & P.A. Weaver (Eds.), *Theory and practice of early reading*. Hillsdale, NJ: Erlbaum.
- Collins, M.D., & Cheek, E.H. Jr. (1993). *Diagnostic-prescriptive reading instruction*. Wisconsin: WCB Brown and Benchmark, Publishers.
- Danner, F.W. (1976). Children's understanding of intersentence organization in the recall of short descriptive passages. *Journal of Educational Psychology*, 68, 174-183.
- Davis, F.B. (1972). Psychometric research on comprehension in reading. *Reading Research Quarterly*, 7, 628-678.
- Doctor, E., & Coltheart, M. (1980). Children's use of phonological encoding when reading for meaning. *Memory and Cognition*, 8, 195-209.

- Frith, U. (1985.). Beneath the surface of developmental dyslexia. In K.E. Patterson, J.C. Marshall, & M. Coltheart (Eds.), *Surface Dyslexia*. London: Erlbaum.
- Garner, R. (1980). Monitoring of understanding: An investigation of good and poor readers' awareness of induced miscomprehension of text. *Journal of Reading Behavior*, 12, 55-63.
- Gitomer, D.H., Pellegrino, J.W., & Bisanz, J. (1983). Developmental change and invariance in semantic processing. *Journal of Experimental Child Psychology*, 35, 56-80.
- Golinkoff, R.M. (1975-76). A comparison of reading comprehension processes in good and poor comprehenders. *Reading Research Quarterly*, 11, 623-659.
- Gonzalez-Intal, A.M. (1995). *The Philippine Elementary Achievement Test*. Washington, D.C.: Policy Research Department, The World Bank.
- Graesser, A.C., Singer, M., & Trabasso, T. (1994). Constructing inferences during narrative text comprehension. *Psychological Review*, 101, 371-395.
- Johnson-Laird, P.N. (1980). Mental models in cognitive science. *Cognitive Science*, 4, 71-115.
- Just, M.A., & Carpenter, P.A. (1980). A theory of reading: From eye fixations to comprehension. *Psychological Review*, 87, 329-354.
- Just, M.A., & Carpenter, P.A. (1992). A capacity theory of comprehension: Individual differences in working memory. *Psychological Review*, 99, 122-149.
- Kintsch, W. (1974). *The Representation of Meaning in Memory*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

- Kintsch, W. (1994). The psychology of discourse processing. In M.A. Gernsbacher (Ed.), *Handbook of Psycholinguistics*. London: Academic Press.
- Kintsch, W. (1992). A cognitive architecture for comprehension. In H.L. Pick, P. van den Broek, & D.C. Knill (Eds.), *Cognition: Conceptual and methodological issues*. Washington, DC: American Psychological Association.
- Kintsch, W. (1988). The role of knowledge in discourse comprehension: A construction-integration model. *Psychological Review*, 95, 163-182.
- Kintsch, W. & Keenan, J.M. (1973). Reading rate and retention as a function of the number of propositions in the base structure of sentences. *Cognitive Psychology*, 5, 257-274.
- Kintsch, W. & van Dijk, T.A. (1978). Toward a model of text comprehension and production. *Psychological Review*, 85, 363-394.
- Kobasigawa, A., Ransom, C.C., & Holland, C. (1980). Children's knowledge about skimming. *Alberta Journal of Educational Research*, 26, 169-182.
- Lockhart, R.S. (1992). Measurement of memory. In L.R. Squire (Ed.), *Encyclopedia of learning and memory*. New York: MacMillan Publishing Company.
- Mandler, J.M., & Johnson, N. (1977). Remembrance of things parsed: Story structure and recall. *Cognitive Psychology*, 9, 111-152.
- McClelland, J.L., & Rumelhart, D.E. (1981). An interactive model of context effects in letter perception. Part 1: An account of basic findings. *Psychological Review*, 88, 375-407.
- McKoon, G., & Ratcliff, R. (1992). Inference during reading. *Psychological Review*, 99, 440-466.

- Morton, J. (1970). A functional model for memory. In D.A. Norman (Ed.), *Models of Human Memory*. NY: Academic Press.
- Myers, M., & Paris, S.G. (1978). Children's metacognitive knowledge about reading. *Journal of Educational Psychology*, 70, 680-690.
- Oakhill, J., & Garnham, A. (1988). *Becoming a skilled reader*. Oxford: Basil Blackwell Ltd.
- O'Regan, K., & Levy-Schoen, A. (1987). Eye-movement strategy and tactics in word recognition and reading. In M. Coltheart (Ed.), *Attention and performance* (Vol. XII). Hove, UK: Lawrence Erlbaum Associates, Ltd.
- Paris, S.G., & Lindauer, B.K. (1976). The role of inference in children's comprehension and memory for sentences. *Cognitive Psychology*, 8, 217-227.
- Patberg, J., Dewitz, P., & Samuels, S.J. (1981). The effect of context on the size of the perceptual unit used in word recognition. *Journal of Reading Behavior*, 13, 33-48.
- Rayner, K. (1993). Eye movements in reading: Recent developments. *Current Directions in Psychological Science*, 2, 81-85.
- Rayner, K., & Pollatsek, A. (1989). *The Psychology of Reading*. London: Prentice-Hall.
- Rayner, K., & Sereno, S.C. (1994). Eye movements in reading: Psycholinguistic studies. In M.A. Gernsbacher (Ed.), *Handbook of Psycholinguistics*. NY: Academic Press.
- Rubin, D. (1993). *A Practical approach to teaching reading*. Boston: Allyn and Bacon.

- Rubin, D.C., & Friendly, M. (1986). Predicting which words get recalled: Measures of free recall, availability, goodness, emotionality, and pronunciability for 925 nouns. *Memory and Cognition*, 14, 79-94.
- Ruddell, R.B. (1978). Developing comprehension abilities: Implications from research for an instructional framework. In S.J. Samuels (Ed.), *What research has to say about reading instruction*. Newark, Del.: International Reading Association, 108-120.
- Sanford, A.J. (1994). Language comprehension. In M.W. Eysenck (Ed.), *The Blackwell dictionary of cognitive psychology*. Oxford: Basil Blackwell Ltd.
- Schank, R.C. (1976). *Conceptual Information Processing*. Amsterdam: North-Holland.
- Schank, R.C., & Abelson, R.P. (1977). *Scripts, plans, goals and understanding*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Siegler, R.S. (1986). *Children's thinking*. NJ: Prentice-Hall.
- Smith, R.J., & Barrett, T.C. (1974). *Teaching reading in the middle grades*. Reading, Mass.: Addison-Wesley.
- Stein, N., & Glenn, C. (1979). An analysis of story comprehension in elementary school children. In R. Freedle (Ed.), *New directions in discourse processing*, (Vol. 2). Norwood, NJ: Ablex, Inc.
- Tulving, E., & Gold, C. (1963). Stimulus information and contextual information as determinants of tachistoscopic recognition of words. *Journal of Experimental Psychology*, 66, 319-327.
- van Dijk, T.A., & Kintsch, W. (1983). *Strategies of discourse comprehension*. NY: Academic Press.

- Weber, R.M. (1970). First graders' use of grammatical context in reading. In H. Levin and J.P. Williams (Eds.), *Basic studies of reading*. NY: Basic Books.
- Wilkinson, A.C. (1980). Children's understanding in reading and listening. *Journal of Educational Psychology*, 72, 561-574.
- Yussen, S.R. (1982). Children's impressions of coherence in narratives. In B.A. Hutson (Ed.), *Advances in reading/language research* (Vol. 1). Greenwich, Conn.: JAI Press.
- Yussen, S.R., Mathews, S.R., & Hiebert, E. (1982). Metacognitive aspects of reading. In W. Otto and S. White (Eds.), *Reading expository material*. London, Academic Press.

APPENDIX

Examples of Passages and Comprehension Questions

Passage 3:

The people in Barangay San Antonio always clean their houses and yards. They throw their garbage into garbage cans. People have toilets in their homes. Everyone tries not to make the streets dirty. The water in the river is clear and clean. Mothers bring their children to the health center. The children take a bath everyday. Each home has a vegetable garden. Everyone helps to make the barangay clean and safe.

1. What is the story about?
 - a. How the people keep the streets clean.
 - b. How the people make the river clear and clean.
 - c. How the people make their barangay clean and safe.
 - d. How the people keep their houses and yards clean.

2. What happens when people keep their houses, yards, and streets clean?
 - a. They will have plenty of work to do.
 - b. They will get an award for cleanliness.
 - c. They will be healthy.
 - d. They will have many friends.

3. Why is Barangay San Antonio clean and safe?
 - a. Because people throw their garbage in garbage cans.
 - b. Because people have toilets in their homes.
 - c. Because mothers bring their children to the health center.
 - d. Because everyone keeps their house, yard, and streets clean.

4. In this story, the word clean means --
 - a. to scrub
 - b. not dirty
 - c. to sweep
 - d. to wash

5. Put a check (✓) mark on the statement that is found in the story.
 - a. The people throw their garbage into garbage cans.
 - b. The garbage truck picks up the garbage everyday.
 - c. Barangay San Antonio is big.
 - d. The water in the artesian well is clear and clean.

Passage 7:

Once upon a time there was a great city named Troy. It was surrounded by high walls and its gates were very strong. The people of Troy were called Trojans. They were at war with the Greeks. The Greek army had been trying to conquer the city of Troy for many years. They were not able to because they could not find a way to enter the city. One morning the Trojans woke up and saw that the Greeks had given up and left. The only thing they saw outside the city gates was a huge wooden horse statue. It was a gift from the Greek army. So the Trojans brought the wooden horse statue inside their city and they held a feast to celebrate their victory. That night,

after the merrymaking, as the Trojans slept, a secret door from the wooden horse opened and out came a group of Greek soldiers. The Greek soldiers tiptoed to the gates of the city and opened them. The Greek army, which had pretended to sail away, returned in the night and entered the city whose gates were now open. The Greek army defeated the Trojans.

1. How come the Greek army could not conquer Troy?
 - a. The Trojans are brave warriors.
 - b. The Greek army was not strong enough.
 - c. The Trojans fought hard.
 - d. The Greek army could not enter the city.

2. What is the story about?
 - a. The Greeks and the Trojans.
 - b. The great city of Troy.
 - c. How the Greeks defeated the Trojans.
 - d. The gift from the Greek army.

3. The Trojans brought the wooden horse statue inside their city because--
 - a. They like horse statues.
 - b. They thought the Greek army had given up and left.
 - c. They thought the wooden horse statue was beautiful.
 - d. They needed the wooden horse statue for their feast.

4. The Greeks were --
 - a. clever
 - b. brave
 - c. fearless
 - d. powerful

5. The general mood of the paragraph is --
 - a. celebration
 - b. gloom
 - c. suspense
 - d. fear

Passage 12:

Once upon a time in the animal kingdom, Lion, the king of beasts, declared war against Eagle, the king of birds. The eagle had snatched the lion's prey. King Lion gathered his followers together and when night came they attacked the sleeping birds in their nests. The birds who were badly beaten fled to the jungle guided by the owl who could see in the dark.

A bat who saw what happened folded his wings and approached lion. "Oh King Lion," he said, "let me fight with you. You can see that I am a relative of the mouse. I am ready to die for you." Pleased with the bat's bravery, King Lion agreed. The bat pretended to fight with them.

When daylight came, the birds fought back. They threw stones and nuts on the animals and then pecked the animals with their sharp beaks. When the bat saw the badly hurt and defeated animals, he went to King Eagle, spread his wide wings, and said, "King Eagle, let me fight with you. Like you, I have wings. I am a bird. I will risk my life for you." Convinced of the bat's courage, King Eagle readily agreed. As the two groups fought, the bat made sure that he was always with the winning side.

Finally, the beasts and the birds noticed the bat's trickiness. "Go away," they shouted. "You do not belong to any of us. We do not want you!" The beasts and the birds also realized how foolish they were in fighting each other. They made up and became friends again. The bat left in shame. He began to hide in dark caves and would only fly secretly at night.

1. The main idea of the story is about --
 - a. the animal kingdom
 - b. a fight between the beasts and the birds
 - c. King Lion and King Eagle
 - d. a bat who kept changing sides

2. Who is the main character in the story?
 - a. bat
 - b. King Lion
 - c. King Eagle
 - d. owl

3. Why did the beasts fight the birds?
 - a. The birds pecked the beasts with their sharp beaks.
 - b. The bat made them quarrel.
 - c. King Lion wanted to be king of all.
 - d. King Eagle snatched King Lion's prey.

4. The bat in the story is best described as --
 - a. stupid
 - b. dishonest
 - c. cowardly
 - d. lazy

5. The main purpose of the story is to --
 - a. explain why bats live in dark caves
 - b. show that one who keeps changing sides will have no friends
 - c. show how foolish beasts and birds could be
 - d. describe the animal kingdom long ago