

THE IMPACT OF TEXT-PICTURE RELATIONSHIPS ON READER RECALL
AND INFERENCE MAKING: A STUDY OF FOURTH GRADERS'
RESPONSES TO NARRATIVE PICTUREBOOKS

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ABSTRACT

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Picturebooks play an important role in elementary education, but few teachers focus on their text-picture relationships. This qualitative study examined the impact of four narratives with different text-picture relationships on fourth graders' explicit recall and inference making, both immediately after reading and after a one week delay. The four relationships were loosely symmetrical, complementary, text carries the narrative, and ironic or contradictory. Twelve urban fourth graders, four reading at or above grade level, four reading moderately below grade level, and four reading significantly below grade level, met with the researcher on six occasions. The purpose was to read, retell, and answer questions about a story in a one-to-one setting. While each student read and responded independently, each received help with word recognition. Data consisted of transcriptions of oral retellings, interviews, and a cued recall measure. Transcriptions of story retellings were parsed into kernels and coded according to cognitive process, either explicit or implicit, and source of content. Possible sources were text, picture, text-picture overlap, and background knowledge. Five categories of inference emerged from

the analysis of story retellings: local inferences, global inferences, associations, evaluations, and misinterpretations. An analysis of codes and categories and interview data revealed that the text-picture relationship influenced the sources of content readers recalled, inferences they constructed, expressed ease of story comprehension and recall, and expressed level of enjoyment. It also affected the meaning that students at three levels of reading ability constructed. Given that different text-picture interactions provide support for specific comprehension processes, this study suggests that teachers should consider the relationship of words and images when selecting reading materials for their classrooms, especially when students are reading below grade level.

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CHAPTER 1

INTRODUCTION

The Problem

From the earliest stages of a child's life, communication takes place through the real and the symbolic, through tangible people and their actions as well as those represented in various media. One medium is the children's picturebook which has become increasingly prominent during the past century. These are books in which images and ideas join to form a unique whole. In a traditional picturebook that tells a story, visual art shares in moving the story forward, showing the actions and expressions of characters, the changing settings, and the development of plot (Huck & Kiefer, 2004). This object is both literature and an art form, and its "expressive potential goes well beyond the mere narrative. More like a film than a painting, its aesthetic force derives from the continuity of images, from the relationships of the pages as they are turned" (Marantz, 1977, p. 148). Most picturebooks are created for young children and read aloud by an adult, often in a group setting, but many are appropriate for older students who read them independently.

Multimedia offerings are commonplace in modern society. Adults and children are bombarded by a combination of print and pictures often accompanied by sound and motion (Schwarcz & Schwarcz, 1991). Images are displayed on the World Wide Web, computer software and more traditional texts of all kinds, rendering visual as well as visual-verbal literacy important skills in the twenty-first century. Reading words and pictures together is a different and in some ways more complex process than reading either alone. Not only does each medium have its own symbol system, but each

potentially interanimates the other (Meek, 1992), and meaning constructed from both is more than the sum of its parts (Nodelman, 1988; Sipe, 1998a). Readers need practice in building meaning from images alone and in combination with words, and picturebooks provide that opportunity (Kiefer, 1995). Literacy educators are aware of this need. The number of professional articles and books devoted to using picturebooks in the elementary, middle and even high school classroom has proliferated during the past few years. Moreover, the National Council of Teachers of English and The International Reading Association include in their *Standards for the English Language Arts* (1996) that students read a wide range of print and non-print texts.

While practice in visual and visual-verbal literacy is important, the nation's present system of measuring reading competency exhibits a more text-based perspective. Current literacy assessments, such as the *Pennsylvania System of School Assessment*, or PSSA, require students to read, comprehend, and remember connected text by itself even if artistic representations accompany printed materials. The content of visual symbols is virtually ignored at the time of testing. Nonetheless, illustration art has an important role to play within this framework as well. Experimental research has revealed that under certain conditions in the context of reading, representational images that overlap with textual content facilitate story comprehension and recall (Filippatou & Pumfrey, 1996; Levie & Lentz, 1982; Levin, Anglin & Carney, 1987; Peeck, 1987). Therefore, even if assessments do not focus on the content of pictures per se, images can potentially promote student achievement.

Still, few pictures in real narratives actually repeat content embedded in the text, for each symbol system communicates differently (Lewis, 2001b; Nodelman, 1988).

Moreover, there are several other relationships. For example, some pictures complement or extend textual content, others select or represent only a part of it, and still others deviate from or contradict it. In some books, the relationship between print and image varies from one page or opening to the next. In others, it is fairly uniform throughout. In either case, particular visual-verbal combinations might be expected to influence a reader's response to story in diverse ways. Since there is a dearth of quantitative and qualitative research on this topic, the main problem addressed in this study is whether the nature of a text-picture relationship makes a difference in the reader's construction and recall of story meaning.

Intellectual History

My serious interest in picturebooks began in the 1980's when, as a newly certified reading specialist, I wanted to explore the full range of African American literature for young readers. By chance, this search led me to a dazzling alphabet book, *Ashanti to Zulu* (Musgrove, 1976), illustrated by Leo and Diane Dillon. Its characters belong to twenty-six African tribes whose names begin with every letter of the alphabet. On successive pages, text describes each tribal culture while the adjacent pictures echo and elaborate on the words. I touched the vibrant illustrations again and again with great pleasure and reflected on the rich and exotic world they created. So began my appreciation of illustration art in multicultural picturebooks, fostering an attachment to both which has continued until the present.

Like Marantz (1977), I experienced picturebooks as art objects but also viewed the narratives as children's literature. Later, as a classroom reading specialist, I was particularly interested in the overlapping functions of pictures beyond the aesthetic - the

attentional, affective, cognitive, and compensatory (Levie & Lentz, 1982; Peeck, 1987). At times, visual art captured the children's attention, motivated them to read, concretized characters, setting and action sequences, and generally contributed to a meaningful and emotional literary experience. In my work with struggling readers, pictures often had a compensatory function, providing them with visual background knowledge prior to reading or visually organizing complex verbal content. When pictures conveyed a wealth of information central to the text, they seemed to be worth a thousand words.

In contrast, my students were occasionally led astray by deviations between words and adjacent images, such as when pictures contained characters and objects not mentioned in the story. The artist's extension of textual information seemed misleading to the reader. Had not the artist attended to the print he was illustrating? At the time, I assumed that textual content took precedence over what was displayed in pictures and relegated illustrations to a secondary, supportive role. After all, standardized and other assessments were based on textual content alone. This occasional contradiction between word and image, whether or not intended by the illustrator, added yet another layer to my perception of the picturebook rendering it somewhat of an enigma.

As a doctoral student, my desire for a broader perspective about the educative qualities of picturebooks led me to a large body of experimental research conducted between the 1970's and early 1990's. Investigations had been carried out by educational psychologists who were interested in the instructional benefits of representational illustrations in both expository and narrative texts. Very few researchers examined authentic picturebooks. Their studies of student oral or silent reading were also quite varied. However, what unified them was the lens, suggested by Peeck (1974), through

which researchers viewed these visual-verbal texts. They basically agreed that the information in books with pictures is of three distinct kinds: content derived from images alone, from words alone, and from the overlap between words and images, also called illustrated text. Research results were interpreted within this framework.

Levie and Lentz (1982) conducted several meta-analyses of these text-picture studies of elementary school through college students reading expository passages or stories. Three noteworthy conclusions were that 1) illustrations facilitate learning the information in the written text that is depicted in those illustrations, 2) illustrations facilitate retention of illustrated text more in delayed than in immediate recall, and 3) illustrations are used more extensively by struggling readers than skilled ones and may be of greater benefit to them. This beneficial effect for struggling readers was more of a trend than a definite conclusion.

Unfortunately, many of the early experimental investigations were ecologically invalid. Peeck (1987) criticized the substantial body of text-picture research implemented up to that point, stating that “it is doubtful to what extent the outcome of picture-text studies may be generalized to the use of illustrations in educational practice” (p. 144). There was little attempt to reproduce the type of image, text, and presentation conditions used in a typical classroom. Even when utilizing material from authentic books, investigators often isolated words and pictures from the context of the whole story, failing to consider that meaning is made cumulatively in a sequence of turning pages (Kiefer, 1993). Moreover, most research focused on pictures that were loosely symmetrical with text rather than exploring other possible relationships. As the volume

of experimental text-picture research began to dwindle in the early 1990's, qualitative investigators revitalized it from a more naturalistic perspective.

In the winter of 2005, a quest for more knowledge led me to two courses at the University of Pennsylvania taught by Professor Lawrence Sipe. One was entitled, *Picturebooks and the Practice of Literacy*. I was captivated by the theory, practice, qualitative research, and a picturebook subgenre (Goldstone, 2004) termed the post-modern. Books of this type often ask the reader to construct meaning from words and images which deviate from one another. Visual art no longer simply repeats, complements, extends, or limits text but, in some cases, completely changes its meaning. While author and illustrator may have a range of interpretations in mind, possibilities for the reader are endless. Lewis (2001a) accurately observed that picturebooks are enormously varied in terms of the forms of written text they can include, the kinds of images they contain, the authorial intentions they embody, [and] the interrelationships of word and image they can support...." (p. 27).

To fulfill Professor Sipe's research requirement, I worked individually with two gifted second graders, taping my oral readings and their responses to a single picturebook. Each child approached the same Japanese folktale, *The Crane Wife* (Bodkin, 1998), in a different fashion. At the outset, the young girl announced that pictures were for babies and reluctantly agreed to consult them. Several weeks later in another context, the young boy eagerly capitalized on the interplay between word and image to create his version of story. He formed hypotheses and then moved back and forth between print and picture, earlier pages and later pages, to confirm or reject them.

While each child's retelling was excellent, the young boy created more nuances of meaning from the collaboration of words and images.

This introductory experience as a researcher broadened my understanding of Rosenblatt's (1982) transactional view of reading when applied to books with pictures. She contends that "reading is a transaction, a two-way process, involving a reader and a text at a particular time under particular circumstances" (p. 268). It was apparent that while author and reader contribute to textual meaning, the illustrator does as well. Not only must readers combine words and background knowledge to cobble together their unique re-creations of story but, for the richest interpretations, they must integrate illustrations as well. Yet most children seem to put very little effort into this process, and still others, such as the female participant in my study, neglect visual art altogether.

In contrast to the earlier quantitative research in which participants of all ages often read short illustrated passages, the more recent qualitative studies reviewed in Professor Sipe's class were characterized by authentic teacher read-alouds and class discussions of entire picturebooks mainly with young children. Investigators, such as Arizpe and Styles (2003), Kiefer (1993, 1995), Sipe (2000, 2004), and Walsh (2003), audio-taped elementary school students' reactions to a variety of narratives and categorized their verbal responses while listening to, viewing, drawing, and discussing episodes. To some degree in each study, the teacher's oral performance cues, questions, restatements, expansions or redirections of children's responses served as prompts and scaffolds which facilitated interpretation of texts and pictures. They were a form of intervention, subtly instructing children how to navigate between two symbol systems.

While applauding these teacher-researcher accomplishments, I questioned what impact words and adjacent images would have on inference making and recall when students read whole stories independently without teacher mediation or classmate input. This is a far more complex task for the student, in that it includes the extra steps of attending to and recognizing printed words on many consecutive pages and reading them fluently enough for effective comprehension. It leaves less cognitive energy to focus on picture content and integrate it with both textual information and background knowledge to construct an evolving representation of story. One alternative, hardly a solution, is to peruse the pictures and neglect the text which my struggling readers sometimes do. Nevertheless, constructing meaning from a picture storybook read-aloud in the context of a classroom is a different experience from interpreting and remembering that same book alone.

My initial interest in this subject was the positive effect of pictures on story understanding and recall, but this focus gradually changed. Over time, I began to reflect on the diverse ways in which text and pictures collaborate to enrich the reader's meaning. Picturebook theorists delight in creating provocative metaphors to describe these word-image interactions. For example, the late author-illustrator, Barbara Cooney (1988), likened the picturebook to a string of pearls. She remarked at a symposium that "the pearls represent the illustrations, and the string represents the printed text. The string is not the object of beauty on its own, but the necklace cannot exist without the string." Somewhat different is Lewis's (2000a) conception of a picturebook as a textile, "a cohesive patterning of interwoven strands that add up to more than... the individual parts" (p. 33).

Text-picture interactions exhibit varying degrees of harmony and dissonance. Some picturebooks exhibit a collage of these relationships while others contain just a few. Theorists have developed several taxonomies to describe and organize them. But to ground these colorful schemes, there is a need for ecologically valid studies about the impact of diverse relationships on reader meaning construction and recall of story. The picturebook, which I initially savored as an art object and genre of children's literature, metamorphosed into a complex puzzle that I eagerly investigated.

During my study, I worked with twelve urban fourth graders as they independently read four picturebooks with four different text-picture relationships. My research was guided by these questions:

1) What is the impact of different text-picture relationships on readers' explicit immediate and delayed recall and inference making about narrative picturebooks?

2) How do different types of text-picture relationships affect recall and inference making of readers with diverse reading abilities?

More specifically, I examined the sources of story content children utilized and their cognitive processes as they transacted with words and images.

Since reading is a complex activity, there are many influences and constraints on visual-verbal meaning making. They relate to the reader, pictures, text, and total book design as well as timing of story recall, context of the reading event, and reading activity. The present study filled a gap in the research literature and examined an additional influence, the text-picture relationship.

CHAPTER 2

BACKGROUND OF STUDY

The Picturebook Broadly Defined

Narrative picturebooks are those in which text and pictures work together to tell a story. This is only possible when visual art that is more than simply decorative is exhibited on each page or opening of text, allowing for some degree of interplay between two different symbol systems. Still, there is some disagreement as to the specifics of this arrangement. Schwarcz and Schwarcz (1991) loosely characterize picturebooks as those in which “text and pictorial narrations accompany each other, alternate and intertwine” (p. 5). More precisely, some storybooks, particularly those for younger children, are designed so that pictures are most prominent, enabling the narrative to be understood with little text. Conversely, in those for older readers, the reverse is often true. Text carries the narrative doing much, though not all, of the work. In these two types, neither word nor image “is as effective without the other, although they may not be necessary for each other” (Sutherland & Hearne, 1977, p. 159). There are also narratives in which text and pictures echo one another telling somewhat redundant tales (Golden, 1990; Nikolajeva & Scott, 2001).

Another type of picture book exists in which words and adjacent images are of equal importance, contribute alternative information, and greatly depend on the other for meaning. Many theorists consider this characteristic of interdependence to be the essence of the genre. They extend it to total book design as well (Doonan, 1993; Kiefer, 1995; Marantz, 1977; Sipe, 1998b). Marantz (1977) explains that “a picturebook is properly conceived of as a unit, a totality that integrates all the designated parts in a sequence in

which the relationships among them- the cover, endpapers, typography, pictures [and text]- are crucial to understanding the book” (p. 3). Each part makes its own contribution to a harmonious whole.

In actual practice, the degree of interdependence between all parts of a picture book is partly a function of reader use. Moreover, while this type of book, more than the others, urges readers to rely equally on words, images, and book design for meaning, it represents only one segment of the genre. Children read a wide range of colorful stories in school and at home. Consequently, in the present study, the narrative picturebook will be defined broadly to include all of the above categories.

The particular text-picture relationship woven into a narrative is just one of many interrelated influences on a child’s recall and inference making. In order to view it in appropriate perspective, it is first necessary to examine other influences on reader meaning making about these artistic storybooks. I will begin my background of study with a review of theory and research pertaining to picturebooks in general before dealing specifically with the text-picture combinations they exhibit.

Theoretical Framework

Transactional theory of reading is one lens through which this topic will be examined. Following World War II, New Criticism was the dominant theoretical model for literary interpretation. It focused on the individual work alone as an independent unit of meaning and close reading of text as the primary critical technique. In other words, meaning was considered to reside solely within the text. Rosenblatt (1938) first disputed this view in her book, *Literature as Exploration*. In subsequent writings, she argued that “reading is a transaction, a two-way process involving a reader and a text at a particular

time under particular circumstances” (1982, p. 268). Each reading event offers a range of possible meanings or interpretations. The version readers construct partially depends upon their background knowledge and socio-cultural experiences.

This same paradigm works for picturebooks as well except that the transaction is a three-way process involving a reader, text, and sequence of pictures. Sipe (1998a) suggests that this transaction is quite complex. Since illustrations and text both carry meaning in the forms of their respective symbol systems, reader-viewers must oscillate between them, interpreting text in terms of pictures and pictures in terms of text. This process continues throughout the book with each successive reading-viewing transaction serving as a basis for the next.

Rosenblatt (1986, 1994) hypothesizes that reader stance affects the interpretation of text. This applies to picturebooks as well. An efferent stance indicates that the reader’s selective attention is focused more on story content to be carried away. In contrast, when assuming an aesthetic stance, a reader attends more to thoughts, feelings, and associations, or what is personally lived through. Any reading act falls somewhere on a continuum between these two. Stance goes by other names, such as reader orientation, and can be categorized in a variety of ways (Smith, 1991; Smith & Wilhelm, 2002). Some readers exhibit distinct patterns of response to illustrated stories regardless of the variations within.

Similar to Rosenblatt, Iser (1978) agrees that meaning is made rather than found. He maintains that omissions or indeterminacies located in texts oblige readers to fill them with their own background knowledge in order to create coherence. According to Iser, “this access is not arbitrary, thanks to the repertoire’s organization of possibilities into a

range of meanings....” (p. 85). While inferences serve to bridge these gaps, Sipe (1998a) suggests that “we can think of readers filling in some of the gaps in the verbal text of a picturebook with information from the illustrations and of readers using information from the verbal text to fill in some of the gaps in the illustrations” (p. 99). This process might be likened to a conversation between words and images (Sipe, 1996).

If, as constructivists such as Rosenblatt and Iser suggest, the reader uses prior knowledge to construct meaning from what is read, in what form is this knowledge? Schema theory posits the existence of dynamic, abstract mental structures, or schemata, which serve to represent knowledge and experience in memory. While formed by an inductive bottom up process, they function in a top down fashion, setting up predictions or expectations of textual meaning. Schemata also operate in the case of picture interpretation and recall. The viewer constructs meaning based on a rich heritage of conventions and expectations and reconstructs it later during retelling. Socio-cultural theorists use the concept of schema to explain why different cultural groups approach written discourse in unique ways (Anderson, 2004).

Reader use of story structure or grammar is an example of how a schema sets up expectations, guiding understanding of story elements, such as character, setting, problem, events, and resolution as well as recall of narrative (Morrow, 1985). During the preschool years, adult story telling and read-alouds enable culturally mainstream children, at least, to arrive at school with some understanding of narrative story structure (Donovan & Smolkin, 2006). This framework is also directly taught beginning in the primary grades.

However, narrative theory differentiates between what is depicted in a story and how it is depicted or expressed. Narrative discourse can be divided into the structure of its transmission, such as setting, characters, and plot and the specific medium in which it is presented. According to Chatman (1975), the medium can be verbal, cinematic, balletic, musical [or] pantomimic (p. 296). In the case of picturebooks, while the essence of the story, or its literary elements and structure, remains the same, both visual and verbal media pass it along.

Picturebook theory also underlies this dissertation research. Central to this theory is that sources of meaning in a picturebook are complex, an interaction of words, images, and total book design. It is the relationship between them that constitutes the narrative (Nikolajeva & Scott, 2001). Words tell, usually conveying meaning in a linear, sequential fashion, and images show or represent, conveying meaning all at once, spatially and holistically. The two symbol systems can never fully repeat one another (Lewis, 2001b; Nodelman, 1988). In fact, their differences create a tension between them which the reader tries to resolve (Moebius, 1986).

At the same time, considering how visual art and language are expressed, they have much in common. While less precise than words, sentences, and paragraphs, illustration art exhibits some of the same characteristics. Keifer (1995) explains:

The author uses sounds and words, the phonetic and morphemic systems of language. The artist uses line, shape, color, value, and texture, the elements of art...Both language and art have syntactic and semantic properties, such as the organization of lines and colors and ...[the way in which] lines and colors evoke metaphors such as quiet, warm or angry. In addition, both author and artist have principles of organization that they call *composition*, [such as] balance, rhythm, and pattern...Finally, the word *style* is applied to the product created as a result of an author's or artist's choices of these elements and principles. (p. 117)

These similarities enable words and images to work together to tell a story. In terms of semiotic theory, “the picturebook as a potential sign conveys a narrative through verbal language (symbol) and illustration (icon). The respondent is engaged in a dual process ...reading the painting as well as the poem” (Golden & Gerber, 1990, p. 207).

Given that theorists view the picturebook as an art object, they focus heavily on its aesthetic mode of communication. For example, Nodelman (1988) emphasizes that artistic style, or how something is depicted rather than what is represented, is interpretation. Diverse artistic styles can make readers feel differently about the same information or story. Sipe and Ghiso (2005) describe how small visual details can contribute much to children’s understanding of characters. Facial expressions and subtle gestures suggest characters’ feelings and motivations. They provide a window into characters’ inner thoughts and emotions.

Moreover, picturebook theorists concentrate on how artistic conventions or codes and symbols convey meaning which varies according to culture. An understanding of artistic codes of position and size, perspective, frame, picture shape, line, and color is important for decoding pictures (Moebius, 1986). For example, jagged lines usually accompany troubled emotions and smooth, parallel ones suggest a settled, orderly world. Images also transmit meaning by referring to things outside themselves. They denote by literally representing what words tell but also exemplify or symbolize what cannot be pictured directly- ideas, moods, abstract notions and qualities (Doonan, 1993). However, visual elements, codes, and symbols only suggest meaning rather than defining it absolutely. Even more than text, illustration art is filled with indeterminacies.

Images must lean on words to relay the narrative. In his book, *Words about Pictures*, Nodelman (1988) emphasizes that “pictures by themselves offer too many nuances of meaning to tell a particular story. They can communicate much to us...but only if words focus them, tell us what it is about them that might be worth paying attention to” (p. 121). Words limit the pictures by directing our attention, but pictures can also limit the meaning of the words, and the reader must negotiate this process.

In their book, *The Grammar of Visual Design*, Kress and van Leeuwen (1996) contest this view and propose a structural approach to reading pictures. Drawing on a broad range of visual art in isolation or in textbooks and magazines, they challenge the idea that images are too indefinite, too open to a variety of meanings, so that language must come to their rescue. Instead, they assert that each symbol system has its own structure or grammar and despite limitations in how each communicates, each can stand alone. They state:

The hallmark of a narrative visual proposition is the presence of a vector. Vectors are formed by depicted elements that form an oblique line, often a strong diagonal line...The Actor is the participant from whom the vector departs...Different kinds of narrative process can be distinguished on the basis of the kind of vector and the number and kinds of participants involved. (pp. 57-61)

Kress and van Leeuwen’s narrative structural system defines a variety of circumstances or settings, participants and objects, action processes and means as well as symbols encountered in stories. Unfortunately, their grammar does not fully transfer to picture storybooks.

In contrast to single images, narrative picturebooks are composed of a series of them which must be viewed in appropriate sequence within the context of total book design. Single pictures can only describe how things appear at a particular moment in

time. This is because an artist must select a “moment of choice,” an instant that focuses an event, a theme, or a character (Bodmer, 1992, p. 73). However, viewed as a whole, a sequence of pictures can depict time passing, just as in film, and represent evolving stages of the narrative. Nodelman (1988) suggests that “good picturebooks concentrate our attention on a series of carefully perceived moments of stopped time” (p. 8).

Meaning is made cumulatively from one page or opening to the next.

Once children learn to read, they are taught to focus mainly on the text. Still, for the richest interpretations and, in many cases, total story understanding, picturebook readers must move back and forth between both symbol systems. Kress and van Leeuwen (1996) acknowledge that in a multimodal world, there is “incessant translation and transcoding between a range of semiotic modes” for the purposes of representation and communication (p. 37). In a narrative picturebook, the purpose of this oscillation is to create a coherent version of story.

In practice, do all readers strive for meaning? Graesser, Singer, and Trabasso (1994) suggest that it depends upon their goals. For example, readers might acknowledge that in relation to a particular book, their prior knowledge is too limited or the text reading level is beyond their own and simply abandon their search. But under most circumstances, readers are propelled to search for meaning as they move through text (Arizpe & Styles, 2003; Graesser et al., 1994).

Kintsch’s (2004) construction-integration model of text comprehension, a mental model theory, imposes an interesting framework on this process. He proposes that in a reading context, there are three levels of text representation and comprehension. Surface level memory, or how words, sentences, and paragraphs look and sound, fades quickly.

The semantic level of text representation, known as the textbase, consists of ideas explicitly stated by the words. It can be segmented into individual propositions, clauses, or kernels. A third level of textual representation, which resembles Rosenblatt's conception, is known as the situation model. It contains information provided by the text, integrated with a reader's prior knowledge, and depends upon his reading goals or purposes and interests. According to Kintsch, "situation models also contain mental images of maps, diagrams, and pictures, integrated with verbal information in ways not well understood" (p. 1274).

Kintsch's (2004) perspective is that unless a reader's memory of explicitly stated content, or the textbase, is integrated with his background knowledge, it is not considered learning but rather superficial understanding. In other words, true comprehension always goes beyond the text. A variety of inferences are generated for this purpose. Some bridge the gaps between explicit statements to create coherence at both local and global levels; others are associations that elaborate on the words. Both of these types are based on knowledge retrieval although other kinds of inferences are not. Moreover, not all inferences are generated during reading. Some are made during story recall. Representational models of story are dynamic and reflect the reader's current understanding. Ideally, as reading progresses, his or her knowledge is updated in light of new information (Graesser et al., 1994, Kintsch, 2004). More elaborate and coherent representations are associated with improved comprehension and recall (Gyselinck & Tardieu, 1999). For mental model theorists, the ultimate goal of a reading event is the integration of text and background knowledge into a coherent memory representation that includes a deep understanding of text, such as its global message or point (Graesser et al.,

1994). In Rosenblatt's (1985) terms, they emphasize the efferent stance more than the aesthetic.

Of course, there are constraints on text comprehension. Thurlow and Van den Broek (1997) enumerate several. One relates to gaps in the textbase (Iser, 1978) while another is the reader's need for story-relevant background knowledge to fill them in. Limited cognitive or attentional resources also prevent the reader from attending to every part of a narrative at once, for working memory has limited capacity. As well, readers have different standards for coherence. Poor comprehenders, as opposed to good ones, are less aware of the need for complete coherence or have fewer strategies to achieve it. Another constraint is the reader's ability to decode and recognize words in print fluently enough for explicit understanding and inference making (Laing & Kamhi, 2002). As far as picturebooks, comprehension is limited by the learner's ability to read images and integrate them with words (Levie, 1987). These are some of the factors which restrict the reader from constructing a well-integrated representation of story.

Building on mental model theory, Gyselink and Tardieu (1999) propose that text-relevant illustrations have a beneficial effect on the construction of a rich situation model of text. They suggest that the main advantage of representational pictures is that they make structural or spatial relations more transparent, allowing readers to build a mental model that can be manipulated afterward to draw elaborative inferences. This beneficial effect of pictures lasts even after a long delay. According to Gyselink and Tardieu, the kinds of pictures with the most value are those which clarify relationships in the text.

Paivio's (1986) dual coding theory explains how representations of pictures are connected to those of words. It has implications for story retention and recall. A basic

premise of the theory is that all mental representations retain some of the original qualities of external experiences from which they derive. Verbal and non-verbal symbolic subsystems develop which are separate and can be activated independently but are also interconnected. The former deals with sequential information, such as language, whereas the latter deals with spatial content, such as images. Their connection enables language to evoke visual images and images to evoke language. A main tenet of the theory is that “dually-coded items will be remembered better than unitarily coded items” (p. 142). This means that memory is enhanced when pictures overlap with text, and both codes are activated. Of the two systems, the non-verbal has a greater effect on memory. Dual coding theory was the impetus for much of the early experimental text-picture research. Researchers wanted to investigate whether pictures that repeated text produced greater recall than those which did not. As well, they questioned whether more picture information would be remembered in delayed than in immediate recall.

The above theories describe how readers use their background knowledge and socio-cultural experience, organized into schemata, during their transactions with words and images in a narrative picturebook for the purpose of making meaning. Knowledge of story structure facilitates this process. Visual art and book design work together with text to communicate possibilities of story meaning. Readers oscillate between them in varying degrees as they construct and update their personal versions of story. This cognitive process involves integrating and remembering explicit text and picture information and making inferences about them. The present study examined in more detail how the relationship between text and picture affects this process. It built on results of relevant investigations carried out in the past.

Research: Influences on Narrative Picturebook Meaning-Making

To date, there is a dearth of research directly comparing the impact of different word-image interactions in picturebooks on the independent reader. Consequently, other explorations will serve as a background for this study, such as experimental text-picture studies (1970's- 1990's), qualitative picture book studies (1980's-present), and other analyses of children constructing meaning from text, with and without images. Together, they reveal the many influences on reader recall and inference making about visual-verbal narratives. Rosenblatt's (1982, 1986, 1994) transactional theory provides one useful lens through which to view these investigations. However, her model must be expanded for this study. The next five sections include research pertaining to pictures, reader, text, time, context, and activity and their influences on meaning making.

Pictures

Reading pictures. Research findings support specific aspects of picturebook theory. Levie (1987) conducted a meta-analysis of many picture studies and reached the following conclusions to which other researchers made later additions. First, learning to read pictures is a complex, developmental process which involves learning to extract and simultaneously impose meaning on an image. To be useful to a viewer, he or she must perceive visual content, remember it, and think about it. Perception involves attending to and scanning an image, interpreting significant figures and cues, and perceiving global meaning (Levie, 1987). While the gist of an entire picture can be grasped quickly in 300 milliseconds, an in-depth understanding requires much more time. Information in a

picture must be patiently extracted (Evans, Watson & Willows, 1987; Weidenmann, 1989).

However, young children differ from adults in how they approach pictures. For example, they find many small details in illustrations that adults may overlook (Kiefer, 1993). Young children recognize familiar objects and figures, but decoding pictorial cues about relationships is far more difficult especially when pictorial information is complex, abstract, and represented in culture-bound conventions (Levie, 1987). Reading pictures is a complicated process influenced by image characteristics as well as a viewer's age, purpose, culture, expectations or schema, and expertise in decoding pictures (DeLoach, Peiroutsakos & Uttal, 2003; Levie, 1987). Fortunately, as children develop, many skills are acquired spontaneously during exposure to pictorial media.

A study by Evans and Saint-Aubin (2005) exhibits how young children learn how to attend selectively to picturebook images. The researchers monitored the eye movements of two small groups of four and five year olds during adult storybook read-alouds. They found that children fixated on illustrations rather than print during the reading and that when extra time was spent on a given page, children devoted this time to illustrations. Moreover, children fixated on details of pictures that were highlighted in the text. These findings reveal that the visual attention of preschool children who listen to a story is related to the accompanying text. Words read by an adult direct children's attention to specific parts of the story illustration.

Pictures and recall. In addition to selective attention, picture use in the context of reading also requires memory. A recurrent experimental finding is that memory is better for pictures than for words which is known as the pictorial superiority effect. Memory

for pictures also improves over time (Levie & Lentz, 1982). Several studies have addressed this effect in regard to recognition memory which differs somewhat from recall. Nelson, Reed and Walling's (1976) investigation was designed to link pictorial superiority in memory either to its sensory or meaning code. Two hundred and fifty-six college students participated in an experimental study involving paired-associate stimuli of simple pictures and their labels. Manipulations involved stimulus type, schematic similarity, conceptual similarity, and rate of presentation. The researchers concluded that the picture effect on recognition memory is related to the qualitative superiority of an image's sensory code.

Forty years later, Stenberg (2006) revisited the same issue. His study aimed to disentangle perceptual and conceptual contributions. In three experiments, each involving 19 or 20 Swedish college students, orienting tasks to lists of words and images were manipulated. Subjects were given neutral, semantic, or perceptual instructions and subsequently tested on text and picture recognition. Results indicated that "both perceptual and conceptual features contributed to the picture superiority effect, but the main contribution came from conceptual processing" (p. 836).

To test the validity of pictorial superiority effects on recall, Peeck (1974), a Dutch psychologist, designed an elegant study using a cartoon-like picturebook, *Rupert Bear in the Land of Dreams*. Recall was assessed at three different time periods- immediately, one day after reading, and one week later. Participants were 71 fourth graders randomly assigned to two groups, each reading either story with pictures or story alone. Following reading, a multiple choice test tapped retention of information presented by pictures alone, matched text and pictures, and mismatched text and pictures. Regardless of time

of testing, children who read the illustrated version tended to answer both matched and mismatched text-picture items on the basis of illustrations rather than text. In the case of mismatches, their answers were incorrect. His findings supported the pictorial superiority effect, at least for salient images. As preschoolers in the Evans and Saint Aubin study (2005), fourth graders in Peeck's study focused on pictures to facilitate text comprehension.

Peeck (1985) repeated his text-picture mismatch study using the same 19 page story with 37 illustrations. This time he used 53 fifth grade children and new instructions. Children were told that in case of a mismatch, they should respond to multiple choice questions on the basis of text rather than pictures. Once again, students gave responses based on pictures, even more often after a time delay. Peeck reasoned that children forget the initial inconsistencies between visual-verbal content and the origin of retained material. Instead, there is an increased tendency over time to respond with content provided by pictures.

Pictures: Distraction or facilitation. Given that very young children learn how to attend to pictures in text (Evans & Saint Aubin, 2005), might they not distract beginning readers from attending to print? This was a much debated issue during the 1960's and 70's when Samuels (1970) presented his focal attention hypothesis. It asserts that learning to read depends upon attention to orthographic stimuli, and illustrations are a distraction. In two investigations by Samuels (1970) and two by Willows (1978), pictures were shown to interfere with primary grade children's attempts to correctly read new words either presented in isolation or in the context of a story. This was particularly true for poor readers and when pictures were unrelated to the adjacent words. A study by

Denburg (1976-77) challenged Samuels' conclusions, but some educators still accept them.

Theorists on the other side of the argument support the psycholinguistic or contextual view of reading which holds that reading development involves more than learning to read orthographic symbols. Reading, in their view, is dependent upon learning to process information from its semantic, syntactic and orthographic dimensions. Consequently, illustrations are a source of contextual information that increase a reader's access to semantic content and reduce his reliance on printed symbols (Donald, 1983). While empirical research indicates that storybook pictures may interfere with learning to read in the initial stages, studies summarized below illuminate their positive effects on students who are reading to learn. Of course, picture facilitation for some older students does not negate the possibility of picture distraction for others (Willows, Borwick & Hayvren, 1981). Text-picture effects are related to reader characteristics.

Reader

Investigations and perspectives summarized in this section pertain to reader characteristics that affect meaning making from text and pictures. Studies are both experimental and qualitative and were implemented during different time periods. Certain reader characteristics can potentially strengthen or weaken the facilitative relationship between pictures and text or simply alter the type of reader response. These are reading ability, age, attitude, background knowledge, linguistic background, book preferences, and gender.

Reading ability and age. Children's reading ability and age affect the influence of pictures on text comprehension and recall. Gambrell and Jaywitz (1993) conducted an

ecologically valid text-picture study of fourth grade average readers. They wanted to determine the impact of instructions to induce mental imagery and attend to text-relevant illustrations on two outcome measures immediately after reading, free recall and text-explicit and implicit comprehension questions. The researchers adopted Schallert's (1980) stringent criteria for a text-relevant picture. Characteristics are that 1) the information in the illustration is central to the text, 2) illustrations are congruent with textual content, and 3) illustrations provide a spatial or schematic representation of the interrelations in the story.

One hundred and twenty randomly selected students were divided into one control and three experimental groups. Reading material was an authentic picture story, *The Case of the Blueberry Pies* (Sobol, 1976). It contained at least one text-relevant illustration per opening. One experimental group was given instructions to attend to illustrations as they read the story. A second group was told to induce mental imagery while a third was given instructions to do both of the above. The major finding was that for average readers, imagery and relevant illustrations each contributed independently to enhanced reading performance, and, in combination, these two strategies led to impressive increases in comprehension and recall.

In South Africa, Donald (1983) also studied how reading ability and age interact during picture story reading. In contrast to Gambrell and Jaywitz (1993), he analyzed the oral reading behaviors of 120 good and poor readers in grades one, three, and five. Children had reading ages of either seven or nine. Half read aloud a story with text-relevant pictures; the other half read text alone. Post-testing immediately after reading consisted of five comprehension questions. Results showed that illustrations aided in

literal recall of text for good readers at reading age seven. Poor readers at reading age nine and seven also utilized pictures but with less benefit. Good readers at reading age nine did not benefit from illustrations at all. Donald concluded that beneficial effects of concrete relevant illustrations for understanding and recalling illustrated narrative text are related to age and reading ability.

Reader attitude. Reader attitude is another factor which influences the meaning which children derive from picturebooks. In order for readers to effectively attend to, utilize, and enhance learning from visual images that accompany text, they must consider them valuable sources of information (Weidenmann, 1989). In her qualitative study, Gontarski (1994) investigated the views of fifth grade students and significant adults toward picturebooks using as a representative example, *Agatha's Feather Bed* (Deedy, 1991). She collected interview data from six fifth graders, their parents, teachers, a media specialist, and an administrator of a particular school. Student participants believed that "1) size takes precedence over the quality of a book, with bigger being better, and picturebooks are not big enough; 2) picturebooks represent early childhood; and 3) picturebooks can impede the reading process" (p. x). Gontarski combined interview data with the fact that participants eschewed visual clues during their reading of a focus picturebook. Moreover, interview data from significant adults revealed that they encouraged such a perspective. She concluded that this negative attitude was an impediment to development of the students' visual literacy. While illustrations have the potential to facilitate understanding and recall of text, they are undervalued by teachers and students who process them quickly, superficially, and inadequately (Peeck, 1993; Weidenmann, 1989).

Reader background knowledge. The question arises as to what happens when a viewer's prior knowledge conflicts with an author-illustrator's intended visual-verbal story meaning. Lipson (1982, 1984) was interested in how children's existing background knowledge influenced their reading comprehension. She studied 28 average and below average third graders. During the first session, their prior knowledge of eight topics was assessed by recognition items as well as free recall. One week later, children read eight expository passages similar to those in their primary grade textbooks. After each passage, children made forced choice decisions about the material and then freely recalled what they remembered. Struggling and average readers who knew nothing about a topic at the time of pre-testing did better on the post-test measure than those who had inaccurate background knowledge. Alvermann, Smith and Readance (1985) confirmed these findings when participants deliberately activated relevant background knowledge prior to reading text that contained incompatible information. Applied to picturebooks, inaccurate prior knowledge can interfere with reader interpretation of a story image, adjacent text, and the story itself (Peeck, 1987).

For example, in a pilot study (Diamond, 2006) conducted for this dissertation research, a fourth grade student read the narrative, *Fly Away Home* (Bunting, 1991). One picture shows airport police confronting two homeless and somewhat inebriated aging males singing loudly in a waiting room. Books are historical documents. Bunting did not anticipate recent airport security measures when she wrote this story. Given the reader's current understanding that police search for terrorists with weapons in airports, the student used prior knowledge to misinterpret the picture and create a larger gap in story coherence than already existed.

Reader linguistic background. The act of reading is particularly challenging for English language learners who approach English texts with diverse linguistic backgrounds. According to August, Francis, Hsu and Snow (2006), reading comprehension is a complex process reflecting the presence of many component capabilities. These include

decoding skills (reading words accurately and fluently, accessing lexical representations), knowledge in several domains (vocabulary, linguistic structure, and discourse as well as world knowledge), and cognitive processing capacities (memory for text, accessing relevant background knowledge, drawing justified inferences). (p. 222)

Failure in any one of these domains disrupts comprehension even if the reader is competent in the others. Both English language learners and children from low income families often exhibit difficulty with reading comprehension due to weaknesses in several of these areas. Yet there is no reason to assume they have difficulty with other elements, such as cognitive processing capacity, often considered pure comprehension ability. In their study of 192 Spanish-speaking English language learners in the third grade, Francis, Snow, August, Carlson, Miller and Iglesias (2006) used an experimental measure, the Diagnostic Assessment of Reading Comprehension (in press), which constrains the decoding and vocabulary demands of text while increasing the processing demands of understanding it. The measure has the potential to distinguish those children who are truly weak in comprehension from those exhibiting difficulty in other components of the reading process.

Picturebooks may enhance the literacy skills of English language learners and students from low income families. Tsarykova (2005) advocates their use with children who lack cultural knowledge and linguistic competency. She deems most valuable those

with text-picture relationships in which words and images are either largely redundant or complementary. Tsarykova recommends that teachers analyze the text-image relations in narratives chosen for students to ensure that pictures support words during every stage of the story.

Reader book preference. Reader preference for a particular picture book genre can affect engagement and the amount of time children are willing to devote to meaning construction from words and images. In general, as elementary school students develop, they move away from a preference for fairy tales and toward contemporary realistic stories (Huck et al., 2004). However, in their study described in a later section, Arizpe and Styles (2003) found that children in this age group were also intrigued by postmodern fantasy in which words and images exhibited incongruent contradictory relationships. They were approached as puzzles to be solved, or “invitations that children felt compelled to take up” (p. 80). Both contemporary realistic stories and postmodern fantasies are good choices for intermediate grade students.

Gender of reader. Gendered response style also affects how children approach picturebooks. In their qualitative study of 84 English children, ages 4-11, listening to and interpreting three picturebooks, Arizpe and Styles (2003) found that:

Boys were slightly less willing than girls to keep on looking and thinking, particularly when faced with difficulties in the visual text....However, boys took as long as girls-if not longer-when drawing...[Another] difference was in the girls' willingness to talk and in their generally being more articulate. Both girls and boys tended to make comments comparing situations in books to their personal experiences. However, the boys tended to be objective while the girls expressed their feelings more openly (p. 234).

In a pilot study (2006) for this dissertation, I found that response styles of a fourth grade boy and girl matched the above pattern. The young girl produced a greater number of

responses to three dissimilar picturebooks, reacted more emotionally, and made far more elaborative text-to-life associations.

Text

Textual characteristics impact the meaning that readers construct and remember about narratives. The majority of studies conducted through the late 1980's focused on the positive effect of illustrations on literal recall of concrete stories. Moore and Skinner (1985) broadened the scope of this research. They questioned whether cued attention to text-relevant images would also facilitate inference making about abstract stories. Participants were 56 Australian sixth graders with low-average reading ability. Half read illustrated passages whereas the controls read non-illustrated versions. Following silent reading of abstract and concrete narrative passages, students responded in writing to a series of open-ended questions designed to tap explicit recall and inference-making. The researchers concluded that relevant, informative pictures facilitated inferential and total comprehension of abstract passages.

Other studies have investigated level of text difficulty and reliance on pictures for story meaning. Level of text difficulty depends upon characteristics such as vocabulary, sentence length and structure, text organization, and familiarity of content to the reader (Roller, 1990). Readers who struggle with text tend to use pictures to enhance learning about story more so than skilled readers (Levie & Lentz, 1982; Willows, 1979). However, Peeck (1987) suggested that even when the reading level of text is easy for a student, illustrations can influence the way a text is understood, interpreted, and represented in memory.

Time

According to Rosenblatt (1982), the time, or moment, during which a reader transacts with text makes a difference in meaning-making. Two different interpretations of time are a reader's mood or state of mind at a particular moment and the number of times a story is revisited. Rereading is used frequently in the classroom to increase reading fluency and comprehension (Richek, Caldwell, Jennings & Lerner, 2002). This practice also creates opportunities for readers to develop new perspectives and understandings. Martinez and Roser (1985) reached this conclusion while studying the value of repeated oral readings during story time. They conducted case studies of four to five year olds both at home and at school. Adults audiotaped story time readings including questions and comments made by young listeners. The researchers found that child talk changed as stories became more familiar. With each reading, children's range of responses increased, for "they appeared to have more opportunity to clarify, to fill gaps and to make connections" (p. 786). Children's successive transactions with the same story enhanced their depth of processing.

Similarly, in their discussion of using complex picturebooks for older readers in intermediate grades or above, Bainbridge and Pantaleo (2001) recommended repeated reading. They explain that sophisticated interdependent storybooks for this audience often require readers to actively construct meaning from words and images. With this method, "each new reading evokes new interpretations and new stories" (p. 405). Revisiting a narrative picturebook enables readers of different ages to fill its gaps in novel ways and broaden their comprehension.

Context and Activity

Rosenblatt (1982) asserts that the social context of a reading event affects narrative meaning making. The reading activity does as well. Independent reading, which takes place when a child reads alone, represents one possible context and task. During this event, a child must simultaneously impose, extract, and integrate meaning from visual and verbal symbols and do so fluently enough for effective comprehension. Moreover, he or she must attend to this task for a significant length of time so as to update an evolving representation of story. In contrast, when a narrative is read to a child by a teacher and discussed in a group setting or context, word recognition is not an issue and more resources are available for comprehension of spoken words and pictures. Interpretation is also facilitated by the exchange of ideas surrounding a particular story. Golden and Gerber (1990) describe the many influences on meaning construction during an interactive teacher read-aloud during which children listen rather than read.

The reader/performer interprets the text through a variety of ... cues reflecting his or her own interpretation of the text for a particular audience. Thus, performed text integrates the reader's oral text, the author's written text, and the illustrator's visual text. From this view, the narrow conception of an author's text is extended into the sphere of the social context of the reading event... Another dimension of the event is the adult's mediation of the text expressed in the talk that may accompany the reading of the story, such as asking questions and/or commenting on certain aspects of a book. (p. 204)

In other words, children hear the reader's interpretation of a story which is further distilled during teacher questioning and class discussion. One advantage of this setting is that students are able to reach higher levels of abstraction and generalization than if they read the same book alone (Arizpe & Styles, 2003; Sipe, 2000). Teacher read-alouds and group discussions facilitate children's literal recall and inference making about stories.

Research: Listeners' Responses to Picturebooks in Group Settings

As early experimental text-picture studies became fewer in number, qualitative investigations using authentic picturebooks with young children gradually took their place. Consequently, most of the recent research has been of this nature. The transition occurred, according to Kiefer (1995), because literacy educators grew interested in research in natural settings, “research that valued the complexity of linguistic processes and described these processes rather than pinpointing cause and effect” (p. 16). They began to ask not only how picturebooks contributed to textual meaning, but also what other understandings were possible. Most qualitative research pertains to young listeners in group settings rather than children reading stories alone.

The largest body of qualitative research on young listeners' responses to picturebook read alouds has been implemented by Sipe. He focuses broadly on their transactions with all aspects of these art objects. For his doctoral research, Sipe (2000) observed, read to, and engaged in scaffolded “conversation” with 27 multicultural first and second graders in large group, small group, and one-to-one settings. Using audiotapes as well as interview and field notes collected over a seven month period, he described five conceptual categories of young children's conversational turns, or talk, about picture story books that took place before, during, and after reading.

In descending order of frequency, the analytical category deals with text as an opportunity to construct narrative meaning whereas the intertextual reflects children's connections between the read-aloud texts and others. A third category is the personal in which children connect the text to their personal lives. Responses in the transparent

category indicate that children have momentarily entered the story world, similar to that of Rosenblatt's aesthetic or lived-through experience. Finally, in the performative category, children use the text as a platform for their own creative imaginations. In this interactive group setting in which student reading of connected text was not required, young children reached a high level of literary understanding. Results of this study were confirmed and broadened during subsequent research with kindergarteners (Sipe & Bauer, 2001).

Sipe also examined children's responses to picturebooks from other perspectives. In one exploration (Sipe & Brightman, 2004), he posed the question: In a first grade classroom, in what ways do children use visual features of picture storybooks to construct meaning during teacher read-alouds of four versions of the same fairy tale, *The Three Little Pigs*? Stories were sequenced to progress from traditional to highly untraditional versions with different text-picture relationships. Participants were 13 first grade children involved in two interactive read-alouds per day. Data consisted of complete transcripts of teacher readings and group discussions. Using children's conversational turns as the unit of analysis, eight conceptual categories were created. Close to half of the turns were responses to visual features of the storybooks which children made before, during, and after readings. Pictures facilitated student conversations about setting/background; characters (appearance, action, and inner state); prediction/confirmation of plot; integration of picture book components; comparison of visual elements within and across stories; and a meta-fictive device, story boundaries. In this study, the eight conceptual categories reflected discussions about traditional story elements as well as more unique features of picturebooks.

Sipe's numerous investigations contribute much to the body of knowledge about listeners' meaning making from narrative picturebooks. His conceptual categories can be used to describe story understandings of independent readers as well. However, without the benefit of adult read-alouds, subtle teacher instruction, and interactive group conversation, older independent readers might not exhibit such a broad range of literary responses. Their recall and inference making about picturebooks might lack the same depth, breadth, and texture.

The current qualitative study fills a gap in the literature and explores responses of independent readers to narrative picture books. Mainly, it examines the impact of different text-picture relationships on the meaning making process. Several theoretical taxonomies of visual-verbal interactions will be presented in the next section. Such schemes delineate a range of ways in which print and pictures collaborate. Some of these relationships are utilized in the current study.

Taxonomies of Text-Picture Relationships

One of the defining aspects of the picturebook is the relationship between words and images. It is often a creative and involving process for readers as they shift back and forth between two symbol systems. The first of several taxonomies developed to describe these relationships was actually created for expository and narrative illustrated texts. It is the only one which has been validated empirically. The other theoretical schemes were created specifically for picturebooks.

Levin and others (Carney & Levin, 2002; Levin, 1981; Levin, Anglin & Carney, 1987) focused on how pictures in narrative and expository prose function to facilitate recall of text for those who are reading to learn. They classified five functions of

illustrations. These are decoration, representation, organization, interpretation, and transformation. Decorative pictures are used for the purpose of making a text more attractive but have little relevance to the narrative itself. Representational images, also called symmetrical, serve to reinforce the major narrative events and render them more concrete. They show approximately the same story that the words tell and overlap substantially with text. Those in the organizational category provide a framework for a text giving it greater coherence. Interpretational pictures clarify difficult to understand passages and abstract concepts thereby adding comprehensibility. Finally, those in the transformational category recode critical information to be learned.

Levin et al. (1987) performed a meta-analysis of 100 experimental studies, assessing student ability to recall information while reading or listening, to empirically validate these functions of pictures in prose. There were many problems associated with this meta-analysis. For example, all categories were not mutually exclusive and, in some studies, narratives were not separated from expository text. Nonetheless, Levin et al. concluded that decorative pictures had no prose learning value. Representational, organizational, and interpretational pictures all exhibited moderate text-recall facilitation. While transformational pictures were most effective, neither these nor the interpretational variety generally accompany narratives.

Shortly after Levin (1981) formulated his taxonomy of text-picture relationships, Schwarcz (1982), a picturebook theorist, published his own. He proposed two main categories, congruency and deviation, but then specified subtle differences within each type. Schwarcz pointed out that these designations were to be applied very loosely

because “the combination of the verbal with the visual never means that contents and meanings may be translated from one medium to the other” (p. 10).

Several years later, Golden (1990) expressed interest in examining the interplay between words and images. She created a taxonomy of five text-relevant relationships, each of which applies either to a single page or opening or to an entire storybook.

In her taxonomy:

- text and picture are symmetrical;
- text depends on picture for clarification;
- picture enhances or elaborates text;
- text carries primary narrative, picture is selective; and
- picture carries primary narrative, text is selective (pp.105-115).

While citing examples of picturebooks which conform to each type, there are no data to validate her scheme. Moreover, her categories are not mutually exclusive and fail to include incongruent relationships.

Theorists Nikolajeva and Scott (2001) built on this foundation and created a continuum of word-image relationships. Each of the following categories can be loosely applied to an entire picturebook:

- symmetrical picturebook (two mutually redundant narratives)
- complementary picturebook (words and pictures filling each other’s gaps)
- expanding or enhancing picturebook (visual narrative supports verbal narrative, verbal narrative depends of visual narrative)
- counterpointing picturebook (two mutually dependent narratives)
- sylleptic picturebook (two or more narratives independent of each other) (p. 12)

The authors cite examples of picturebooks in each group although categories are not necessarily watertight. As with any continuum, it is difficult to know where one category ends and the next begins. Symmetrical relationships are those to which dual coding theory refers. Words tell essentially the same story that pictures show leaving the

same gaps in the story or possibly no gaps at all. The next category consists of complementary relationships. Words and pictures are congruent but extend one another just enough to fill in each other's indeterminacies or gaps. The majority of picturebooks seem to fall into these two categories. Nikolajeva and Scott portray them as leaving little to the reader's imagination rendering him or her somewhat passive.

Moving along the continuum, some pictures or words exhibit an expanding, enhancing or elaborating relationship with the other. One goes beyond the other in a supportive fashion, expressing or exhibiting more information, and can elicit a variety of readings. As expansion increases, a new relationship is formed, that of counterpoint. An example is Sendak's approach in *Where the Wild Things Are* (1963). This term applies when words and images provide alternative information or perspectives about the narrative or even contradict each other in some ways while simultaneously depending upon one another for meaning. Readers must make inferences to resolve the tensions between text and picture and create a coherent story. In an interview with Lorraine (1977), author-illustrator Maurice Sendak discusses interpretive illustration. He explains:

To be an illustrator is to be a participant, someone who has something equally important to say as the writer of the book - occasionally something more important, but certainly never the writer's echo....You...must not ever be illustrating exactly what you've written. You must leave space in the text so the picture can do the work...It's a funny kind of juggling act. (p. 152)

Interpretive differs from narrative illustration which tells the same story as the words.

Nikolajeva and Scott (2001) declare that "picturebooks employing counterpoint are especially stimulating because they elicit many interpretations and involve the reader's imagination" (p. 24). They describe eight different types of counterpoint - in address, style, genre, juxtaposition, perspective, characterization, meta-fictional nature, and

space and time, and exemplify each with descriptions of actual children's books. Finally, a sylleptic relationship is actually counterpoint in juxtaposition. In this type of picture book, there are two or more parallel visual stories either supported or unsupported by words. Each reader bridges the gaps between these separate stories in his or her own way.

Lewis (2000a) simplifies Nikolajeva and Scott's rather complex scheme. First, he suggests that there are four main categories- symmetry, enhancement, counterpoint, and contradiction. Next, he clarifies the term counterpoint, suggesting that

When words and images counterpoint one another, they offer the reader alternative information, so that an effort must be made to forge a connection. Contradiction, the extreme form of counterpoint, pushes the words and pictures even further apart, so that they seem to be saying entirely different things. (p. 39)

As with symmetry, he views contradiction as somewhat illusory because two symbol systems do not actually communicate in the same way.

Lewis (2000a) applauds Nikolajeva and Scott's attempts to capture the variety of relationships in picturebooks but argues that it is not really possible. He reasons that "picturebooks do not take kindly to being corralled into six, eight, or even ten determinate categories...[The] picturebook is a particularly flexible form of text, and picturebooks in general are extraordinarily diverse" (p.44). Instead, he views each book as a miniature ecosystem in which "words come to life in the context, the environment, of the pictures and vice versa" (p. 48). Moreover, "this is only possible in the experience of reading" (p.55). While Lewis makes a good point, many picturebooks do fit loosely into a particular category, at least from a researcher's perspective. These were selected for the current study.

Research: Text-Picture Relationships

While there are several taxonomies of text-picture relationships, only Levin et al. (1987) is well researched though not for picturebooks. There is no real verification of schemes by Golden (1990) or Nikolajeva and Scott (2001). However, quantitative and qualitative researchers have investigated bits and pieces of each.

Both Nikolajeva and Scott (2001) and Golden (1990) include symmetrical word-image relationships in their taxonomies. Numerous experimental text-picture studies, implemented between the 1970's and early 1990's, focused on how these symmetrical or "representational" pictures affected reader recall of expository and narrative text. Subjects ranged from elementary school to college students, and materials were usually experimenter-made. Levie and Lentz (1982) reviewed 23 of these investigations. Several of their conclusions were that 1) illustrations facilitate learning the information in the written text that is depicted in those illustrations, 2) the presence of illustrations will neither help nor hinder learning of non-illustrated text, 3) representational pictures help more in delayed than in immediate recall, and 4) illustrations may be somewhat more helpful to struggling readers than to skilled ones.

More recently, Filippatou and Pumfrey (1996) conducted several meta-analyses of experimental text-picture investigations. Representational pictures in these studies were of two types: organizational and integrative, depicting relationships in a story or partial and non-integrative, depicting only part of the content. The latter were utilized more frequently in expository text. They found that picture effects on text comprehension depend on many factors, such as type of reader, image, text, learning activity, and outcome measure.

Qualitative researchers have studied other text-picture relationships, such as those in which text and pictures are incongruent and contradictory. However, qualitative picturebook research generally pertains to listening, rather than reading, comprehension. Arizpe and Styles (2003) conducted a small study within a larger one in the vicinity of London, England. Participants were 84 children, aged four to eleven, one-third of whom were English language learners. Case studies were carried out with 21 students in two schools. Children initially heard the storybooks during teacher read-alouds in their regular classrooms, following which they listened to stories a second time and participated in semi-structured interviews, picture drawing, and group discussions.

Arizpe and Styles describe how children constructed meaning from three postmodern picturebooks, each a complex contemporary fantasy. Two of them, Browne's *Zoo* (1992) and Kitamura's *Lily Takes a Walk* (1987), exhibit a contradictory, interdependent text-picture relationship. The researchers explain that "irony makes demands on the reader to use inference to detect contradictions between what is said in the written text and illustrated in the picture" (p. 79). Young children below age seven understood the stories less well than older ones. They had difficulty mediating between two alternative perspectives and viewing the pictured text as a whole.

All children perceived these books as puzzles to be solved, which they did, but not independently. Their initial responses to picturebooks were on the literal level, but repeated exposure led to deeper levels of analysis. The researchers observed that "when children are given the time they need to look at visual text and talk, listen, draw, reflect and think about them, the results can be outstanding" (p. 241). Arizpe and Styles

concluded that “analyzing visual text, and the relationship between word and image, makes demands on higher level reading skills and involves deep thinking” (p. 238).

In another study, Pantaleo (2005) questioned whether young children are sensitive to the word-image relationships in narrative picturebooks. Participants were a multicultural, mixed ability group of first graders in a Canadian classroom. Nineteen children listened to and discussed each of eight narratives in both small and large group scaffolded, interactive read-aloud sessions. Following the second reading of each story, children were asked to draw their visual and dictate their verbal responses to it. Pantaleo used Agosto’s (1999) division between symmetrical and interdependent picturebooks. Those in her study fell into the latter category which she subdivided into three text-picture relationships: pictures extending text, text extending pictures, and pictures extending text and text extending pictures. Children’s drawings and accompanying texts were analyzed quantitatively according to these relationships. Approximately 60% reflected interdependent storytelling as the texts and pictures communicated alternative information; the other 40% were symmetrical. Results indicated that “to a certain extent, the child’s images and verbal text emulated the interdependent storytelling nature of the picturebooks” (p. 11).

In a pilot study (Diamond, 2006) for this dissertation research, I chose to investigate independent readers in a one-to-one setting. One question I raised was whether the sources of content two readers used to recall three narrative picturebooks supported my analysis of their visual-verbal relationships. Prior to the study, each picture book was assigned to a particular text-picture category which was then matched with the sources of meaning children used. For the book in which a majority of pictures were

loosely symmetrical or overlapping with the text, most of the explicit content that children recalled immediately was drawn from information in the text-picture overlap. For the book in which text mainly carried the narrative, the greatest percentage of explicit information recalled immediately by one child only was based on text alone. Finally, when constructing meaning from the highly interdependent picture book in which contradictory text and pictures greatly depended upon the other for meaning, children recalled more picture information than for either of the other books. In other words, reader use of words and images conformed to the text-picture categories assigned to these three books.

Both experimental and qualitative researchers acknowledge that text-picture interactions affect children's narrative meaning making. The present qualitative study extended their work and directly compared independent readers' transactions with four picturebooks, each loosely exemplifying a different word-image relationship. In contrast to previous qualitative picturebook studies, participants were fourth grade students with a range of reading abilities who read and constructed meaning on their own. In contrast to most experimental studies, authentic narrative picture books were utilized. Moreover, the purpose of this study was to make connections between the predominant text-picture relationship exhibited in each of four books and the sources of meaning and cognitive processes readers used to shape their personal representations of each story.

Theory and research presented above reveal numerous factors which influence a reader's understanding of visual-verbal narratives. Extending Rosenblatt's (1982, 1986, 1994) paradigm set forth in her transactional theory of reading, they include 1) nature of

picture and total book design, 2) reader characteristics, 3) level of text difficulty and nature of the reading material, 4) time during which the story is read and revisited, 5) context of the reading event and 6) reading activity. However, the type of text-picture relationship exhibited in a picturebook also has an impact on meaning recalled and inferred from a narrative. Its significance was investigated in greater detail.

Need for Study

Mackey (2003) provides one rationale for this study. In talking about new forms of literacy, she states:

The job of young people is to make sense of the world as they find it. They do not necessarily perceive print as the primary source of cultural meaning, whatever the adults in their lives believe...Contemporary new readers have no other way of learning about reading except within the context of a background of vast textual experience across many media and through multiple forms of address...One consistent source of analysis of how polysemic texts are delivered is the study of picturebooks. (pp. 403-405)

As Nodelman (1988) and other picturebook theorists, Mackey perceives that pictures inflect the meaning of the words and the words direct particular attention to aspects of the pictures. Meaning arrives through both channels, and young interpreters need to learn, if they have not already, that polysemic understanding is richer as a consequence. Yet the interaction of word and image changes within and among texts, and there was a need to examine how children create meaning from these different relationships (Golden, 1990; Pressley & Miller, 1987). As I worked with twelve fourth grade students in an urban school, the following two questions framed my dissertation research.

1) What is the impact of different text-picture relationships on readers' explicit immediate and delayed recall and inference making about narrative picturebooks?

2) How do different text-picture relationships affect recall and inference making of readers with diverse reading abilities?

I analyzed the sources of narrative content readers utilized as well as their cognitive processes as they recalled four stories with four different text-picture relationships. Since retention of content is important, I also examined how the meaning students constructed immediately after reading compared with that recalled one week later.

CHAPTER 3

METHODOLOGY

Introduction

Narrative picturebooks are those in which words and images work together to tell a story. Each symbol system limits and enriches the other but the interplay between the two varies. While author and illustrator create this visual-verbal interaction, the reader interprets it and constructs an evolving representation of story. The purpose of this qualitative study was to explore the impact of different text-picture relationships on readers' explicit recall and inference making about four narrative picturebooks, both immediately and one week later. However, according to the transactional perspective, literary meaning making is affected by other factors, such as characteristics of the reader, words, and images as well as the particular time and circumstances of a reading event. In order to investigate text-picture effects per se, the method was designed to control most of the other factors which influence readers' story understanding.

Pilot Study

A small pilot study (2006) in a suburban private school enabled me to try out procedures in preparation for this investigation. I observed two reading disabled children, who had just completed the fourth grade, read and retell picturebook narratives once a week for four weeks. Each child met with me individually for approximately 40 minutes. Since their weakness was in word recognition rather than comprehension, and the picturebooks were on their instructional reading level, it was possible to observe meaningful responses to different text-picture relationships in visual-verbal narratives. Procedures and methods of data collection differed somewhat from those outlined in the

present study, and the analysis was less broad. My interest was in the sources of their literal recall, whether picture alone, text alone, or their overlap, and the presence of their inferences in relation to each story.

During the initial meeting, each child became acquainted with the procedures in a one-to-one setting. They read aloud from a picturebook to practice making meaning from words and images. I praised their responses, especially to pictures, since many children are not in the habit of reacting to visual art. Data were collected during the next three sessions. At each meeting, these very cooperative children responded to every page of a book after reading it aloud to create meaning from words and images. In addition, they recalled the entire story after reading, immediately and one week later. When time permitted, they answered eight explicit and implicit comprehension questions about story content and several metacognitive ones about their thought processes. The method elicited much talk about the stories which provided enough data to answer the research questions.

Three picturebooks were used in that study. *Fly Away Home* (Bunting, 1991) is a work of realistic fiction in which text generally carries the narrative. *Zoo* (Browne, 1992) is a postmodern interdependent picturebook in which text is accompanied by two sets of contradictory pictures. Children must navigate between alternative visual-verbal meanings to create a coherent version of story. Finally, *The Man Who Walked Between the Towers* (Gerstein, 2003) is a true story. The text-picture relationship is a loosely symmetrical one in which words and images overlap much of the time. Since the children exhibited word recognition difficulties, their oral reading of the three stories was

slow and hesitant. To facilitate word recognition, I either segmented the unknown word or pronounced the whole word for them.

During each session, the children recalled explicit story information and made inferences about it. They did not approach books haphazardly but rather strove to construct a version of story that made sense in light of words and images as well as their experience and knowledge. I audio-taped each session, took field notes in school, and wrote memos immediately upon returning home. Observations, reflections, and analyses of transcribed tapes facilitated many insights into their transactions with narrative picturebooks. This descriptive detail provided answers to more questions than I had originally posed.

In the pilot study, I was mainly interested in the sources of information children used to construct meaning from each book, specifically from text alone, picture alone, or an overlap of the two, and the presence of their inferences. After segmenting the data into propositions, I coded them according to these features. Counts and percentages revealed a definite connection between the text-picture profile of each book and the sources of information children used to retell it. However, the percentage of inferences children made as they retold each story was more indicative of their individual response styles than a particular book's characteristics (Smith, 1991). Several other conclusions of the pilot are woven into the background of study. While results of this investigation were based on only two participants, they provided the rationale for proceeding with a broader study. As well, I used my understandings about the pilot's procedural strengths and weaknesses as a guide in designing the current investigation.

Goals of the Study

As in the pilot, one focus of the present study was on the sources of content children use as they shape and retell their personal versions of story. Another focus was on their explicit recall and inference-making. In this broader study, I also examined and categorized their various inferences. These analyses illuminated the influence of specific word-image relationships on reader meaning making about narrative picturebooks. Moreover, analyses showed whether readers with different levels of reading ability exhibited the same or different patterns of response to text and pictures.

Setting

The study took place in an urban elementary school in a large city. Its student population was primarily African American though heterogeneous in terms of socioeconomic class. The principal was dedicated to raising the level of student achievement in her school. She strove to provide children with as many special services as possible both for purposes of enrichment and remediation.

Participants

Grade Level

The twelve participants were a mix of boys and girls in the fourth grade. There were three reasons for selecting this age group. First, children need to be able to read the words in picturebooks; otherwise, word recognition interferes with comprehension and masks the influence of a text-picture relationship (Pressley & Miller, 1987). Secondly, reading pictures is a developmental skill (Kiefer, 1995; Levie, 1987). Students need some experience with this process. Thirdly, Gontarski (1994) found that older children,

such as those in the fifth grade, have negative attitudes towards books with pictures and consider them babyish. This attitude interferes with their engagement.

Student Selection

Prior to beginning the research, letters were sent home to parents or guardians requesting permission to use their children in the study. Student assent was also requested. Twelve participants with a range of reading levels were selected. Reading ability was based on two sources of information. The Gates-MacGinitie Reading Test, routinely administered at the school, is a paper and pencil group test measuring performance in vocabulary knowledge and reading comprehension. In addition, teacher verification of the Gates-MacGinitie scores, in terms of actual classroom reading performance, was requested.

Reading Ability

Participants were sought with a broad range of reading abilities because this characteristic has been shown to influence the way children use and benefit from pictures in text (Donald, 1983; Filippatou & Pumfrey, 1996). Since the study began at mid-year, expected reading level for each participant was 4.5. Selected participants were divided into three groups: grade level and above (GLA) or 4.5-5.5, moderately below grade level (MGL) or 3.5-4.1, and significantly below grade level (SGL) or 2.5-3.2.

Grouping

The twelve participants were drawn from two fourth grade classrooms. They were divided into two groups of six, loosely matched in terms of reading ability. Members of the first group met with me on an individual basis in a separate room once a week for six weeks to read and respond to four picturebooks. After completion of their

six sessions, the second group of participants met with me for the same period of time and followed the same procedures. In order to control for a possible rehearsal effect and the impact of students' comfort with me, I counterbalanced the sequence of picturebook presentation for the second group. Make-up sessions took place as soon as possible after a missed meeting. This research project extended over a period of three and one-half months, from late February to early June, 2007.

Twelve Participants: Vignettes

Each of the twelve participants in this study exhibited a different pattern of strengths and weaknesses in reading. As well, each displayed a unique response style. Individual readers fell at different places along a continuum relating to the average length of story retellings, use of text and picture, use of explicit versus implicit content, and tendency to adopt a more efferent, as opposed to aesthetic, stance during retelling (Rosenblatt, 1986, 1994). These differences were noticeable across all participants. Neither gender nor reading ability was necessarily predictive of the other characteristics. In the following vignettes, I will briefly describe each child in the study.

Ashley (GLA) was mature, reserved, and bright, and instructional a year or more above grade level. She approached the picturebook sessions in a balanced fashion, following instructions to utilize visual and verbal content as well as go beyond the story in her retellings. She reflected a long time before responding to each narrative and each question but ultimately recalled a great deal about the stories and made excellent, high quality inferences. The following quote highlights Ashley's style of examining all of the evidence before drawing a conclusion. During our trip back to her classroom, she equivocated about *The Man Who Walked Between the Towers*. She said, "The story is

not necessarily true because pictures were used rather than photographs. But since a date was given when the event took place, it might be a clue that this is a true story.”

Peter (GLA) was in the gifted program primarily because of his strength in math. He was instructional about a year above grade level. At our first session, he announced that he does not need or use pictures to understand the material, that he is a “word man.” However, he did follow my directions and utilized a limited quantity of visual content. Peter’s stance in relation to each book was largely explicit and efferent as if reading for information to carry away. His retellings were short but included the most important content, especially dialogue that moved the story forward. Brevity and detachment were characteristics of his personal response style rather than an indication of limited knowledge. As the sessions progressed, Peter became somewhat less detached and connected more of his life experiences with the stories.

Ina (GLA) was a mature and loquacious girl. She often talked about her life. Prior to and during each session, she regaled me with stories about her illness du jour and family experiences. Ina was instructional on grade level primarily because of a weakness in word recognition. Otherwise, her comprehension was very strong as was her ability to reflect about a narrative and express her thoughts. She was particularly sensitive to the personalities of fictional characters and enjoyed comparing the artistic styles of each book illustrator. Ina used all sources of content to construct story meaning, delivered very lengthy story retellings, and made more high quality global inferences than any other student.

Amy (GLA) was a gentle and respectful girl. She read approximately on grade level. Her manner was somewhat guarded during the early sessions, and she showed less

exuberance than some of the other children. Rather than giving long sequential story retellings, she often just summarized what she had read. Amy carefully followed my directions to attend to words and images in order to construct story meaning. As the sessions progressed, she felt more comfortable openly reflecting about the narratives, especially about the value of words and images in different picture books.

Kia (MGL) was a vivacious girl with a fine sense of humor. Her reading level was high third grade, though her word recognition skills were strong. Kia exhibited a limited attention span and lost focus if sessions became too lengthy. Nonetheless, she displayed a good memory for explicit story content represented by words and pictures. One of her strengths was a talent for dramatizing story retellings rather than just reporting information. She was able to go beyond the narrative and insert charming dialogue between characters.

Laverne (MGL) was talkative and friendly. Her reading level was late third-early fourth grade, mainly due to a weakness in word recognition. However, her comprehension of explicit content was strong, and she constructed very lengthy retellings of each story. In justifying her long recalls, Laverne explained that it takes her awhile to “download information.” She also exhibited a great need to talk about her life and incorporate her experiences and emotions into long associations with each book. As well, Laverne spent much time focusing on the pictures. This bolstered her talent for separating and remembering the sources of content in a picturebook. She would often recall the story in this manner - “the words told this, the picture showed that,” weaving back and forth in the process of retelling. No other child took this approach as frequently.

Dawn (MGL) was sociable, outgoing, and enthusiastic. She was instructional in reading on a late third grade level. Word recognition appeared to be her main area of weakness. She read each book slowly and hesitantly, needing help with difficult words, and often used finger pointing to keep her place. However, her explicit retellings were satisfactory and included many details. Dawn was not a passive reader. She responded to story content as she read and questioned parts that puzzled her. As Dawn progressed through a story, she frequently swept her fingers across each picture as if to absorb it. She made it clear that illustrations, even if sparse, helped her understand the narratives. Moreover, she commented on the reciprocal relationship between words and images in which each gave meaning to and clarified the other. Dawn clearly enjoyed reading and viewing the four stories and easily associated with them.

Tyrone (MGL) was bright, artistic, and conscientious. As Peter in the GLA group, he displayed little emotion during our sessions together. His instructional level in reading was early fourth grade, more because of a weakness in word recognition than comprehension. He exhibited an excellent memory for each story and recalled many explicit details in appropriate sequence. However, his limited life experiences and background knowledge interfered with understanding. For example, he had never been to a circus or seen a tightrope walker. Tyrone displayed a special interest in the value of picturebook illustrations and defined some of the difficulties involved in constructing meaning from words and images.

Chris (SGL) was a genuinely warm and respectful boy but the least skilled reader in the study. Nonetheless, his overall performance varied from book to book. Chris's reading level was mid-to-late second grade, and weaknesses in word recognition,

comprehension, and background knowledge were responsible. These limitations prevented him from interpreting visual images as well as words. His classroom teacher noted that he needed a lot of time to accomplish tasks and planned to have him evaluated for a learning disability. Chris enjoyed the personal attention in reading that this study afforded. When I asked him each week what the story reminded him of, he typically responded, “When my aunt used to read books to me but she died.”

Allan (SGL) was an animated, friendly boy with an interesting mix of strengths and weaknesses. He was instructional in reading on an early third grade level. Allan’s reading behavior was characterized by distractibility, limited skill in word recognition, and erratic comprehension. While his recalls included many explicit details, they were not always related in the appropriate sequence. As well, he tended to misinterpret story episodes. Yet Allan reflected frequently about narrative content, sensitively evaluated characters’ behavior, and occasionally made broad inferences. In terms of reader’s stance, his fell closer to the aesthetic end of Rosenblatt’s (1986, 1994) continuum in that he became very involved with characters and their actions and frequently dramatized narrative sequences.

Colin (SGL) was less mature than the other students and appeared to have some kind of learning problem. Despite much extra help from a variety of tutoring programs, his reading level was beginning third grade. Comprehension was more of a problem than word recognition. Colin’s classroom teacher characterized him as disengaged and inattentive. He claimed that he tired easily when he had to read and projected a sense of ennui or boredom. Still, Colin made good use of visual content as he recalled each story

and included a sufficient quantity of explicit details in his retellings. However, he rarely went beyond a story's literal level except to associate with it.

Serena (SGL) was a friendly girl with a low voice and tape recorder memory. While undiagnosed, I believe she was a dyslexic child who was achieving in reading below her potential. Her tested reading level was early third grade. Serena worked hard during our sessions together. Once I supplied the difficult words and she had visual images to lean on, she achieved far above others in her SGL group. She was very concrete and literal in her thinking and produced lengthy, explicit retellings. However, of all the members in her group, she made the most global inferences. Serena brought a greater fund of background knowledge to the task of reading picturebooks than some of the other students. She had been to the zoo more than once as well as watched tightrope walkers at the circus. During our last session together, Serena commented that she loved all four picturebooks that she read during the sessions.

Materials

Criteria for Book Selection

I selected four narrative picturebooks for this study that satisfied four criteria. First, each contains approximately 600-700 words and exhibits a third or fourth grade reading level. Second, each houses at least one prominent illustration per book opening that goes beyond a decorative function and helps to tell the story. Third, since engagement with text is related to the amount of effort children are willing to exert (Arizpe & Styles, 2003), reading preferences were considered. According to Huck and Kiefer (2004), intermediate grade students enjoy contemporary narratives; therefore, all books fall into this category. Fourth, each exhibits a different text-picture profile. In the

actual study, the sequence of story presentation was counterbalanced for one-half of the participants to prevent bias.

Establishing Reading Level

There are many readability formulas for establishing a text's reading level. They are generally based on word difficulty and sentence length. Since formulas neglect the content of a book, they are of limited value. In the case of picturebooks, establishing reading level is even more complex because the sources of story information are greater in number. These books are often far more sophisticated than vocabulary and sentence length suggest. Nonetheless, the Fry Readability Graph (2002) was utilized to establish approximate word recognition levels for the four storybooks. I determined that one book was grade level three, and three were grade level four. During the actual study, if participants struggled with a word as they read each narrative aloud, I immediately supplied the unknown word. This technique minimized the interference of weak word recognition skills with story comprehension.

Establishing Text-Picture Relationships

My goal was to select and research several text-picture relationships from existing taxonomies and use narrative picturebooks to represent them. Drawing primarily from taxonomies of Levin (1981), Levin et al. (1987), Golden (1990) and Nikolajeva and Scott (2001) as well as discussion by Nodelman (1988) and Lewis (2001a), I selected four loose categories. This is by no means a complete taxonomy. They are

Congruent categories:

Pictures and text are loosely symmetrical.

Pictures and text are complementary, filling each other's gaps.

Text carries the narrative; pictures are selective.

Incongruent category:

Pictures and text have a contradictory relationship, but are mutually dependent.

Schallert (1980) proposed that a text-picture relationship should be based on visual-verbal content that is central to the story. In some cases, this might include small symbolic details. Consequently, I analyzed each book to ascertain that it matched one of the categories above. (See Appendix A for guide to establishing this relationship.) In order to designate the text-picture relationship on each opening, it was necessary to establish three kinds of narrative content – text alone, text-picture overlap, and picture alone. A kernel sentence served as the unit of textual analysis. It is defined as “a simple... sentence containing no modifiers or connectives (Random House Unabridged Dictionary, 1997). For example, there are actually two kernels in the simple sentence, “A skinny boy walked home.” These are “A boy walked home” and “The boy is skinny.”

At the outset, the words of each story were reproduced and parsed into kernel sentences. Kernels were matched with visual content appearing in pictures. Clearly, this was a subjective analysis. However, matched visual-verbal information was bolded and designated as the text-picture overlap (TP). All verbal information not included in the overlap was considered text-alone (T). Then, drawing from theories about a picture's visual features (Doonan, 1993; Moebius, 1986; Nodelman, 1988; Sipe, 1996; Sipe &

Ghiso, 2005), structural features (Kress & van Leeuwen, 1996) and story elements (Leslie & Caldwell, 2001; Morrow, 1985), I put together a guide for loosely describing picture information that is not represented in the text. (See Appendix A.) As Arnheim (1974), I flinched at the idea of “inventorying shapes, hunting for [diagonal] lines, and...gradients in some vain attempt to do justice to the whole work of art by getting the details right” (Gannon, 1984, p. 16). Nevertheless, this visual content was summarized and designated as picture alone (P).

The four books had to exhibit a fairly consistent set of text-picture relationships. This could only be determined by analyzing the interplay of words and images on each page. All three kinds of content were compared. For example, if within the confines of two symbol systems, text and picture content loosely overlap, meaning that one generally tells what the other shows, the relationship is loosely symmetrical. If pictures extend text and text extends pictures just enough to fill in the others' gaps (Iser, 1978), the relationship is deemed complementary. In the case that selective pictures overlap with or enhance just a small segment of the verbal content, then text carries the narrative. Finally, an ironic or contradictory text-picture relationship exists when text and picture offer alternative meanings. According to Lewis (2001), the “impression of contradiction ...is a product of the pictures and words coming together and acting upon one another rather than... the two modes offering transparently contradictory meanings” (p. 40). The author-illustrator deliberately creates a tension between words and image, and the reader-viewer must forge a connection between the two.

Each book's overall profile was based on its predominant or consistent text-image relationship. To establish inter-rater reliability about this profile, another reading

specialist and I followed the same guidelines and independently analyzed 20% of the pictures and their collaboration with text. Next, we worked together until we reached at least 90% agreement. Once inter-rater reliability was achieved, I completed the analysis on my own.

Book Selection

The four contemporary narratives selected for this study exhibit the diverse text-picture profiles described above. *The Man Who Walked between the Towers* (Gerstein, 2003) displays a loosely symmetrical text-picture relationship. It is a retelling of Philippe Petit's tightrope walk between the twin towers of the World Trade Center. While a narrative, it offers much descriptive information about that event. Words and images loosely show and tell much of the same story, even contributing to the same indeterminacies. Moreover, several images on each opening sequence and map out the action. Nikolajeva and Scott (2001) suggest that this type of text-picture relationship encourages passive reading rather than inferential thinking. However, an advantage of loosely symmetrical relationships is that they "facilitate students' learning of prose content" (Levin, Anglin & Carney, 1987, p. 73).

Jo Jo's Flying Side Kick (Pinkney, 1995) displays a complementary text-picture relationship in which words and images loosely repeat one another as well as fill in each other's gaps. It is the tale of a young girl who performs a perfect flying side kick and breaks a board in two. Nikolajeva and Scott (2001) criticize this type of relationship for leaving little to the reader's imagination. However, according to Levin, Anglin and Carney (1987), it also facilitates students' explicit recall of text.

Wings (Myers, 2000) contains a word-image relationship in which text carries the narrative, and pictures are selective. Each picture is a simple collage composed of various materials that have been cut and assembled into a unified illustration. While words and images central to the story are generally congruent, settings often appear vague and irrelevant. Moreover, the images convey only a limited amount of information to the reader. Readers must rely heavily on the words to fully understand the narrative and its message. *Wings* is the story of Ikarus Jackson, an African American boy who can fly.

Zoo (Browne, 1992) exhibits a contradictory text-picture relationship. It is a complex, interdependent picture book with words and two images on each opening. There is often an impression of contradiction between or among their meanings that creates a problem for the reader. He or she must integrate alternative visual and verbal content during the reading event and make inferences in order to establish coherence. *Zoo* is an account of a family visit to the zoo and of man's relationship with animals. Arizpe and Styles (2003) used this postmodern picture book in their qualitative study of "children reading pictures." The researchers documented how the ironic text-picture relationship created an intellectually challenging literary experience for children in their study.

Teachers and researchers group picture books by characteristics such as genre, theme, and artistic style. They analyze reader response to these features. Yet the way in which words and images relate to each other is another dimension that affects meaning children make from narratives. It is worthy of examination. In the next two sections, I will describe the temporal process of my text-picture research.

Method of Data Collection

Sources of Data

The time frame for this study was late February to early June, 2007. I collected data in a particular sequence from multiple sources during twelve weekly sessions, six for each group of participants. In order to control for a possible rehearsal effect and the impact of students' comfort with me, I counterbalanced the sequence of picturebook presentation for the second group. Sources of data were each participant's: 1) story retellings, both immediately and one week later, 2) responses to comprehension questions, and 3) interviews, or responses to questions about the value of words and images in each book. 4) Observational field notes written throughout each session and 5) memos composed at home supplemented this information. Each meeting with individual students was audio-taped and transcribed. While the first was a practice session during which two students meet with me at a time, its format was generally consistent with the other five. Initially, I explained the purpose of my research and engaged students in the project.

Stages of Data Collection

Oral reading of picturebooks. Once student selection and a practice session took place, each participant met with me once a week in a quiet room. Sessions began with some conversation followed by a review of directions for oral reading and retelling. Fine points of the directions were important. Peeck (1993) studied how different kinds of instructions influenced reader attention to illustrations. Simply telling children to look at images was of little value. More useful were instructions that told students what to observe. For example, he directed them to look for information in the picture that is also

in the text. While the present study was not designed as an intervention, it seemed reasonable to give students specific directions prior to reading. Doonan (1993) states that research shows that the reader scans the picture first, then reads the text, then returns to the picture to reinterpret in light of the words (p. 57). While she does not specify what research draws this conclusion, it is a technique that was incorporated into the directions. (These are detailed in Appendix B.)

After directions cueing students to attend to words and images during reading, they read the complete story aloud, with look backs if desired. Then I directed them to turn the pages of the entire book, taking a picture walk to remember what they had read, viewed, and thought. Weidenmann (1989) insists that to be of value in a text, visual content needs to be patiently considered. However, my emphasis was on the integration of words and images since picture books are designed for this purpose. (See Appendix B.) In fact, to foster students' repeated attention to both visual and verbal symbols, several of the researchers cited in the background of study (Arizpe & Styles, 2003; Pantaleo, 2005; Walsh, 2003) read and re-read the same story aloud to children. Time did not permit a rereading. A sequential perusal of the pictures enabled students to revisit the story, integrate visual-verbal information, and clarify or solidify their initial representation of the narrative. It is an activity I often use in the classroom.

Oral free recall. Since text-picture relationships vary within picture books, I might have asked participants to respond to each page, then to the book as a whole. This method was used during the pilot study; however, there were several drawbacks. Time was the greatest problem since I was limited to one class period per book per child. Secondly, given the cumulative nature of a picture book, each opening or page does not

exist in isolation. Readers carry over what they have read from one page to the next, so they are not simply responding to the specific text-picture relationship in front of them (Pressley & Miller, 1987). Also, during the pilot, I found that after the entire book had been completed, distinctions between one page and the next often blurred. The children updated their representations of story as they moved through it. Consequently, following the picture walk, I requested an oral retelling of the entire story from beginning to end as well as ideas and feelings about it. (See Appendix B for directions.)

Prompts. Once each child completed his or her retelling of the narrative, I prompted for more information. My original plan was to deliver a non-specific prompt asking each student to “add anything else you remember as well as your ideas and feelings about the story.” Goldman and Wiley (2004) assert that the oral free recall encourages participants to report both explicit and implicit content, hence a situation model of text, which gives a broad view of their construction of meaning. It also requires students to organize the information given. However, oral free recall does not give the reader any support during this process. Bridge and Tierney (1981) suggest that prompts for more information are particularly helpful for poor readers, who are less able than good readers to retrieve from memory information stored during reading.

Unfortunately, students had no idea what I meant by “add anything else you remember as well as your ideas and feelings about the story.” They needed a specific prompt that contained concrete examples. Consequently, I also requested that they tell me “what you liked or disliked about the book, anything the book reminds you of, and your view of the author’s message.” (See Appendix B.) This more specific prompt established new goals for the readers beyond a mere story retelling (Graesser et al., 1994;

Kintsch, 2004). In response, they gave me exactly what I had requested: evaluations, associations, and their perceptions of the author's message. During my analysis, I separated content expressed spontaneously before the prompt and that produced after it but ultimately added both together. I also made note of the ways in which students communicated that they had nothing more to retell or infer. They generally said, "That's all" or "that's it."

Comprehension questions. Following the immediate story recall and prompt, I asked the children ten comprehension questions to supplement the story information already shared. (See Appendix C.) Questions structure a task for the child, help him or her retrieve specific content, and tap additional unshared information. Inquiries required explicit information about text and picture content, inferences about both, and insight, if possible, into the value of words and images for story comprehension and recall. All three types of questions were important though mental model theorists perceive answers to text-implicit, as opposed to text-explicit ones, better measures of learning (Gyselink & Tardieu, 1999; Kintsch, 2004). Moreover, researchers Omanson, Warren and Trabasso (1978) found that for young readers, inference probes were even better measures of comprehension than free recall measures.

Questions were based on QARs, or Question-Answer Relationships (Raphael, 1986; Raphael & Au, 2005) and Cortese's (2003) application of QARs to picture information. They asked readers to recall four categories of information. Sources of answers are 1) right there on a page, 2) think and search, 3) the author and you, and 4) on your own. Responses to questions in the first category require explicit content. The second and third types require inferential thinking. Metacognitive questions about

the process of constructing and recalling meaning from text and picture fit into the fourth category. Use of Raphael's and Cortese's models in combination facilitated inquiries about text and pictures separately and together.

Delayed free recall. In addition to requesting an immediate story recall after reading, I also asked children one week later for a delayed retelling. Consequently, each session began with an oral free recall of the story read the previous week. Directions were the same as for the immediate recall except that I omitted the prompt for more information. There was too little time in one session to include it. After students examined the book cover, I requested that they retell the story from beginning to end and share their ideas and feelings about it. (See Appendix B.) Levie and Lentz (1982) and Peeck (1989) state that pictures help recall of illustrated content more in delayed than in the immediate recall.

Observational field notes. I supplemented all audiotaped data with field notes taken at the research site and reflective, analytic memos written at home. These supplied details that audiotapes omitted and other behaviors pertinent to the research questions. Since the picturebook reading event is a transaction involving a reader, text, and sequence of pictures (Sipe, 1998a), rich descriptions of the readers facilitate comparisons among them and generally enhance the research data. Major areas of interest included: non-verbal characteristics, such as body language and tone of voice; verbal strengths and weaknesses exhibited before, during and after the reading event, including their expressive and receptive oral language skills; and reading behaviors during the event, such as overt attitude towards reading activity, attention and concentration, skill in sight

word recognition and decoding, fluency, activation of relevant background knowledge, comprehension ability, and reader response style.

In my notebook, I also tracked details of my own behavior during the study's reading events. This helped me to consistently and uniformly follow the same procedures for each student throughout the study. For example, if I supplied a difficult word in response to one student's request, I did so for all. Conditions were the same as I collected data from the twelve students.

Method of Data Analysis

Deductive and Inductive

My method of analysis in this study was deductive, in that data were analyzed according to an existing framework, as well as inductive, in that categories and patterns were discovered in the data (Patton, 2002). The goal was to reduce parsed student retellings into meaningful categories, group categories into response patterns, and associate patterns with specific text-picture relationships. Cognitive processes and sources of content children used to retell stories were coded and grouped according to existing frameworks defined below.

Grounded theory method (Charmaz, 2004; Strauss & Corbin, 1998) was employed to code and categorize their inferences. This recursive and iterative set of strategies is used to build theory that is "derived from data, systematically gathered and analyzed through the research process" (Strauss & Corbin, 1998, p. 12). Three of the method's distinguishing characteristics are "1) simultaneous involvement in data collection and analysis phases of research, 2) creation of analytic codes and categories developed from the data, not from preconceived hypotheses, and 3) the development of

middle-range theories to explain behavior and processes” (Charmaz, 2004, p. 497). In accord with this method, the initial phase of my data analysis coincided with transcription of student recalls. The full analysis took place in stages and continued after work with my students had ended.

Stages of Data Analysis

Cognitive process. At the end of each school day and on weekends, I transcribed audiotapes from each session into Microsoft Word and parsed them into kernels, as defined earlier in this chapter. Next, I coded 20% of the transcriptions according to the cognitive process children used to recall each kernel. This was Level One of my analysis. Kernels were designated either explicit (E) or implicit (I). To differentiate between the two processes, the semantic form of the kernel was important rather than its surface features or exact wording (Kintsch, 2004). I used “loose criteria” to code explicit content rather than “stringent criteria.” According to Goldman and Wiley (2004), looser criteria are more commonly used so that “credit for inclusion of a proposition [or kernel] is based on comparability of meaning....”(p. 78) In other words, if a kernel sentence contained somewhat different words but had the same meaning as that in the picture book, I considered it explicit content. The remainder of the kernels were deemed implicit ones. Repetitions were noted and counted only once.

Source of content. During the summer, after work with the children had ended, I analyzed 20% of my transcriptions on Level Two. While Level One indicated the cognitive process a child utilized to recall each kernel, Level Two represented the source of content recalled. For the explicit kernels of content, three possible sources were text alone (T), text-picture overlap (TP) or picture alone (P). Five possible sources of implicit

kernels were text alone (T), text-picture overlap (TP), and picture alone (P) as well as background knowledge (BK) and unknown to me (U). Designating source of inference was a subjective activity.

Category of inference. During the next stage, I reread the same transcripts (20%) and coded student inferences inductively and descriptively in a kernel-by-kernel fashion. This initial strategy is also called “line-by-line” (Charmaz, 2004) or “open coding” (Strauss & Corbin, 1998). In order to describe each inference, I posed the question: What is its purpose? For example, one purpose of inference making in this study was to elaborate on a small quantity of story content residing on one or two book openings.

After completing “open coding,” I reread my descriptive codes on 20% of the transcripts and began grouping children’s inferences into conceptual categories. Charmaz (2004) terms this strategy “focused coding” (p. 509). It allows the researcher to try out certain concepts for capturing the data. My reading of professional articles about kinds of inferences guided some of this work. “Focused coding” continued in a recursive and repetitive fashion until I had created a tentative taxonomy of inferences. Some of my initial codes were elevated to dominant categories; others were classified under new headings. I then highlighted all inferences in red marker to differentiate them from explicit content. These groupings constituted Level Three of my coding system. According to Charmaz (2004), “coding is the process of defining what the data is all about....It is the pivotal link between collecting data and developing an emergent theory to explain [it]” (p. 506).

The following is a coded transcription of Kia’s highly explicit immediate retelling of *JoJo’s Flying Side Kick*. It displays all three levels of my coding system which are

cognitive process (E or I), source of content, and category of inference, in this case the local kind. The designation of E for explicit content was eventually dropped so that only source of content is apparent.

TP TP TP
 JoJo's at TKD class./ She's like practicing for the yellow belt./ Her teacher was Master
 I (T) local I (T) local T
 Kim, / He was telling her important things/ like focusing on karate /and trying to get a
 TP
 yellow belt./ That's when her granddaddy picked her up. / And he was like teaching her
 TP T
 how to throw her hands up/ and JoJo said, "What's karate have to do with dancing? / He
 P P P TP
 just went in the house/ and she was by the tree with PJ/ and Ted./ Ted was the dog,/ and
 TP P T
 PJ is her friend/. She stayed away from the tree,/ the bandit. / PJ was talking about how
 T T T
 she can't do it /and she can't break it. / So he was telling her how to scream from her
 T TP TP
 lungs/ like KIAH!/ Then he left with Ted/ and she was alone /and the tree bandit said,
 I (P) local TP T T
 HHHHH./ So she ran/ and slammed the door. /Her mom said, "Hi Honey". /And she
 I (T) local P T
 said "Hi."/And her mom was sitting down / and telling her she has to visualize. /And she
 T T T
 said, What is visualize?/ It's a technique./And mom said, "Visualize is something you
 TP T TP
 think in your mind." / So at night,/ her mom said, "Goodnight honey" /and she went to
 T I (TP) local T
 sleep/ and she was thinking about that bandit/ and was really scared /and she couldn't
 I (BK) local T I (TP) local
 sleep/ and she probably had nightmares./ The next day, it was time for her important day/
 TP TP T
 to go to the Tae Kwon Do/ so she went there /and butterflies was fluttering in her
 I (TP) local I (TP) local P
 stomach,/ she was really nervous, / she was anxious. / So Master Kim put the board out./
 I(T) local P
 She thought, "Are you ready to do this?"/ So she put her foot out like this /and she was
 P I (T) local TP
 very high /and wondering how she can do this/ and thinking about the bandit /and the
 T T
 board went "Crack."/ At the end, her granddaddy said, "I thought you didn't care about
 that tree."

Inter-rater reliability. After transcribing and coding 20% of the transcriptions on Levels One and Two, I taught my system to another reading specialist. She coded the data independently after which we worked together until we reached 90% agreement. As the analysis continued and I established categories of inference, or Level Three, I called on her again. She independently coded and categorized 20 % of the transcripts, following which we worked together to reach 90% agreement. Next, utilizing what I had learned from interactions with my other rater, I analyzed on my own the explicit and implicit content in the remaining transcripts (80%). Throughout this process, I also created and employed a series of rules in order to consistently analyze transcriptions emanating from four very different books. For example, I only counted certain kernels once, such as the words “two,” “little” and “one day,” since children used these repeatedly. While the recursive and reiterative process was time consuming, my codes and categories reflected the data I had gathered. In other words, my system was grounded in the data.

Taxonomy of inferences. (See Table 1.) Given that inference making in response to narratives has been the subject of previous qualitative and experimental research, I was alert to potential groupings already established. These had to be adapted to text and picture rather than words alone. Two categories that appear in the literature are local and global inferences (Graesser et al., 1994; McKoon & Ratcliff, 1992). Local inferences are drawn from a small quantity of content. Since there are so few sentences on picturebook pages, I defined “small quantity” as one or two book openings. All students made these spontaneously as they retold each story in order to establish local coherence.

Table 1. Taxonomy of Inferences

A. Local Inferences

- 1) elaborate on a sentence kernel, answering the question “when, where, what, or how.”
- 2) explain the cause of a sentence kernel, answering the question “why.”

B. Global Inferences

- 1) implied main idea, theme or author’s message.
- 2) characters’ main actions, goals, emotions or primary personality traits.
- 3) connections between actions or events in the story that are not adjacent.

C. Associations Beyond Story

- 1) story-to-personal experience.
- 2) story-to-book or film.
- 3) story- to-real world event.
- 4) story-to-fantasy world.
- 5) story-to-advice.

D. Evaluations

- 1) story events.
- 2) characters’ goals or actions.

E. Misinterpretations

fostered by:

- 1) major visual-verbal gaps in the story.
 - 2) conventions of pictures in picturebooks.
 - 3) unnamed but pictured narrators.
-

Global inferences connect a larger chunk of visual and/or verbal content from different parts of text. I defined “large quantity” as three or more openings. They establish coherence at a broad level. Since my prompt for more information asked for the author’s message, students occasionally made this kind of global inference. As Table 1 indicates, their broad inferences were of different types.

Two additional categories of inference in my taxonomy evolved from the specific story prompt I asked the children. They are evaluations of story and characters as well as associations beyond the story. Moreover, after several rereadings of the transcripts, memos, and field notes, I created a fifth category of inference that I labeled misinterpretations. These faulty inferences were fostered by text and picture in conjunction with students’ limited background knowledge. All of the categories of inference are thoroughly grounded in the data. (See Table 1.)

Patterns of response. After coding and categorizing all of the transcripts, I displayed my data on two Microsoft Excel tables, one for explicit content and the other for implicit. The program enabled me to easily calculate for each book absolute numbers and percentages for explicit kernels by whole group, reading group, time of retelling, and source of content and for implicit kernels by whole group, reading group, time of retelling, source of content, and category of inference. The figures revealed patterns of recall from several different perspectives, that of individual participants, three ability groups, and the whole group of participants for each book separately during three time periods and four books combined.

Answering the research questions. Data analysis required matching the text-picture relationship in each narrative with the patterns of immediate, prompted, and

delayed recall for the whole group and each ability group. To answer my first research question, I was interested in whole group patterns. Did the sources of explicit and implicit content the whole group of students recalled and categories of inference the whole group constructed mesh with each text-picture relationship? If not, I questioned why not. To answer my second research question, I repeated the process with three ability groups. This time I contrasted each ability group's explicit and implicit patterns of recall with each other and each text-picture relationship. Finally, a cross-book analysis summarized similarities within the whole group and differences between ability groups in student retellings of four narratives with different text-picture relationships.

Triangulation of the data. In order to triangulate the data across different sources, I compared each student's responses to QARs with those exhibited by immediate, prompted, and delayed recalls. This indicated whether the text-picture effect generalized beyond a single outcome measure. Rather than analyzing each student's responses to individual questions, I simply tabulated a range of scores for each group.

Since two of the weekly QAR questions dealt with the value of words and images for comprehension and recall of a specific book, I tabulated these responses as well. Additionally, during the final one-to-one session, I asked each student to briefly review all four books and compare the relative value of words and images in each for story comprehension and recall. Their candid responses, which revealed preferences for specific text-picture relationships, added another dimension to the data.

Student vignettes. As the analysis phase of research drew to a close, I had gathered enough information about my twelve participants to write a vignette about each.

Twelve colorful sketches included in this chapter add depth and texture to research about children making meaning from narrative picture books with four different text-picture relationships. The vignettes describe their strengths and weaknesses in reading-viewing and response styles.

Role of the Researcher

In this investigation, I acted as a participant-observer of independent readers (Bogdan & Biklen, 2003). The purpose was to observe and record how fourth graders constructed meaning from narratives with different text-picture relationships. In order to obtain a broader understanding of this process, I assumed the role of interviewer for a small segment of each session.

As a researcher, I tried to be a relatively unobtrusive observer of the participants in my study. Of course, all aspects of a researcher's identity are brought to bear on his or her interactions (Encisco, 1994; Sipe & Ghiso, 2004). Many of my personal characteristics might have affected students and their responses to this project, such as my race, gender, age, dress, dialect, vocabulary, to name a few. Some participants might have regarded me as an outsider, or at best, a new teacher. However, I believe I established a good rapport with all of the students. Not only did they carefully follow my directions from the start, but, in the final session, they appeared to express their honest opinions about each book.

These same outsider characteristics might have stood between some of their meanings and my understandings. Charmaz (2004) views the grounded theory method as an "interaction between the observer and the observed" (p. 501). It is an interpretative activity partially shaped by research questions and the mode of inquiry. While I might

have created a different taxonomy of inferences, the one I constructed was grounded in the data. My method of coding explicit content was also a subjective one. Since I utilized a “loose” standard (Goldman & Wiley, 2004) for coding explicit content in each retelling, another researcher with a more “stringent” one might reach somewhat different conclusions. However, according to Goldman and Wiley, a loose standard is more commonly used.

Limitations of Study

The procedure selected for this study was one of several considered with an understanding that the reading activity influences outcomes. Time constraints and concerns about burdening students with too many recalls and questions led to modifications of the procedure used for the pilot study. In spite of these changes, research findings did not differ from those of the previous investigation.

Still, there are some limitations regarding generalizability. The small number of participants from a particular school and community does not represent same-aged children throughout the city or beyond it. Since visual and visual-verbal literacy are developmental, findings will not necessarily generalize to other age groups. The small selection of books used and questions asked about them are also limitations. In sum, results from this study are more or less limited to these and similar participants, materials, and procedures. However, since results showed that specific kinds of text-picture relationships influenced children’s recall and inference making in a consistent fashion, future investigations should be carried out on a larger scale.

CHAPTER 4

RESULTS OF STUDY

Introduction

In today's world, communication through a variety of media is commonplace, and children need practice in constructing meaning from words and images. Picturebooks provide that opportunity for elementary and even secondary school students, and more needs to be learned about how children interpret them. According to Rosenblatt (1938), meaning does not reside solely in words [and images] but is the product of a transaction between reader, text, [and sequence of pictures] at a particular time within a particular context. Each element in Rosenblatt's equation contains many variables. One pertaining to picturebooks per se is the relationship between words and images.

From the 1970's-1990's, experimental researchers studied the effects on readers of text-relevant illustrations that are symmetrical with the words. Two reviews of these studies concluded that illustrations facilitate learning the information in the written text that is depicted in those illustrations (Filippatou & Pumfrey, 1996; Levie & Lentz, 1982). Early researchers did not broaden their field of study to include the effects of other text-picture relationships. As well, they were not generally concerned with inference making. This was unfortunate because constructivists propose that unless a reader's memory of explicitly stated content is integrated with his or her background knowledge, it is not considered learning. True understanding goes beyond the text, and inferences are generated for this purpose (Kintsch, 2004).

More recently, a small number of qualitative researchers began to study and write about several different text-picture relationships and their impact on elementary school

children during the picturebook read-aloud. Teachers and researchers scaffolded this experience for young children, helping them construct meaning from both traditional and non-traditional picturebooks. However, to date, there is a lack of qualitative text-picture research with independent readers, children who read on their own with little teacher input. It is the purpose of the present study to meet this need by examining the impact of four different text-picture relationships on the independent reader's explicit recall and inference making about a narrative.

Twelve African American fourth graders attending a large urban elementary school participated in this three and one-half month study. The research project began at mid-year, indicating an expected student reading level of 4.5. Participants were placed in three groups: those whose reading levels ranged from 4.5-5.5, or grade level and above (GLA); those whose reading levels ranged from 3.5-4.1, or moderately below grade level (MGL); and those whose levels ranged from 2.5-3.2, or significantly below level (SGL). While currently in a regular classroom, one SGL student was to be evaluated for a possible learning disability.

After an orientation session, each participant met with me individually on five occasions to read aloud and respond to four picturebooks, each exhibiting a different text-picture relationship. To compensate for the reading skill gap among groups so that the focus was on text-picture use, I supplied all of the difficult words students encountered as seamlessly as possible. Participants retold the stories immediately after reading and then responded to a prompt for more information. Following this, they answered eight comprehension questions about the story and two questions about use of text and picture. One week later, they retold the story again prior to reading a new book. At the last

session, participants retold the final story and then answered several questions comparing and contrasting the value of words and images in each of the four books.

During and after the study was completed, I transcribed the tape-recorded sessions, segmented each transcription into kernels, and analyzed each kernel on two or three levels. First, I decided if it contained explicit or implicit content, then I designated the source of the content, whether from text, picture, an overlap of the two, or background knowledge, and finally, in a recursive and reiterative fashion, I created a taxonomy of inferences. The two methods used in this study were quite different. A kernel method required deconstructing children's thoughts into small segments prior to labeling and counting. Grounded theory method necessitated reconstruction of children's thoughts from kernels to determine the kinds and categories of inferences they made (Charmaz, 2004; Strauss & Corbin, 1998). The purpose of using these separate methods was to answer two research questions. They are

1) What is the impact of different text-picture relationships on readers' explicit immediate and delayed recall and inference-making about narrative picture books?

2) How do different types of text-picture relationships affect recall and inference-making of readers with diverse reading abilities?

In the following sections, I examine one book at a time to interpret the results of my study.

The Man Who Walked Between the Towers

The Man Who Walked Between the Towers (Gerstein, 2003) is the true story of Philippe Petit's tightrope walk between the twin towers of the World Trade Center on August 7, 1974. Gerstein's book was selected to represent a loosely symmetrical text-

picture relationship in which information provided by words and images loosely overlap with one another. Pictures show and words tell the same story within the limits of each symbol system. Moreover, Gerstein often uses a series of pictures on a single opening, a technique that serves to sequence and map out the action. The reading level of this book, determined by text rather than picture, is early fourth grade. It is on an independent reading level for GLA readers, instructional for the MGL, and frustration for SGL.

In 1974, as the World Trade Center was nearing completion, a young French aerialist and street performer, Philippe Petit, engaged some friends to help him shoot and then secure a rope between the twin towers. Early the next morning, Petit stepped out onto the rope and spent an hour walking, dancing, and performing tricks a quarter of a mile high above New York City. Police arrested him and brought him to court. The judge sentenced Petit to perform in the park for children. As the story ends, Gerstein briefly connects in words and images the fall of the towers on September 11, 2001 and Petit's tightrope walk between them.

Question I: Patterns of Similarity - Whole Group

Explicit and implicit content. A kernel analysis revealed several similarities in children's response patterns for the group as a whole to *The Man Who Walked Between the Towers*. These were based on an examination of 1271 kernels, 944 explicit and 327 implicit, included in the 24 transcriptions related to this book. The first similarity was that most recalls were quite long, more so immediately after reading (519 kernels) than after a one week delay (416 kernels). (See Table 2.)

Secondly, the ratio of explicit-implicit kernels in a retelling was related to student goals. Beginning with the first session, children perceived the directions given

Table 2. Explicit and Implicit Kernels: *The Man Who Walked Between the Towers*

Total	Immediate		Prompt		Delay	
	Explicit	Implicit	Explicit	Implicit	Explicit	Implicit
1271	519 (80%)	132 (20%)	9 (13%)	59 (87%)	416 (75%)	136 (25%)

immediately after reading, “to tell me about the story from beginning to end,” as a cue to deliver a mainly explicit story retelling. Consequently, the ratio of explicit-implicit content was 80%:20%. (See Table 2.) However, a more specific prompt after the immediate retelling established a new goal for the students, and their responses generally went beyond the text. The prompt suggested that they tell me “what you liked or disliked about the book, anything the book reminds you of and your view of the author’s message.” Explicit content dropped to 13% while implicit increased to 87%.

Constructivists propose that a reader creates a meaning representation that addresses his or her reading goals (Graesser, Singer & Trabasso, 1994; Kintsch, 2004). For example, Amy (GLA) used the prompt to add implicit information by evaluating the story and Philippe’s actions. She asserted, “I think it was a good story because the guy didn’t care if he was going to jail or not. He decided to climb the cord no matter what.” In the delayed recall one week later, children generally returned to the pattern of offering mainly explicit sequentially delivered story content. It accounted for 75% of their retellings, somewhat less than that of the previous week. Children remembered less of the text base and fleshed out their retellings with inferences.

Explicit recall. A third similarity across the whole group was the main source of explicit content that each child recalled. (See Table 3.) It is compatible with the book’s

predominant text-picture relationship in which words tell what images show, each within the limits of its symbol system. This type of book is often characterized as a twice told tale. In accord with this relationship, the main source of recalled explicit content was based on the visual-verbal overlap (TP), both immediately (61%) and after a delay (61%). According to Levie (1987), “the gist of an entire picture can usually be understood [in] as little as 300 milliseconds” (p. 5). Consequently, as children read the words, it took little effort to perceive the content in Gerstein’s overlapping images. For example, in this excerpt from Peter’s (GLA) retelling, all kernels are from the text-picture overlap (TP):

When the police came (TP)...[Philippe] just lay down (TP), and kneel on the wire (TP) and made a salute pose (TP). After that, when he got down (TP), the police arrested him (TP) and took him to the judge (TP) and to court (TP).

The remainder of children’s retellings contained content from text alone (27% I, 26% D) and picture alone (12 % I, 13 % D). Since Gerstein’s images show so much of what his words tell, there is little pictorial information included in the picture alone category. Consequently, children remembered relatively little. The text-picture relationship in *The Man Who Walked Between the Towers* had an impact on the source of explicit content children recalled after independent reading.

Inferences. Participants in this study made a variety of inferences, 132 immediately after reading, 59 following the prompt, and 136 after a delay. (See Table 2) A fourth similarity among group members was the source of their inferences. Considering the very obvious word-image relationship in *The Man Who Walked Between the Towers*, it is not surprising that most recalled implicit content also originated from overlapping text-picture content. For the group as a whole, students based their implicit

responses on the following five sources: 17% text alone (T), 57% text-picture overlap (TP), 10% picture alone (P), 12% background knowledge, mainly from associations (BK) and 4% unknown to me (U). As for explicit content children recalled, the text-picture relationship in *The Man Who Walked Between the Towers* had an impact on their implicit recall of story.

Using the grounded theory method (Charmaz, 2004; Strauss & Corbin, 1998), I grouped children's inferences into five main categories plus miscellaneous faulty inferences (6%). (See Table 4.) They were: local inferences (44%), global inferences (7%), misinterpretations fostered by words and images (19.5%), evaluations of story and characters (7%), and associations beyond the story (16.5%). In the first three categories of inference, the reader seemed to be positioned within the story; in the fourth, he was looking in from the outside; and in the final category, he was looking outward, associating the story with a world beyond it. Categories of inference will be described in the next section.

Children's voices: Book ratings. At our final one-to-one session, I asked children several questions about the four narratives. I was interested in their view of each book, its illustrations and text-picture relationship. Arizpe and Styles (2003) successfully used this interview technique in their study of children's responses to two postmodern picturebooks. Participants in the study were delighted to answer my questions and give their opinions. *The Man Who Walked Between the Towers* was clearly one of their favorites. The subject matter of this story unquestionably appealed to them. However, the quality of the illustrations and their relationship with the words definitely influenced

their preferences. As the following responses exhibit, participants appreciated the detailed images that overlapped with the words:

- Ashley: [The pictures were helpful] because they have a lot of details in the pictures that go along with the words.
- Amy: Pictures and words were both the same and helped me to retell the story.
- Kia: I read the words and I was looking at the pictures. Pictures told the same things the words told but sometimes they showed other things.
- Colin: The pictures were big and helped me see the story and figure out what was going on.
- Ina: Whatever the words tell, the pictures show the same exact story. The pictures show a lot of information, not just half.

Of all the responses, Laverne's was most descriptive:

The words helped me a lot and the pictures, both together...I like when pictures and words both come together to tell the story. [She continued] that if you sit back, go through the book slowly, you kind of feel you are right there with the man, like you are doing it yourself. I like the way the illustrator did the pictures; they made me feel right there.

Students assumed that both text and picture in *The Man Who Walked Between the Towers* told the same story and felt this relationship facilitated story understanding, memory, and enjoyment. They all expressed the same point of view about this award-winning book, creating a final pattern of group similarity.

Summary. In answer to the first research question for the group as a whole, the text-picture relationship in *The Man Who Walked Between the Towers* clearly had an impact on both the explicit and implicit content that children recalled. Text-picture overlap was the most common source of explicit content that children remembered, both immediately and after a delay. When immediate, prompted, and delayed responses were combined, text-picture overlap was also the most common source of inference making. Text alone was the next most frequent source of content followed by picture alone.

Finally, while many children did not fully grasp the concept of text-picture relationship, those who did viewed the relationship in this book as a desirable one, both in terms of learning and enjoyment of story.

Question II: Patterns of Difference – Between Reading Groups

Explicit recall. Table 3 shows the sources of children's explicit recalls by group and time. SGL readers produced slightly shorter explicit recalls, SGL (160 Immediate, 123 Delayed), than did the other two groups, GLA (174 I, 144 D) and MGL (185 I, 149 D), especially after a delay. Their comprehension or memory of explicit content was not as strong. However, considering the relatively small differences in length and the very large gap in reading ability levels, it is probable that the preponderance of overlapping words and images had a facilitating effect.

It is also evident that text-picture overlap was the main source of explicit content for each reading ability group regardless of timing. However, GLA and MGL readers exhibited a greater reliance on text alone (T) than SGL readers, both immediately and after a delay. (See Table 3.) Their skill in word recognition and memory for textual content was stronger. In contrast, the percentage of explicit picture alone content (P) increased as reading level decreased. Less able readers relied more on (P) than stronger readers as they recalled explicit content (15% I, 20% D). This finding is supported by two reviews of experimental research (Filippatou & Pumfrey, 1996; Levie & Lentz, 1982). SGL readers also recalled a greater percentage of explicit picture alone (P) content after a one week delay and somewhat less text (T). In his two studies of 4th and 5th graders, Peeck (1974, 1985) found that memory for picture information in illustrated text improves over time.

Table 3. Sources of Explicit Content by Group and Time: *The Man Who Walked*

Immediate			Delay		
GLA N = 174	T = 28% TP = 65% P = 7%	(49) (112) (13)	GLA N = 144	T = 27% TP = 64% P = 9%	(39) (92) (13)
MGL N = 185	T = 30% TP = 57% P = 13%	(55) (106) (24)	MGL N = 149	T = 29% TP = 60% P = 11%	(44) (89) (16)
SGL N = 160	T = 23% TP = 62% P = 15%	(36) (99) (25)	SGL N = 123	T = 20% TP = 60% P = 20%	(24) (74) (25)
Total N = 519	T = 27% TP = 61% P = 12%	(141) (318) (60)	Total N = 416	T = 26% TP = 61% P = 13%	(107) (254) (55)

Inferences. Children in all reading groups made a total of 327 inferences. There were five possible sources, T, TP and P as well as background knowledge (BK) and unknown (U). As for explicit content, text-picture overlap (TP) was the most frequent source of inference for each group, GLA (72%), MGL (57%) and SGL (44%). Furthermore, as with explicit content, the proportion of picture alone content (P) as a source of inference increased as reading level decreased. GLA readers used it the least (3%), MGL the next (11%) and SGL used it the most (16%). When a group uses the most picture alone content, it indicates that the children are focusing heavily on visual

details. In response to this picturebook, less able readers were more dependent upon images for inference making than stronger readers.

Table 4 shows the category and proportion of inferences children made in each reading group. Children's inferences fell into five main categories plus miscellaneous faulty inferences. Local inferences (44%) emanated from content exhibited on one or two adjacent book openings. They were the most common across all three reading groups. According to McKoon and Ratcliff (1992), readers make these automatically to establish local story coherence. Their purpose is to fill in small visual and/or verbal gaps by elaboration or explanation. Most implicit kernels were drawn from the text-picture overlap (49%) followed by text-alone (24%). However, a sizeable percentage derived from picture alone (18%). For example, Kia (MGL) noticed the short diagonal lines that Gerstein had drawn in the sky. She inferred, "That's when I think it was raining." This effect may or may not have been Gerstein's intent. However, these small inferences served to enrich and personalize each reader's representation of the narrative.

Misinterpretations (19.5%) were faulty inferences children made that were fostered by text and picture in conjunction with their limited background knowledge. They were the next prominent category of inference, and all but one participant expressed them. In contrast to local inferences, they reflected children's lack of story understanding. The majority were also drawn from text-picture overlap (73%). In this beautiful, informative narrative, text and picture unintentionally conspired to mislead inexperienced reader-viewers on two different occasions.

One cause of misinterpretation was students' limited background knowledge about the conventions of pictures, particularly the meaning of an illustration's "frame"

Table 4. Categories of Inference by Reading Group: *The Man Who Walked*

Group	Local	Global	Assns	Eval	Misinter.	Faulty Inf.
GLA N = 97	41% (40)	20% (19)	9% (9)	7% (7)	22% (21)	1% (1)
MGL N = 124	44% (55)	0	25% (31)	10% (12)	19% (24)	2% (2)
SGL N = 106	47% (50)	3% (3)	13% (14)	3% (3)	18% (19)	16% (17)
Total N = 327	44% (145)	7% (22)	16.5% (54)	7% (22)	19.5% (64)	6% (20)

(Moebius, 1986; Sipe, 1996; Whalen-Levitt, 1986). For example, early in the book, Philippe imagines going to the police and owners of the towers asking for permission to tightrope walk between the two tall buildings. Both the words and two large pictures describe his imaginings. However, the images are surrounded by wavy lines, the “frame” Gerstein uses to communicate Philippe’s thoughts as opposed to his actions. Some children appeared to be unfamiliar with this picturebook language. Eight of the twelve drawn from all three reading groups assumed this scenario actually occurred, that Philippe literally went to the owners. Possibly, the vivid images coupled with the words increased the chances of misinterpretation, evidence that pictures can detract from comprehension as well as enhance it.

Another cause of misinterpretation was a large word-image gap or “indeterminacy” (Iser, 1978) in the story. It confused seven of the twelve readers. As his

story of Philippe Petit draws to a close, Gerstein abruptly moves ahead in time almost thirty years at the turn of a single page and without transition. In the next to the last opening, he tells, “Now the towers are gone,” and shows the skyline of New York devoid of the World Trade Center. Then in the final opening, he redraws the towers transparently and visually and verbally connects two different concepts, our memory of two towers and Philippe’s tightrope walk. There are no explanations. In the following quote, Dawn talked about her confusion:

All the pictures helped me except for one. When it said the buildings were gone, I didn’t get it. I didn’t understand why the towers were gone. All I knew was that the towers wasn’t there. The pictures didn’t help me understand ...whether they took them down or they fell down.

Does Gerstein assume that all post- 9-11 elementary school students who read his book are familiar with the twin tower tragedy? Or does he simply want to avoid the issue?

Only Ina spontaneously associated the story with a historic occurrence. She commented after reading that the towers described in this story reminded her of the World Trade Center.

Picturebook time is one source of confusion. How much time can possibly elapse between two book openings? After Amy (GLA) completed her description of Philippe’s arrest by New York City police in 1974 and subsequent sentencing, she stated, “A couple of days later, the towers were gone.” Her thinking certainly seems logical. Next, the children wanted to understand why the towers were suddenly gone. In their desire to create meaning, they used the known to explain the unknown and speculated why the towers might have disappeared. Ina, as three other students, hypothesized that the towers

must have been taken down so that no one would walk between them in the future. She stated:

They took the buildings down that he walked across. I guess they thought it was dangerous because if he did it then someone else will do it, and someone will get hurt, and it gonna be their fault, mostly ...So they took them down.

Allan (SGL) speculated that Philippe's morning walk back and forth on a rope caused the towers to be "messed up, broken in half and smashed," so they will have to "fix them up again." Both of these explanations make some sense in view of earlier words and images.

Constructivists Graesser, Singer and Trabasso (1994) refer to the concept of "search after meaning." They propose that "readers attempt to construct a meaningful referential situation model that addresses the readers' goals, that is coherent and that explains why actions, events, and states are mentioned in the text" (p. 372). While some children simply retold the story of *The Man Who Walked Between the Towers* without addressing its obvious gaps, others needed to openly construct inferences to fill them in. Interestingly, students who verbalized their "search after meaning" resided in all three reading groups.

Global inferences (7%) and evaluations (7%) each represented a small percentage of the implicit content in children's retellings. The main source of each was text-picture overlap (global, 82%; evaluations 77%). I grouped them together because children's evaluations of story and characters sometimes exhibited the same content-connecting thought processes. After retelling the story of Philippe Petit's adventure, Ina (GLA) shared her global perspective about the man and his story. She stated:

It is about a man who is determined to do whatever he want. When he is laying down on the high wire, and if he got locked up, he really didn't care because he fulfilled his dream to climb across the buildings.

Some students viewed Philippe as a risk taker and admired him for his “bravery,” “dedication” and “determination” to do what he wants to do regardless of the consequences. Still others evaluated Philippe’s actions. Allan (SGL) viewed them as “plain old dumb.” Peter (GLA) asserted, “I felt it was weird for a man to walk between two towers a quarter of a mile high in the sky.” Overlapping visual and verbal content clearly implies all of these qualities.

Relatively few global inferences, beyond misinterpretations, were made in response to *The Man Who Walked Between the Towers*. This finding is compatible with Nikolajeva and Scott’s (2001) view of picture books in which words tell essentially the same story that images show. The authors portray them as leaving little to the reader’s imagination, rendering him or her somewhat passive. By this they mean that the reader creates fewer broad interpretations for none is needed. At the same time, a symmetrical text-picture relationship has been found to facilitate recall of illustrated text (Carney & Levin, 2002; Levin, 1981; Levin, Anglin & Carney, 1987). In fact, most children did recall many explicit illustrated details of this story in appropriate sequence.

Associations beyond story (16.5%) constituted the third most common category of inference. Two children from each group associated with this story with differing amounts of content. While text-picture overlap (57%) usually initiated and sustained an association, the retellings often took on a life of their own and became mainly an expression of background knowledge (43%). For example, Philippe’s skill as a street

performer reminded Colin (SGL) of the time Ronald McDonald came to his school whereas tightrope walking reminded Dawn (MGL) of her family trip to the circus.

Faulty inferences (6%) indicated a breakdown in comprehension. The greatest proportion, beyond those labeled misinterpretations, was constructed by SGL readers. They originated from a variety of causes and sources. Reading pictures, like reading words, is a complex task. It involves both extracting and conferring information on a stimulus (Levie, 1987). For example, most of the children in the study were at least vaguely familiar with the purpose of tightrope walking. If not, visual images accompanying text helped to fill this gap. However, Chris (SGL) placed the wrong schema on text and picture. While his immediate retelling of *The Man Who Walked Between the Towers* showed some understanding of the story, he suggested the following after the prompt: "I have an idea for him not to go back and forth. Maybe if they had a helicopter, he could fly back and forth to the towers." Obviously, Chris assumed that the tightrope is a means of transportation rather than of performance.

Another example of faulty inference was also constructed by a SGL reader. Allan was talkative and dramatic. His stance in relation to *The Man Who Walked Between the Towers* was often an aesthetic one (Rosenblatt, 1986, 1994). Despite his emotional involvement, Allan misunderstood several sequences that are described by words and images, either alternately or in combination. For example, after the police arrest Philippe and bring him to court, the judge sentences him to perform in the park for children. While it is obviously a limited sentence, words do not express this fact. Allan responded,

[The judge said,] You're going to do a stand up show for the kids every day of your life. I bet he was tired. "Oh I can't do this no more," [he said], "I can't do it." That's when the two towers got messed up,

had to get built, got broken in half, smashed. And that's when they had to fix it again. And that's all I remember.

The presence of informative pictures that frequently overlap with text did not always facilitate comprehension for these SGL readers, especially those with comprehension difficulties. Bowyer-Crane and Snowling (2005) found that 9 and 10 year olds exhibiting weak comprehension have difficulty applying real world knowledge to make inferences about reading material. These two children either lacked or failed to apply such knowledge and exhibited difficulty with logical thinking as well.

Table 4 summarizes group trends in inference making. In relation to the length of their recalls, the least able readers (SGL) made the greatest proportion of local inferences, and the strongest readers (GLA) constructed the greatest percentage of global ones. Next, the loquacious MGL group produced the greatest proportion of associations and evaluations. Percentages of misinterpretations were fairly similar probably because they were induced by words and images. Finally, the least able readers (SGL) were responsible for the greatest percentage of faulty inferences.

Cued recall and reading ability. In their review of experimental research, Levie and Lentz (1982) found evidence that text-relevant illustrations help struggling readers recall explicit illustrated information they have read. Filappatou and Pumfrey (1996) found that it depends upon other variables, such as characteristics of the reader. Still, considering the high percentage of illustrated content (TP) in *The Man Who Walked Between the Towers*, I speculated whether pictures served to narrow the comprehension gap between less and more skilled readers. Comprehension questions required recall of explicit content as well as inference making. Nonetheless, scores on the cued recall that

followed immediate retellings were somewhat disappointing. With a few noteworthy exceptions, they were in accord with reading ability group. GLA readers had the highest scores with a range of 6.0-8.0 correct responses of a possible 8. MGL readers had a similar range, 6.0-7.5, but more students fell at the lower end. SGL scores ranged from 3.0-7.5 correct. Without one member, Serena, the range was 3.0-5.5. Overlapping words and images appeared to help all readers freely recall numerous story details in appropriate sequence. However, they failed to narrow the achievement gap between the most and least skilled readers.

Summary. In answer to the second research question, the text-picture relationship in *The Man Who Walked Between the Towers* had an impact on kinds and sources of content each reading ability group used to recall a narrative. All children used mainly explicit content derived from the text-picture overlap to retell the story. They supplemented it with inferences, the majority originating from loosely symmetrical words and images. However, stronger readers (GLA and MGL) relied more on explicit content and content from text alone. In contrast, less able readers (SGL) used a greater percentage of picture alone content in their retellings, both immediately and after a delay. This type of text-picture relationship, one with much visual-verbal overlap, generates relatively few global inferences. Nevertheless, in relation to the length of their retellings, the strongest readers created the greatest proportion of global inferences. In contrast, less able readers constructed the greatest proportion of local inferences to flesh out their retellings and created the greatest percentage of faulty ones. Comprehension question scores for the students conformed to their reading ability group. The most able readers had the highest scores, and the least able readers had the lowest. While the

preponderance of text-picture overlap content appeared to facilitate detailed, sequential retellings of the story and a variety of inferences as well, there was still a noticeable difference in the level of performance, as measured by cued recall, between the most and least able readers.

JoJo's Flying Sidekick

JoJo's Flying Side Kick (Pinkney, 1995) is the tale of a young African American girl who performs a perfect flying side kick to obtain a yellow belt in her Tae Kwon Do class. I selected this book to represent a complementary text-picture relationship. In this narrative, words and colorful images loosely repeat one another and fill in each other's gaps. Words also expand upon images in a complementary fashion mainly through dialogue between characters. The book's reading level, determined by text alone, is early fourth grade. This is an independent level for GLA readers, instructional for most MGL and frustration for SGL.

In this story, JoJo is a Tae Kwon Do student who must break a board with a flying side kick to earn her yellow belt promotion. She connects the anxiety about her performance with a fear of the bandit tree in her front yard. After confiding in her grandfather, her friend and her mother, each offers advice on completing the perfect side kick. On the day of her test, she follows each of their suggestions, one of which is to imagine the board as the dreaded bandit tree. Once JoJo successfully breaks the board with her kick, she receives a yellow belt and ceases to fear the tree in her front yard.

Question I: Patterns of Similarity - Whole Group

Explicit and implicit content. A kernel analysis of 24 transcriptions related to *JoJo's Flying Side Kick* revealed several similarities in children's response patterns for

Table 5: Explicit and Implicit Kernels: *JoJo's Flying Side Kick*

Total	Immediate		Prompt		Delay	
1535	Explicit - 644 (87%)	Implicit 94 (13%)	Explicit - 4 (4%)	Implicit 106 (96%)	Explicit - 569 (83%)	Implicit 118 (17%)

the group as a whole. These were based on an examination of 1535 kernels (1217 explicit and 318 implicit). (See Table 5.) First, children's retellings were long, more so immediately after reading than after a delay. In fact, of the four books, retellings of *JoJo's Flying Side Kick* included the most kernels. Secondly, of the four books, the children offered the greatest proportion of explicit content in relation to the implicit, both immediately and after a delay. Thirdly, as for the other books, a prompt for more information reversed the explicit-implicit ratio. It established a new goal for students that influenced the kind of information they offered (Graesser et al, 1994; Kintsch, 2004).

The explicit story of *JoJo's Flying Side Kick* is particularly easy to remember which partially explains children's lengthy explicit retellings. Pinkney's detailed illustrations greatly overlap with text. Much of what the words tell, the pictures also show. This relationship was found by experimental researchers to facilitate recall of illustrated text (Carney & Levin, 2002; Levin, 1981; Levin, Anglin & Carney, 1987). Next, a few significant ideas are repeated throughout the story. This encourages reader recall of these concepts as well as associated details. As well, Pinkney writes and illustrates with clarity; neither word nor image fosters misinterpretation. Finally, both the topic and traditional narrative structure are familiar to students.

All children claimed they used both text and picture in varying degrees to retell the story. Accordingly, the coded transcriptions show they integrated different sources of content as well as explicit and implicit information. For example, Kia (MGL) described JoJo's thoughts and feelings as she takes her test at the Tae Kwon Do center. She related:

So the next day (T), she was very nervous (T), but she thought about the bandit (TP). She imagined that the bandit was the board (TP). So she said "Kiah" (T) and flicked the bandit away (Infer P), but broke the board instead (TP).

This integration process occurred throughout the study. At times, I could almost hear the words of the story and visualize the pictures as the children recalled the narrative from memory. Dawn (MGL) constructed an explanation for this integration process. She explained that "the words told about the pictures and the pictures told about the words. It was back and forth. [Then] they both connect in your brain."

Explicit recall. A fourth similarity in response to *JoJo's Flying Side Kick* was the source of explicit content that children recalled. It is compatible with the book's complementary text-picture relationship in which words and images loosely repeat one another as well as fill in each other's gaps. In addition, text alone enlarges upon the pictures mainly through conversations between characters about story events. In contrast to *The Man Who Walked Between the Towers*, text-picture overlap was not the predominant source of content in children's recalls. Instead, they included almost equal portions of content from words alone and overlapping words and images. As Table 6 indicates for the entire group, percentages were T (46%), TP (44%) immediately after

reading and T (42%), TP (46%) after a one week delay. Peripheral picture alone (P) content was sparse (10% I, 12% D).

For example, midway through the story, JoJo converses with her mother about her upcoming sidekick test. Ashley retold this conversation:

JoJo's mother heard that she will be tested by Master Kim. (T) So JoJo asks her mother for advice (T) because she is afraid she is not going to make it. (T) Her mom tells her to visualize. (T) JoJo asks what does visualize mean? (T)

The source of content is text alone (T) because an artist cannot recreate this dialogue in the form of images (Nikolajeva & Scott, 2001). However, in the latter part of the story, when JoJo actually takes her test, there is greater visual-verbal overlap. Images can represent her actions, and Ashley's description exhibits the change in source of content:

Master Kim tests JoJo (TP) to see if she can break the wood (TP). So JoJo visualizes the bandit tree as the wood (TP) and breaks the wood (TP). So after Kim gives JoJo the yellow belt (TP), he tells her he is proud of her (Inf. T).

The sources of explicit content children recalled about *JoJo's Flying Side Kick* reflected the narrative's text-picture relationship.

Inferences. As compared to other books, children made a small percentage of inferences in response to *JoJo's Flying Side Kick*. There were 94 kernels immediately after reading, 106 after the prompt, and 118 after the delay. (See Table 5.) Source of inference-making across groups was a fifth pattern of similarity. In this very visual book containing many vivid colors, 37% of the inferences originated from text-picture overlap, followed by text alone (23%), picture alone (14%), background knowledge related to associations (23%) and unknown (3%). As these percentages indicate, students'

inferences were largely based on visual-verbal overlap and supportive text alone. This reflects the book's complementary text-picture relationship.

The paucity of inferences about *JoJo's Flying Side Kick* stemmed from the book's clarity. (See Table 7.) There were no misinterpretations for which words and images were responsible, such as in *The Man Who Walked Between the Towers*, and few faulty inferences (1%). Of the remaining categories, percentages of total were as follows: local inferences (60 %), global ones (7.5 %), associations (28%), and evaluations (3.5%). Global inferences might have been sparse because words and pictures fill each other's gaps, leaving little to the reader's imagination (Nikolajeva & Scott, 2001).

Children's voices: Book ratings. *JoJo's Flying Side Kick*, as *The Man Who Walked Between the Towers*, was one of the children's favorite books. During the final session, five out of 12 students rated *JoJo's Flying Side Kick* as their favorite; three more rated *JoJo's Flying Side Kick* and *The Man Who Walked Between the Towers* as the two best. The following is a list of reasons why readers enjoyed *JoJo's Flying Side Kick*. First, they liked the pictures and how they reinforced textual meaning.

Allan: At first when I looked at the book, I didn't know what it was about, so I looked at the pictures and they helped me to understand the story.

Tyrone: *JoJo's* pictures helped me [more than words] to understand the story. I got a lot of information from pictures on each page.

Ina: The pictures in *JoJo* helped me because they showed her confidence about what she was doing.

They also enjoyed associating with JoJo and the story's topic.

Peter: JoJo reminds me of when I was in karate.

Kia: I feel the way she feels when I have to do something in front of an audience.

Colin: JoJo was my favorite because I learned how she imagined how the tree was the wood thing that she kicked.

Perhaps Laverne was the most articulate:

All the books remind me of me, but that one really gets to me because JoJo reminds me of me all of the time, all my different ages, up to the age I am now.

Students favored *JoJo's Flying Side Kick* and *The Man Who Walked Between the Towers* for similar reasons. In both cases, they appreciated the large, detailed pictures that went along with the words and told the same story. This facilitated comprehension and recall. Children did not seem to notice that each book contained a somewhat different text-picture relationship. Moreover, they enjoyed the content of each narrative. Readers were drawn to the familiar topic and main character, JoJo, with whom they could identify.

Summary. In answer to the first research question, *JoJo's Flying Side Kick's* complementary text-picture relationship had an impact on readers' explicit immediate and delayed retellings of the story. It served to facilitate memory and recall which resulted in lengthy, explicit and sequential retellings. While text-picture overlap and text-alone were relatively equal sources of recalled explicit content, text-picture overlap was the main source of children's inferences. In general, children enjoyed associating with the main topic and character. Both were clearly portrayed in compatible text and illustrations.

Question II: Patterns of Difference – Between Reading Groups

Explicit recall. Table 6 shows the quantity and sources of explicit content each group recalled at two different times. Explicit recalls of SGL readers were only moderately shorter immediately after reading (N= 179) than those of GLA readers and

Table 6. Sources of Explicit Content by Group and Time: *JoJo's Flying Side Kick*

Immediate			Delay		
GLA N = 201	T = 45% (91) TP = 46% (93) P = 9% (17)		GLA N = 156	T = 43% (67) TP = 47% (73) P = 10% (16)	
MGL N = 264	T = 52% (136) TP = 37% (100) P = 11% (28)		MGL N = 240	T = 46% (109) TP = 43% (105) P = 11% (26)	
SGL N = 179	T = 40% (72) TP = 50% (90) P = 10% (17)		SGL N = 173	T = 37% (65) TP = 49% (84) P = 14% (24)	
Total N = 644	T = 46% (299) TP = 44% (283) P = 10% (62)		Total N = 569	T = 42% (241) TP = 46% (262) P = 12% (66)	

somewhat longer after a delay (N=173). SGL readers appeared to profit from the complementary text-picture relationship. As already mentioned, all children relied heavily on text alone and text-picture overlap content to retell the story. However, ability group differences were noticeable. (See Table 6.) As in response to *The Man Who Walked Between the Towers*, SGL readers relied somewhat less than the other groups on text alone (T) content, both immediately and after a delay (40% I, 37% D). Moreover, their use of picture alone (P) content increased after the delay (10% I, 14%D). SGL readers did not recall words of a story as easily as the other groups and sought help from visual images. In a sense, this is understandable. Since the reading level of *JoJo's Flying Side Kick* was an independent one for the GLA group and instructional for the

MGL, SGL readers were at a disadvantage from the start. They had the most to gain from inclusion of visual content, and they utilized it the most. After reading *JoJo's Flying Side Kick*, Allan (SGL) explained:

I couldn't have understood the story without the pictures....The pictures told me mostly about the story more than the words because all the words did was tell me what she was doing but the pictures showed me how she was doing it. I looked at the pictures to see how she was gonna do the flying sidekick, how Master Kim taught her how to get the yellow belt, and how she was gonna fight that little tree bandit. That's how I visualized it.

While several participants in the other groups, such as Laverne (MGL), focused heavily on images in their retellings, it was more a matter of style than need, at least while reading *JoJo's Flying Side Kick*. For SGL readers, it was the most practical approach to comprehension and recall.

Inferences. Children in all reading groups based their inferences on a variety of sources. A comparison of the explicit and implicit content in their retellings revealed some differences. Of the five possible sources of inference, SGL readers used text-picture overlap content more frequently than the others (47% GLA, 22% MGL and 53% SGL) and picture alone content as well (11% GLA, 12% MGL, and 17% SGL). When a group collectively bases their inferences on the highest percentage of peripheral pictorial information, children must be focusing heavily on visual details.

Table 7 indicates that children's inferences fell into five categories plus some miscellaneous faulty ones. The following is a description of each category. Local inferences (60%) were the most numerous as in response to all of the books. The large percentage of total was related to the fact that students made relatively few in other categories. SGL readers made the greatest proportion of local inferences in relation

Table 7. Categories of Inference by Reading Group: *JoJo's Flying Side Kick*

Group	Local	Global	Assns	Eval	Misinter.	Faulty Inf.
GLA N = 82	44% (36)	13% (10)	40% (33)	2% (2)	0 0	1% (1)
MGL N = 148	63% (93)	2% (2)	31% (46)	3% (5)	0 0	1% (2)
SGL N = 88	69% (61)	15% (13)	11% (10)	5% (4)	0 0	0 0
Total N = 318	60% (190)	7.5% (25)	28% (89)	3.5% (11)	0 0	1% (3)

to their recalls, and GLA made the smallest. As a group, the sources of children's local inferences were text (37%), text-picture overlap (31%), and picture alone (22%) which is a large proportion. For example, early in the narrative, Master Kim tells JoJo he plans to test her flying side kick the next day. While words explain that JoJo begins to "worry," her illustrated facial expression is somewhat open to interpretation. Laverne (MGL) inferred locally from the picture that "JoJo was kind of surprised, and her facial expression was that she was shocked." This made sense to Laverne and was compatible with the text. Students made local inferences either because they could not remember the explicit text base or they expanded upon what they recalled.

Global inferences (7.5%) were sparse in response to *JoJo's Flying Side Kick*, and each originated from text and picture. Only a few episodes in the story prompted readers to connect content from different portions. In each case, while the inferences were global, they were shallow, requiring little mental effort. For example, at the end of the

story, Pinkney implies that JoJo has overcome her fear of the tree in her backyard. SGL reader, Serena, inferred that “when they went home, JoJo was not afraid of the tree because she visualized and kicked the tree. She wasn’t afraid of it no more.” While Serena utilized information from different portions of the story to make this inference, she did so with ease. In her study of inference-making abilities of five and eight year olds, Wasik (1986) found that regardless of age of subject and familiarity of content, subjects were adept at inferring story characters’ emotions. Her conclusion applies to this study as well in which children competently interpreted JoJo’s changing emotional states. However, aside from interpreting feelings, there were few loose ends to weave together in *JoJo’s Flying Side Kick* or incongruous strands that needed to be combined. The most children did was enjoy the simple story and associate with it.

Associations (28%) with *JoJo’s Flying Side Kick* were generally about the students’ accomplishments, often athletic ones, and their fears. For example, after the prompt, Tyrone (MGL) reported that JoJo “reminded me of when I played basketball. I was afraid to play against big people, like the bandit tree when she was afraid of it.” As well, Peter (GLA) offered:

This book kinda reminds me of when I used to be in karate practice
.... I quit before we had to break a board because I knew I wasn’t
going to be able to break it. I just quit. It was very hard.

Perhaps Laverne’s (MGL) description of panic was the most intense and graphic. She portrayed feelings of anxiety associated with reading papers and poems in front of a large church audience.

JoJo reminds me of me...Every program, I have to do something in
the service. When I finally get there, I sit there and take lots of deep
breaths. I am really nervous. I have nerves down my legs. My legs start

shaking. I go up to the front of the church...try to calm down... I mess up some of the time but just go back, fix it and then just keep moving on. The book reminds me of that.

As with the other books, children initially associated with the story's topic conveyed by text and picture. The source of content was coded text-picture overlap. When the association was lengthy, it became an expression of personal experience or background knowledge.

Table 7 shows that the number and proportion of inferences in each category varied by group. In relation to the length of their retellings, SGL readers created the greatest percentage of local inferences (69%) and evaluations (5%) and were almost tied with GLA for percentage of global inferences (GLA 13%, SGL 15%). These were implied by text and easy to construct. GLA readers produced the greatest proportion of associations. Each group had an affinity for specific categories of inference.

Cued recall and reading ability. Following the immediate story retelling of *JoJo's Flying Side Kick*, children answered eight explicit and implicit questions about narrative content and two about their use of words and images. Considering the substantial text-picture overlap in this luminous book, I speculated whether SGL readers' performance on a cued recall measure would resemble that of the other two groups. This was not the case. The range of scores for GLA readers was 6.5-8.0, for MGL readers, 6.5-8.0, and for SGL readers, 4.0-6.5. Without Serena's high score, the SGL range was 4.0-4.5. My comprehension questions were challenging for the SGL students. They asked for more than explicit recall of content in the text-picture overlap. Questions also required explicit recall of text alone as well as inference making. In contrast, experimental text-picture researchers mainly demonstrated that illustrations facilitate

explicit recall of text that is depicted in those illustrations (Filippatou & Pumfrey, 1996; Levie & Lentz, 1982). Very few of these studies focused on students' inferences.

One interesting result of asking questions about the story was that they structured children's thinking about it and gave them the vocabulary to discuss it. In several cases, this affected the content of their delayed retellings the following week. For example, one of my questions required students to describe JoJo's "strategy" as she broke the wood with her kick. The following week, Chris, an SGL reader, retold the story using the word "strategy," a term he had not included in his immediate recall. Questioning served as an indirect form of instruction.

Summary. In answer to the second research question, reading ability group made a difference in children's response to *JoJo's Flying Side Kick*. GLA and MGL students had the reading skills to understand this story from text alone and recalled more text-alone content than SGL students. In contrast, the SGL group had the most to gain from accompanying visual images. They used less explicit text alone content than other readers and relied somewhat more on text-picture and picture alone. This enabled them to produce explicit retellings that were substantial in length. They also used text-picture and picture alone content more than the other groups as a source of inference. Moreover, SGL readers made approximately the same percentage of global inferences as GLA students, though most were low level ones involving character's emotion. Despite the supportive role played by complementary text and pictures, SGL readers' performance on cued recall was not strong. Nonetheless, the children in this study considered *JoJo's Flying Side Kick* one of their two favorite books, and most felt that the complementary images facilitated comprehension and memory of story.

Wings

Wings (Myers, 2000) is the story of Ikarus Jackson, an African American boy who can fly. It was selected to represent a congruent text-picture relationship in which text carries the narrative, and pictures are selective. Myers' wants to communicate to readers "never to abandon the things that make them different, to be proud of what makes them unique" (Inside cover). His simple illustrations are constructed from a collage of colorful pieces of paper. Since cut-paper images are either abstract or without much detail, words must tell the story. Pictures reinforce some of the verbal meanings and add some new information of their own. The reading level, determined by text alone, is early fourth grade. It is on an independent level for GLA readers, instructional for the MGL, and frustration for SGL.

Ikarus Jackson, a new boy in school, is an outcast because he has wings. One of his classmates, a lonely girl in yellow, narrates the story of their blossoming friendship. Initially, Ikarus flies proudly above the neighborhood, but he slowly loses confidence as the students, his teacher and a policeman criticize his strange appearance. In the end, after the policeman shouts at him and students explode with laughter, the narrator reaches out to him in friendship. Ikarus smiles at his new female friend as he flies away.

Question I: Patterns of Similarity – Whole Group

Explicit and implicit content. There were 24 transcriptions of students' responses to *Wings*. They contained 1031 kernels, of which 676 were explicit and 355 were implicit. (See Table 8.) Since *Wings* is the shortest of the four books and somewhat repetitious, explicit retellings were not as lengthy as the others. However, they contained the highest percentage of inferences (25% I, 31% D). An examination of the

Table 8. Explicit and Implicit Kernels: *Wings*

Total	Immediate		Prompt		Delay	
	Explicit	Implicit	Explicit	Implicit	Explicit	Implicit
1031	392 (75%)	130 (25%)	12 (10%)	103 (90%)	272 (69%)	122 (31%)

transcriptions revealed certain similarities among student recalls. First, their immediate story retellings were longer than those expressed after a delay. Secondly, the ratio of explicit to implicit recall was related to student goals (Graesser et al., 1994; Kintsch, 2004). Prompted responses included far more inferences because readers were given directions to share specific thoughts and ideas about the story. For example, after reading how school students ostracized Ikarus because of his unique qualities, Kia (MGL) used the prompt to apply this concept to her own school experience. She related:

We have to wear blue all of the time. If I came in a pink shirt, I would have to go to the office and change my shirt. It's like Ikarus. They would say you can't come in the class like that. You're supposed to wear light blue and dark blue.

Most readers supplemented story recalls with additional inferences after the prompt.

Explicit recall. A third similarity across readers was that text was the main source of explicit content children recalled, regardless of reading group. (See Table 9.) This finding is compatible with the book's text-picture relationship in which words rather than images carry the narrative. While there are two illustrations per opening in *Wings* that are congruous with the words, text and picture do not greatly overlap. Consequently, for the group as a whole, text (T) was the source of 58% of the immediate and 58% of the delayed kernels recalled.

Participants utilized other sources of meaning in smaller quantities. Text-picture overlap (TP) was the next most common source (28% I, 25% D), followed by picture alone (14% I, 17% D). As compared to the other books, recalls of *Wings* contained the greatest percentage of picture alone (P) content because less was tied up in the text-picture overlap. For example, Colin (SGL) retold a segment of the story in which Ikarus shows off on the school playground. He used only visual content and recalled:

He had a ball in his hand (P) and he dunked it on the court (P) and the court broke (Inf P), and he swept onto the fence (P). Then they left (Inf. P) and [the kids] told him to get out (Inf P) and he felt sad (Inf P).

In contrast to relevant visual content in *Wings*, Pinkney's abstract backdrops are often irrelevant to the narrative. These are created from materials, such as pieces of newspaper, gift wrap and fabric. Tyrone criticized these pictures following his retelling of the story:

Wings' pictures are hard to understand because they have been cut out from a magazine. Like there is one picture of the sky [made up of] roses, and there are towers made from cut-outs....The world doesn't really look like the *Wings'* pictures.

Aside from Tyrone, the other students simply ignored the backdrops. They neither used this content in their retellings nor questioned its existence. Instead, they focused only on harmonious information that contributed to story meaning. This finding is in keeping with Graesser et al.'s (1994) "search after meaning" principle.

While a researcher's job is to disentangle different sources of recalled content, the reader's task is to integrate explicit details and ideas to create a representation of story. The process seemed spontaneous and effortless to some students but not to all. After

reading *Wings*, Tyrone talked about his difficulty putting together visual and verbal information. He observed:

The pictures was hard to understand. You have to understand about one picture and then about the other picture, but it's all on the same page and the words also. It's hard to put all of them together. Pictures sometimes mixed me up.

This is partially understandable because each image conveys the artist's "moment of choice," an instant that focuses on an event, a theme or a character (Bodmer, 1992, p. 73) whereas the writer's words move along sequentially over time. Moreover, each communicates through a unique symbol system. However, in the case of *Wings*, the integration process can be problematic. Abstract irrelevant background images and somewhat vague foreground images that frequently do not overlap with the words can make comprehension difficult for an observant independent reader. Tyrone was astute enough to perceive and verbalize the complexities involved in creating a meaningful representation of *Wings*.

Inferences. Participants in this study constructed a large proportion of inferences while retelling *Wings*, 130 kernels immediately after reading, 103 after the prompt, 122 after a one week delay. (See Table 8.) Inference-making involved 25% of the immediate kernels and 31% of the delay. This percentage exceeded that in recalls of *The Man Who Walked Between the Towers* and *JoJo's Flying Side Kick*, and it was partly a function of author's purpose. Gerstein (2003) and Pinkney (1995) are primarily interested in telling and showing a story that their readers will understand, enjoy, and remember. Myers, on the other hand, has a different purpose. He wants to tell a simple story in order to communicate a message with which readers will identify. He structures *Wings* in an

episodic, repetitive fashion and encourages them to grasp his implied message. Children were familiar with his theme, inferred his point of view, and associated with it.

The text-picture relationship in *Wings* also contributes to inference making. In *JoJo's Flying Side Kick* and *The Man Who Walked Between the Towers*, overlapping words and images clarify one another, helping children comprehend and remember many narrative details. These are sequential, descriptive stories. In *Wings*, while visual and verbal content about the main theme are compatible, words and illustrations are neither symmetrical nor complementary most of the time. Instead, text drives the story, leaving many gaps. Readers filled some by elaborating or connecting chunks of verbal content; they filled others by inferring meaning from pictures. In other words, Myers structures his sources of content so that readers are encouraged to make inferences as they retell his story.

The sources of children's inferences created a fourth pattern of similarity. It is in accord with *Wings'* text-picture relationship. When all implicit kernels were combined, text was the most frequent source (36%), followed by text-picture overlap (26%), picture alone, (12%), background knowledge (13%), and unknown to me (13%). Text was the main source of explicit content and inference.

As the above percentages show, images play a subtle role in *Wings*. While Myers' illustrations do not contain enough detail to show much of what the words tell, his cut-out figures are the main source of emotional content. Almost every student inferred feelings of happiness and sadness from Ikarus's features and postures. Nikolajeva and Scott (2002) refer to the "speed and efficacy of illustrations' potential to convey emotions" as compared to words. Sipe and Ghiso (2005) affirm that "careful

observations of facial expressions and body language suggest characters' feelings and motivations" (p. 135). Early in the story, Ikarus's bent head and slumped shoulders elicited from readers terms such as "sad," "upset," "embarrassed", "mad," "hurt", and "uncomfortable." As the story ends, Ikarus's raised head and subtle smile evoked modifiers such as "happy," "happy moments," "happy motion," and "cheered up." Small changes in line and shape create a window into the character's state of mind.

Children's voices: Book ratings. At our final meeting, I asked each child to compare the four books and state his or her preferences. In terms of enjoyment, they appreciated Myers' artwork but otherwise gave the book mixed reviews. The subject matter was presented in too simplistic a fashion for fourth graders. Allan complained that "this boy was gifted with wings, but he didn't do anything special with them." Dawn asserted that "she liked the book but it didn't tell how he got his wings or do he have a family." Fourth grade stories generally present more complex characters and plots.

Next, I asked them to reflect on the value of text and pictures in each of the books. From this comparative perspective, seven of twelve students felt that the illustrations in *Wings* were not as useful as those in books with a considerable text-picture overlap. Here are some of the responses:

- Ina: The book's creative but the pictures didn't tell me nothing. They just showed how he was flying. So I relied mostly on the words.
- Dawn: In *Wings*, pictures were not that helpful. The words told more than the pictures showed.
- Ashley: In *Wings*, the pictures didn't have a lot of background...or details. Like on some pages, it's just a person on a blank white page.

Laverne: This story could have been told in a small book, without pictures. Words helped me more. The pictures gave me a picture in my mind, but they didn't really get to me. The words really got to me.

Tyrone: Pictures in *The Man Who Walked Between the Towers* helped me more. They were more real.

By the end of the project, students had developed some concept of text-picture relationship. They correctly observed that *Wings* is driven by text rather than illustrations, and pictures do not show enough of the story. It appeared from their comments that many of the participants had specific expectations about the role of images in picturebooks. Illustrations in *Wings* did not fulfill them.

Summary. In answer to the first research question for the group as a whole, *Wings'* text -picture relationship clearly had an influence on the origin of readers' explicit recall and inference making. Text was the main source of explicit and implicit content children retold about the narrative. Patterns of recall were supported by participants' perceptions that words were more valuable than illustrations for story understanding. This reflects the fact that in *Wings*, text, rather than images, carries the narrative. Moreover, this type of relationship encouraged inference making. Children needed to bridge the gap between two sources of content that only moderately overlap. In other words, the relationship between words and images had an impact on students' explicit recall and inference making.

Question II: Patterns of Difference - Between Reading Groups

Explicit recall. Table 9 shows the explicit sources of content students recalled by group and time. First, SGL readers produced the shortest explicit recalls in relation to the other groups, more so immediately after reading ((N=98 I, N=73 D). These numbers

Table 9. Source of Explicit Content by Group and Time: *Wings*

Immediate			Delay		
GLA N = 142	T = 59% TP = 24% P = 17%	(84) (34) (24)	GLA N = 91	T = 67% TP = 23% P = 10%	(61) (21) (9)
MGL N = 152	T = 57% TP = 30% P = 13%	(86) (47) (19)	MGL N = 108	T = 56% TP = 25% P = 19%	(61) (27) (20)
SGL N = 98	T = 57% TP = 29% P = 14%	(56) (28) (14)	SGL N = 73	T = 49% TP = 28% P = 23%	(36) (20) (17)
Total N = 392	T = 58% TP = 28% P = 14%	(226) (109) (57)	Total N = 272	T = 58% TP = 25% P = 17%	(158) (68) (46)

suggest that the text-picture relationship was less helpful for them than for stronger readers. Since *Wings* is told primarily through words, their weaker verbal skills put them at a disadvantage. Moreover, while each group used a similar percentage, though not amount, of text immediately after reading, the situation changed after the delay. GLA readers recalled a greater percentage of text alone (T) after a delay (67%) and SGL readers recalled considerably less (49%). GLA readers had better memories for words over time. Furthermore, after a delay, the percentage of picture alone (P) content each group recalled increased as reading ability decreased. Less strong readers relied more on images over time to retell the story (14% I, 23% D). This last pattern of group difference was exhibited during delayed story recalls of *The Man Who Walked Between the Towers*

and *JoJo's Flying Side Kick* and is supported by the literature (Filippatou & Pumfrey, 1996; Levie & Lentz, 1982).

Inferences. The same pattern was exhibited in regard to inference making. While text was the most frequent source of inference, the proportions differed for each group. GLA readers used text more frequently than other groups as a source of inference (GLA, 48%; MGL, 30%; SGL, 31%). Conversely, SGL readers used picture alone as a source more frequently than the other groups (GLA, 12%; MGL, 9%; SGL, 16%). In response to *Wings*, each ability group's pattern of implicit recall resembled the explicit one.

As Table 10 indicates, readers made a variety of inferences across groups about *Wings*, but the proportions varied per group. Local inferences accounted for 46%, global ones (9%), associations (32%), evaluations (6%), and misinterpretations (5%). Local inferences were most common, and one-half originated from text. In response to each story, children spontaneously constructed small elaborations and explanations to establish local coherence (McKoon and Ratcliff, 1992). For example, when Ikarus goes to class, his big wings prevent the students from seeing the blackboard. The teacher tells him in so many words that he must "leave class until he can figure out what to do with his wings." Many children elaborated on this textual statement. They inferred that he should "put them down," or "take them off," or "get them replaced with smaller ones." Each of these local inferences based on text embellished what the teacher actually said. A sizeable proportion (23%) of local inferences was based on images, many of which implied emotion.

Global inferences (9%), like local inferences, were based on text approximately one-half of the time. This is in keeping with the relationship of words to images in

Table 10. Categories of Inference by Reading Group: *Wings*

Group	Local	Global	Assns	Eval	Misinter.	Faulty Inf.
GLA N = 101	54% (54)	21% (22)	17% (17)	4% (4)	4% (4)	0
MGL N = 141	36% (49)	5% (5)	53% (77)	6% (9)	1% (1)	0
SGL N = 113	53% (60)	4% (5)	20% (2)	8% (9)	12% (14)	3% (3)
Total N = 355	46% (163)	9% (32)	32% (116)	6% (22)	5% (19)	1% (3)

Wings. In relation to the length of their retellings, GLA readers clearly made the greatest percentage, and many were their perceptions of the author's message. For example, Ina (GLA) completed her retelling of *Wings* by interpreting Myers' point of view about friendship and individuality. She stated:

[The girl] was happy [she] stood up for [Ikarus] and that now he got a friend...and Ikarus was happy because he had a friend who wouldn't tease him, pick on him and laugh about his wings. ...I guess she was trying to say that you should fly free any way you want, and you shouldn't listen to what other kids say about you.

While Ina's word recognition skills were less strong than those of other GLA readers, she constructed more global inferences than any student in the study.

Associations beyond story (32%) formed a prominent implicit category since several children made lengthy ones. Myers' theme is the strength of this book. It is a familiar one, and students were eager to share their personal experiences. Most personal

associations were text-to-life (Sipe, 2000) in that children used the text to illuminate something in their own lives. While their anecdotes originated from text or text-picture content, some took on a life of their own and mainly reflected background knowledge. For example, Laverne (MGL) began her association by reminiscing about her first day of school when attempts to make friends were met with derision. She then proceeded to give advice to any new student who wants to be accepted by classmates:

So the first day, first introduce yourself. And each day, as you keep on going, they'll start growing closer to you. You're there now, and the more you keep on doing what you're supposed to do, they gonna come up to you, they know you, that you won't do nothing and go back out.

Evaluations (6%) of story and its characters were constructed by readers across all groups. Text and text-picture overlap were their main sources of content. For example, Allan (SGL) argued that “if [Ikarus] had wings, they could have been useful for someone else instead of just flying around all of the time.” By “useful” he meant, helping old people cross a street or relocating cars trapped in a traffic jam. In contrast, Laverne (MGL) found the teacher “unfair” for asking Ikarus to leave the classroom. She criticized, “Just because a kid had some kind of problem or was different from the other kids, the teacher shouldn't have turned him down.” Each student evaluated a fantasy character by real world standards.

Misinterpretations (5%) were of two types, and both mainly originated from text-picture overlap. As in *The Man Who Walked Between the Towers*, one type involved children's limited background knowledge about the conventions of pictures, particularly the implication of an illustration's frame. For example, on one opening, Ikarus is shown with bars placed in front of him as if he is in prison. Myers is trying to illustrate the

narrator's fear that Ikarus might be sent to jail, but some of the viewers interpreted the scene literally as if Ikarus is actually there. Tyrone (MGL) found this illustration problematic. After reading, he commented how confusing pictures and words can be. He said, "When the sticks were over [Ikarus], the cage stuff, it mixed me up. He really wasn't in jail but in that picture it said he was."

Another type of misinterpretation was related to the unnamed narrator, the "I" of the story, who tries to befriend Ikarus. Also a cut-out figure, she is pictured in even less detail than he. Aside from color, her only distinctive features are the hint of a skirt and ponytail. Both her vague appearance and pronoun-only name contribute to confusion. Consequently, readers misinterpreted her identity, at times calling her the teacher or even "he." Just as in *The Man Who Walked Between the Towers*, text and picture interact to mislead unsophisticated readers of *Wings*.

Table 10 summarizes general trends in the children's inference making. In relation to the length of their retellings, GLA readers made the greatest proportion of global inferences whereas MGL readers, the most verbal group, constructed the greatest proportion of associations. Both GLA and SGL readers made a similar percentage of local inferences. As well, SGL readers made the greatest percentage of misinterpretations. Their weak word recognition skills were partially responsible.

Cued recall and reading ability. The theme of *Wings* was familiar to all students, and the story line was quite simple. Consequently, the recall questions were not particularly challenging. However, text told the story, and SGL readers had difficulty with comprehension. Even simple questions were troublesome. On a measure of cued recall given immediately after reading requiring literal comprehension and inference

making, the range of scores was generally in accord with student reading ability. Of eight questions, number correct was: GLA, 7-7.5; MGL, 5.5-7.5 and SGL, 3.5-6.5.

Without Serena, the SGL range would have been 3.5-4.5. This arrangement of scores was similar to those children earned in response to the other books.

Summary. In answer to the second research question, ability groups differed in their responses to *Wings*. First, each ability group used different proportions of text and picture in the explicit portions of the recalls. The stronger the reader in relation to the book, the more heavily he or she relied on explicit textual content over time. Conversely, the less strong the reader, the more he or she leaned on explicit content in images. Implicit retellings exhibit the same pattern. Stronger readers used textual content more than less able ones as a basis for inference. All groups constructed a variety of inferences, but the proportions of each differed. Since details of the story are conveyed more through words than images, more skilled and text oriented readers had an advantage. This was precisely what occurred during cued recall. GLA and MGL participants correctly answered the most questions as compared to SGL readers.

Zoo

Zoo (Browne, 1992) is an account of a family trip to the zoo. It was selected to represent an incongruent text-picture relationship in which words and images can be viewed as ironic or contradictory. *Zoo* is a postmodern, multi-stranded picture book with words and two images on each opening. Text primarily tells one strand, a simple story about the family's visit. However, the story told in words is often at odds with that shown in the pictures. Children must navigate between alternative visual-verbal meanings to infer Browne's complex message. The book's reading level, based on words

alone, is third grade. While this is an independent level for GLA readers, instructional for MGL, and barely instructional for SGL, it is a challenging story for fourth graders to comprehend.

Brown's *Zoo* describes a less than idyllic family visit to the zoo to see a variety of animals. As narrator, the oldest son creates a bleak picture of the day's events. Traffic is heavy, he and his brother fight frequently, most of the animals are boring, and Dad's boorish behavior embarrasses the family. Fortunately, lunch at the cafeteria and a trip to the gift shop make the trip worthwhile. This textually explicit strand contrasts with Browne's illustrations. He paints the animals as calm and dignified creatures while decorating a backdrop of human characters with animal-like features. Words and images create a double orientation which readers must integrate to fully understand the story. When viewed together, they encourage the reader to question man's relationship with animals as well as the ideological concept of zoos.

Question 1: Patterns of Similarity - Whole Group

Explicit and implicit content. As for all books, there were 24 transcriptions of students' responses to *Zoo*. They contained a total of 1292 kernels, of which 934 were explicit and 358 were implicit. Table 11 displays a breakdown by time of retelling. One pattern of similarity was that the group as a whole recalled considerably more content immediately after reading than after a delay. Secondly, the ratio of explicit- implicit content was related to student goals (Graesser et al., 1994). A more specific prompt after the immediate retelling elicited a greater proportion of inferences. Most children used the prompt to convey their personal associations with the story. For example, Serena reported:

Table 11. Explicit and Implicit Kernels: *Zoo*

Total	Immediate		Prompt		Delay	
	Explicit	Implicit	Explicit	Implicit	Explicit	Implicit
1292	521 (80%)	129 (20%)	15 (11%)	127 (89%)	398 (80%)	102 (20%)

It's about going to the zoo....Oh yeh. I saw in the Philly zoo the animal that looks like a giraffe, a donkey and a zebra mixed together. It's next to the elephants, but the elephants left. I went on Sunday.

Explicit recall. A third pattern of similarity was that text alone (T) was the main source of explicit content in students' retellings, more so immediately than after the delay. (See Table 12.) It was the source of 59% of the immediate content recalled and 54% of the delayed. Text-picture overlap (TP) accounted for about a third more, 29% of the immediate and 33% of the delayed. This recall pattern was similar to that of *Wings*, in which text carries the narrative. Fourth grade participants created a representation of *Zoo* that was on a textually explicit level. They utilized the words and supporting visual content to retell the story even though attention to incongruent picture alone content was necessary for complete story comprehension. In her study of kindergarten and sixth graders' reading behavior, Feathers (2002) found that the older children neglected to make use of illustrations on each page even when visual images were critical for understanding.

For the group as a whole, picture alone (P) content accounted for 12% of the immediate kernels and 13% of the delayed. Most recalled visual information, such as Colin's (SGL), was congruent with the words. For example, he remembered: "They went to see the giraffes ...The [boys] had chocolate on their faces ...Harry was on a pole

...They were right underneath the baboons.” In contrast, several children recollected visual images in *Zoo* that were incongruent with the words, creating the ironic text-picture relationship that contributes to story meaning. The following are several quotes illustrating this point:

Ina (GLA): People had their faces painted like cats and lions and tigers.

Amy (GLA): The ticket booth guy had a strange face [and] one person had strange feet.

Serena (SGL): I recognized people dressed up like animals, like their tails and their heads.

Ashley (GLA): There was a woman who had frog feet and men having horns on their heads.

While a few students described these unusual sightings, text was the main source of their explicit retellings. Ten of twelve readers retold a simple story based on textual content about a family’s visit to the zoo to see the animals.

Inferences. Readers across groups constructed a large number of inferences in response to *Zoo*. Of the 1292 kernels in 24 transcriptions, 358 were implicit ones. This included 129 immediately after reading, 127 after the prompt, and 102 after the delay. (See Table 11) A fourth pattern of similarity was the source of children’s inferences. Children used text most frequently (31%), followed by text-picture overlap (27%), picture alone (18%), background knowledge (19%), and unknown, (5%). Their main source of inference was also consistent with the book’s textual strand.

As Meyers, Browne is interested in telling a story and communicating a message to his readers. However, their subjects and techniques differ. Myers’ message is almost explicit, residing just below the surface of the text and a familiar one to intermediate grade students. They all have the personal experience to understand it. Moreover, it emanates from the harmonious text-picture relationship in *Wings*. In contrast, Browne’s

message is far more complex, not necessarily familiar to all intermediate grade students, and not easily accessible. It requires an understanding of the contradiction between word and image. Inference making, particularly at the global level, is crucial. Reader-viewers had an opportunity to co-author the story (Goldstone, 2002) beyond the usual reading transaction. However, few were able to take advantage of it.

Children's voices: Book ratings. During the final one-to-one session, each participant compared the four books. *Zoo* was the least favorite of the stories children read. This was another similarity among eleven of the twelve participants. In the first place, the textually explicit story is not very eventful, and most readers comprehended it on this level. They voiced the following opinions:

Kia: [Zoo] is not really talking about anything.

Ashley: I liked it the least [of the four] because it didn't have a lot of entertainment for me.

Laverne: They could have put something else in the pictures.

Next, several readers were alienated by Dad's unkind behavior toward his sons. They viewed it as specific to an individual rather than, as Browne intended, a general statement about humanity.

Serena: Dad was always mean to the children. When they was hungry, he said they can't have a candy bar.

Colin: I didn't like the way dad treated his sons.

Peter: I didn't like how the dad didn't let his kids eat chocolate.

Furthermore, children were disappointed that visual content did not overlap with text.

Peter: The pictures didn't help much.

Kia: The pictures didn't show much. They didn't show much about the mom.

Allan: The words told me how they did it in the story, but the pictures didn't tell me much about the story.

Several children perceived the book's incongruent text-picture relationship and found it confusing.

Serena: In *Zoo*, people dressed up like animals but the words didn't say anything about it. Pictures and words told different stories.

Amy: I didn't like the *Zoo* book because it was too complicated and it didn't make sense. The words and pictures in it didn't make sense. The pictures didn't make sense because they had crazy pictures. And the words didn't make sense because it wasn't barely telling what the pictures was saying.

However, while Ina (GLA) was aware of the incongruities, she enjoyed the story and reflected:

The Zoo book is a funny book....Pictures told a different story than the words. [It told] how it is on the street. People get mad at each other and yell at each other and walk around looking crazy and acting like animals. But...the gorilla at the zoo just sat there looking very serious and controlled....[Some pictures] showed how serious animals can be and how you should treat them like you treat humans.

Ina was one of the few students who understood the book's double orientation, produced by a picturebook maker who played off one perspective against the other (Lewis, 2001). This enabled her to correctly interpret Browne's sophisticated message about animals, humans, and zoos. Most of the fourth graders in this study would have profited from a more interactive method of reading *Zoo*. Independent reading was not a sufficient one.

Summary. In answer to the first research question, Browne's multi-stranded picture book exhibits an incongruent text-picture relationship. It offers more than one perspective or level of understanding. Most fourth graders across groups retold the story immediately after reading and after a delay on its most simple level, using text as their primary source of explicit and implicit content. Some children recalled and inferred

about incongruent picture alone content. However, for the group as a whole, it was insufficient to generate the kinds of global inferences about human and animal behavior that Browne intended. Consequently, readers perceived that something about *Zoo* was lacking. It was own their lack of understanding.

Question II: Patterns of Difference - Between Reading Groups

Explicit recall. As Table 12 indicates, the first difference between groups relates to length of explicit recalls. In contrast to other story retellings, the SGL group constructed more lengthy explicit recalls immediately after reading (N=167) than GLA readers (N=141). *Zoo*'s reading level is third grade, one year lower than that of the other books. SGL readers were not as challenged by the words.

Text alone (T) was the most frequent source of explicit content for all children. (See Table 12.) However, recollection of picture alone (P) content is an important variable since it displays the book's ironic or contradictory points of view. A noteworthy difference between groups was that GLA readers recalled the most picture alone (P) content during both time periods (14% I, 18% D). This finding is compatible with their higher level of story comprehension. Interestingly, they reversed their pattern of explicit recall established with the other three narratives. Instead of using less picture alone (P) content than SGL readers, both immediately and after a delay, they used more. In accord with the literature (Peeck, 1974, 1985) both groups increased their recall of picture alone (P) content after a delay. However, SGL readers did so to flesh out their retellings. In contrast, GLA readers understood that visual information was necessary to retell the story from Browne's perspective.

Table 12. Sources of Explicit Content by Group and Time: *Zoo*

Immediate			Delay		
GLA N = 141	T = 57% TP = 29% P = 14%	(81) (41) (19)	GLA N = 131	T = 53% TP = 29% P = 18%	(69) (38) (24)
MGL N = 213	T = 62% TP = 26% P = 12%	(132) (55) (26)	MGL N = 135	T = 56% TP = 36% P = 8%	(76) (49) (10)
SGL N = 167	T = 56% TP = 34% P = 10%	(94) (57) (16)	SGL N = 132	T = 54% TP = 32% P = 14%	(71) (43) (18)
Total N = 521	T = 59% TP = 29% P = 12%	(307) (153) (61)	Total N = 398	T = 54% TP = 33% P = 13%	(216) (130) (52)

Inferences. Sources of implicit content each group utilized exhibit the same scheme. GLA readers based their inferences on the most picture alone content and least text. To do so, they reversed their typical pattern of implicit recall established with the other three books. Conversely, SGL readers based their inferences on the least picture alone content and the most text, reversing their usual pattern. The following percentages exhibit this trend: GLA (24% T, 32% P), MGL (34% T, 16% P), and SGL (35%T, 10%P). Pictures and words in *Zoo* are truly interdependent. To fully understand and integrate all strands of the story, reader-viewers must focus on contradictory visual and verbal content and infer how one symbol system relates to the other. Aripze and Styles (2003) suggest that “irony makes demands on the reader to use inference to detect

contradictions between what is said in the written text and illustrated in the picture” (p.79). In fact, GLA readers did make the most global inferences about this story in relation to the length of their retellings.

Table 13 shows the categories of inference in students’ story retellings. Whole group proportions of inferences were: local (50%), global (12%), associations (32%), misinterpretations (2.5%) and evaluations (2.5%). Local inferences represented half of all implicit content in children’s retellings, and text was their main source (47%), followed by picture alone content (26%). Moreover, SGL students made the greatest percentage in relation to the length of their retellings. These inferences embellished the narrative, making it more locally coherent to readers. For example, in one scene, a gorilla observes Dad in an ambiguous fashion. Browne probably intends to communicate the gorilla’s wisdom or dignity. However, Laverne (MGL) recalled, “It looked like the gorilla was angry...and Dad was getting scared a little bit.” She imposed her own background knowledge on the image and missed the message that Browne is trying to convey. In order to make the appropriate broad inferences about *Zoo*, children had to begin at the local level.

Global inferences (12%) were constructed by students in each group. GLA readers made the greatest proportion in relation to the length of their retellings, many of which were messages that Browne’s story implies. In their discussion of books with incongruent text picture relationships, Nikolajeva and Scott (2001) contend that “as soon as words and images provide alternative information or contradict each other in some way, we have a variety of readings and interpretations” (p. 17). Ashley (GLA) made one interpretation:

Table 13. Categories of Inference by Reading Group: *Zoo*

Group	Local	Global	Assns	Eval	Misinter.	Faulty Inf.
GLA N = 92	45% (41)	28% (26)	21% (19)	4% (4)	2% (2)	0
MGL N = 154	49% (76)	6% (9)	40% (62)	2% (3)	2% (3)	1% (1)
SGL N = 112	54% (61)	7% (8)	31% (35)	2% (2)	4% (4)	2% (2)
Total N = 358	50% (179)	12% (42)	32% (116)	2.5% (9)	2.5% (9)	1% (3)

I think Anthony Browne was trying to say that people and animals can be the same in different ways and different in some ways. Like in the middle of the story, when the two boys was wrestling, the mom saw baboons wrestling and said they reminded her of somebody. And in another part of the story, the pictures showed people having animal features and stuff. There was a woman with frog feet and men having horns on their heads and noticeable features that animals have.

Ina (GLA) began her retelling with the concept of incongruence and then made broad inferences about many scenes:

I think the author is trying to make the book funny, a kid's book with a lot of pictures and animals, but when you see the animals, he's making it serious....[Some additional inferences:] Animals should be treated like humans and fed and taken care of....All the animals was serious but the kids kept getting irritated....[The] author was trying to say that some animals don't like to be bothered....Dad's a person who really doesn't care. He just loves what he does and no one else.

Picturebook reading is a transaction between a particular reader, the words, and sequence of images. Only two students were able to reach far below the surface of Browne's book during independent reading to construct complex meaning.

Associations (32%) constituted a large percentage of all inferences. While most children did not rate this book highly, they easily associated with it. Either they had been to the zoo with caregivers or fictitious interactions among characters were reminiscent of those within their own families. Text-picture overlap and background knowledge were the main sources of their associations. Several children associated with the two brothers' frequent fighting. For example, Tyrone (MGL) related that the story "reminds me of me and my brother when we fight when we get bored. That's when my brother start picking on me, and we start tussling on the floor. That's when my dad says, Stop it now."

Misinterpretations (2.5%) represented a small percentage of total inferences. As in *Wings*, readers had difficulty identifying the unnamed narrator, the "I" of the story, who is actually the older brother. Some students confused him with Harry, the younger one. Not only is a proper noun omitted in the book, but his appearance is similar to that of his younger sibling. The brothers' only distinguishing visual features are their height, hair color, and T-shirts. Perhaps Browne is intentionally trying to generalize about these two fictional characters. However, both text and picture interact to foster students' misinterpretation.

Evaluations (2.5%) were not frequent in children's retellings. They were mainly about the behavior of story characters. For example, Allan (SGL) found fault with Dad for knocking on the glass of the orangutan's cage. He insisted, "Dad didn't have a right to knock on the glass. It could have been broken." Laverne (MGL) disapproved of Dad for taking sides when his two sons fought. She asserted, "The older brother is always getting into trouble....He gets told off a lot of times, but it's not always his fault....It's Harry's fault also." Ina (GLA) went one step further and criticized the entire book.

Referring to the way characters treat animals, she announced, “The book doesn’t have manners. It is saying stupid things.” Browne creates scenes in *Zoo* that encourage his readers to question human behavior.

As students responded to *Zoo*, each group specialized in particular categories of inference. Table 13 exhibits these trends. In relation to the length of their retellings, the most analytical GLA group constructed the greatest percentage of global inferences and evaluations whereas the talkative MGL group produced the greatest proportion of associations. SGL readers made the most local inferences and misinterpretations. Children displayed different abilities and response styles as they inferred about the story, *Zoo*.

The sources of these inferences were also revealing. GLA readers used the most implicit visual content (GLA 32%, MGL 16%, SGL 10%) in their retellings and also constructed the most global inferences. By focusing and reflecting on Browne’s illustrations, they were able to infer his messages. In contrast, MGL and SGL readers used more textual content as a basis for inference making (GLA 24%, MGL 34%, SGL 35%), made fewer global inferences and more local ones.

One ironic aspect of the using *Zoo* in this study is that while its reading level is the lowest of all four books, it is the most difficult to fully comprehend. SGL and MGL readers were able to recognize most of the words without help, but word recognition was not the key to understanding. Interpreting visual images is a complicated process. Levie (1987) stresses the importance of anticipatory schema. We only see in pictures what we know how to look for. The stronger GLA readers approached Browne’s visual images

with more cognitive flexibility than some of the other children. They saw more possibilities of visual meaning in juxtaposition to the words.

Cued recall and reading ability. Following readers' immediate recall of *Zoo*, I asked eight comprehension questions. Since the story was challenging, so were the questions. In their study of five and eight year olds, Omanson, Warren and Trabasso (1978) suggest that inferential comprehension may be independent of surface recall of text, and that inference probes are better measures of comprehension than free recall measures. Data in this study support those conclusions for a few students. Children who freely recalled the most explicit information about *Zoo* did not always make the most global inferences. As well, comprehension questions encouraged a few children to increase their inferential thinking. For example, Allan (SGL) had difficulty remembering the details of *Zoo* during free recall. However, in response to a comprehension question, he reflected:

Animals shouldn't be in the zoo and people should because of the way people act in life...like the way they kill people over a pencil. Like some kid tried to fight me over a pencil. That's really stupid. Animals don't really do anything, just walk around. They are taking animals from natural habitats, from their families and homes.

My eight questions were designed to evoke explicit content and inferences about three strands of *Zoo*, the textual and the visual, and their interaction. As a group, stronger GLA readers were most successful at all levels. The range of scores for GLA readers was 4.5-7.5, for MGL, it was 4.0-6.0, and for SGL, it was 3.0-5.5. Since *Zoo* was the most complex book, scores were lower than usual.

One purpose for using a book like *Zoo* in the classroom is to encourage children to think creatively about story content. For example, one of the eight comprehension

questions requested that children verbalize Browne's message. Ashley (GLA) reflected for a moment and offered the following:

When Browne was writing this book, he was thinking about if animals could do what people do and people do what animals do. It's backwards, like if animals were walking around and buying steaks and groceries and if people were in cages and being fed by zookeepers.

Ashley's inference might not have been what Browne had in mind, but it emerged from the story's incongruities. The text-picture relationship encouraged Ashley to think flexibly about a subject. With appropriate teacher guidance and group discussion, more students would have discovered different possibilities of meaning in *Zoo*.

Summary. In answer to the second research question, the incongruent text-picture relationship in *Zoo* impacted the sources of content and kinds of inferences that children drew upon to comprehend the story. Students in each reading group displayed different patterns of response. Stronger GLA readers utilized the most picture alone content in their explicit recalls, immediately and after a delay, and as a source of inference. They made the most global inferences and constructed the most complex meanings as they navigated between alternative visual-verbal content. Accordingly, GLA readers achieved the highest scores on questions about the story, some of which required insight into its incongruent visual-verbal structure. In contrast, SGL readers recalled the story's most simple textual strand. They used less explicit picture alone content in their retellings and more text alone content as a source of inference making. Their understanding of *Zoo* was more limited. With teacher guidance and class discussion, however, all of the readers might have sampled the wide range of meanings that Browne's book offers.

Cross Book Analysis

The text-picture relationship is one influence on children's meaning making about narrative picture books. It has been largely ignored as a variable in the process. Yet results of this study indicate that it does play a role. As story structure, each text-picture relationship is a schema or framework that can be applied to picture books and reader response to them. It illuminates the transactional process by which readers construct meaning from words and images.

In his writings about text-picture taxonomies, Lewis (2000a) contends that "picturebooks do not take kindly to being corralled into six, eight or even ten categories...[The] picturebook is a particularly flexible form of text, and picturebooks in general are extraordinarily diverse" (p. 44). It is true that many of these artistic works exhibit a mix of visual-verbal combinations. However, some, such as those used in this study, are fairly consistent. As results show, they can influence the sources of information children use, kinds of inferences they make, expressed ease with which they recall a story, and their expressed level of satisfaction with the reading-viewing experience. In this section, I will compare students' responses to the four narratives used in this study.

Text-Picture Relationship and the Whole Group

My initial research question pertains to the impact of different text-picture relationships in narratives on a whole group of children with mixed reading abilities. First, certain text-picture relationships encourage explicit recall of illustrated text, both immediately and after a delay (Levie & Lentz, 1982). These are found in books with detailed, descriptive words and images that loosely overlap with or complement one

another. Each symbol system echoes or supports the other, reinforcing memory of content. Both *The Man Who Walked Between the Towers* and *JoJo's Flying Sidekick* exhibit this kind of congruent text-picture relationship. Children's explicit recalls of *JoJo's Flying Side Kick* accounted for 87% of the immediate retellings and 83% on the delayed. The proportion was less for *The Man Who Walked Between the Towers* (80% I, 75% D) due, in part, to a large percentage of misinterpretations fostered by text and picture.

Next, participants used a sizeable percentage of overlapping visual-verbal content to retell these narratives. For the group as a whole, 61% of the explicit content children recalled about *The Man Who Walked Between the Towers* came from the text-picture overlap. *JoJo's Flying Side Kick* differs from *The Man Who Walked Between the Towers* in that it also has an abundance of complementary dialogue that elevates the importance of text alone as a source of content. Consequently, about one-half of the recalled explicit content came from symmetrical words and images. For these two books, text-picture overlap was also the main source of inference making. During end of study questioning, children did not differentiate between the text-picture relationships in these two narratives. Most readers expressed the feeling that detailed words and images in both books helped them understand, recall and enjoy the stories. At our final meeting, Laverne (MGL) reiterated the thoughts of her classmates when she said, "I like when pictures and words come together to tell the story...They make me feel right there."

As stated previously, a relatively tight fit between words and images can discourage inference-making, especially at the global level, depending upon other story and reader variables (Nikolajeva & Scott, 2001). There is less need for children to

mediate between text and picture as they progress through the story since the two sources either overlap or fill in each other's gaps. This was true in the case of both books.

Global inferences accounted for only 7.5% of implicit content in children's retellings of *JoJo's Flying Side Kick* and 7% of their retellings of *The Man Who Walked Between the Towers*. Of course, many of the twelve children in this study did not spontaneously construct broad inferences during recall. Their reading behavior fits with McKoon and Ratcliffe's (1992) minimalist hypothesis which states that readers' automatic inferences are made mainly to establish local story coherence.

Still, a sophisticated picture book like *Zoo* encouraged a few students to make broad text-picture connections including their view of the author's message. Global inferences in response to this book accounted for 12% of the total. One reason is that Browne is not simply interested in telling and showing a story. His visual-verbal content implies messages to his readers. Additionally, words and images in *Zoo* are not congruent and overlapping. Rather they are contradictory and interdependent. They rub against each other, showing and telling different stories that readers need to interweave. Two GLA readers grasped this incongruence and integrated both sources of content to construct messages about animals, humans and their relationship to one another.

The remaining ten readers either did not perceive the visual-verbal complexities and subtleties in *Zoo* or found them confusing. They simply understood the story on its most simple, literal level derived largely from textual content. For the group as a whole, more than one half of the explicit recall was based on text alone (59% I, 54% D). Text was also the main source of inference-making. Unfortunately, the story on this level is rather uneventful as evidenced by each child's comments at the final session.

Perhaps the average fourth grade reader cannot be expected to make broad connections about *Zoo* in an independent reading situation without prior experience with this kind of book. In their study of children's responses to *Zoo*, Arizpe and Styles (2003) also found the initial responses of four to eleven year olds to be on the literal level. However, after responding to the first adult read-aloud, participants heard a second one and engaged in semi-structured interviews, picture drawing and group discussions. Researchers observed that "when children are given the time to listen, talk, draw, reflect and think about *Zoo*, the results can be outstanding" (p. 241). The independent reading method used in my study could not possibly produce the same results as in Arizpe and Styles' research. Used with a more appropriate reading method, this story and others with contradictory text-picture relationships have the potential to encourage higher level thinking as well as reader satisfaction.

The text-picture relationship in *Wings* differs from that of the other three books. Words and images are congruous, though neither symmetrical nor complementary. Text moves the narrative forward, mapping out the action, and supplying most of the details. Images mainly enhance text while adding some new information. Accordingly, for the group as a whole, about 60% of the explicit content students recalled about *Wings* came from text alone, both immediately and after a delay. Children leaned on words to retell the story. Since there was little visual-verbal overlap, a sizeable proportion of recalled content was based on picture alone (14% I, 17% D).

Of the four books, *Wings* encouraged students to make the highest percentage of inferences, (25% I, 31%D), and text was their main source. As in *Zoo*, text and picture must be integrated for full story understanding, and this mediation is carried out by

inference making. However, other characteristics of the book summon this cognitive process. First, the verbal story is brief with few details, and there are frequent gaps in the narrative. Students made local inferences to fill them in. Next, Myers' vague cut-out figures and abstract settings caused children to infer about time, place, activity and especially characters' feelings. Approximately one-quarter of participant's local inferences were based on images, many of which dealt with emotion. The familiar theme also elicited a high percentage of personal associations, 32% of the total. Several students became involved with the plight of Ikarus and applied it to their own lives. Finally, since the story is meant for younger children, Myers repeats his message and couches it just below the surface of words and images. Low level global inferences, 9% of the total, were easy for readers to construct. In other words, the large number of inferences that children made in response to *Wings* was not simply to bridge the gap between text and picture.

Readers enjoyed *Zoo* and *Wings* less well than *JoJo's Flying Side Kick* and *The Man Who Walked Between the Towers*. One complaint about both was that not enough information was included in the pictures. By this they meant descriptive, detailed content that overlapped with the words. Huck and Kiefer (2004) state that "the use of collage for illustrating children's books has become popular" (p. 179) and describe many wonderful books that include this technique. Levie (1987), on the other hand, found that children prefer realistic pictures for instructional purposes. If readers are using illustration art to carry away information, realistic, detailed images are helpful. While the pictures in *Zoo* are more realistic than those in *Wings*, they are also ironic, symbolic, and deceptive. Most participants were unfamiliar with this interplay of words and images and how it

should be approached to construct narrative meaning. It did not match their expectations and experience with picture books.

Text-Picture Relationships and Reading Ability Groups

My second research question pertains to the impact of books with different text-picture relationships on children reading at three levels- grade level and above, moderately below grade level, and significantly below grade level. In order to draw conclusions, I will focus on the length of children's retellings as well as two types of recalled content, text-alone (T) and picture alone (P).

Influence of words and images. An analysis of the length of children's story retellings revealed that group differences exist, and text-picture relationship seems to have played a role. The following figures show the number of kernels recalled about each book: *JoJo's Flying Side Kick* (1535), *The Man Who Walked Between the Towers* (1271), *Zoo* (1292) and *Wings* (1031). Of these four books, the story of *Wings* contains the least number of words and, for the group as a whole, elicited the fewest recalled kernels. However, between-group comparisons show that SGL readers constructed considerably shorter retellings than the other two groups. When all explicit kernels were combined for immediate, prompted, and delayed retellings, average lengths were GLA (58.75), MGL (66.75) and SGL (43.50). Group recollections of combined explicit and implicit content displayed these same differences. A likely explanation is that since text carries the narrative, SGL readers were at a disadvantage. Images in *Wings* do not greatly overlap with textual content, rendering them less helpful to SGL readers. Consequently, the text-picture relationship contributed to their sparse explicit story retellings.

In contrast, an argument can be made that SGL readers' longer recalls of *JoJo's Flying Side Kick* and *The Man Who Walked Between the Towers*, both of which are also written on a fourth grade level, were related to their text-picture interactions. The lengths of each group's retellings were less divergent. In response to *JoJo's Flying Side Kick*, when all explicit kernels were combined for immediate, prompted and delayed retellings, average lengths were GLA (89.25), MGL (126.25), and SGL (88.75). In response to *The Man Who Walked Between the Towers*, averages were GLA (80.25), MGL (83.50), and SGL (72.25). Group recollections of combined explicit and implicit content displayed these same differences. Presumably, symmetrical and complementary word-image relationships in these books helped SGL readers construct longer explicit story retellings.

Group differences were also apparent when use of text-alone and picture alone content were examined. For the three picturebooks in which words and images are congruent or, at least, harmonious, GLA readers generally relied more than struggling readers (SGL) on explicit text-alone and less on picture-alone to retell the stories. This held true as well for implicit content. Since the reading level was not too difficult for GLA students, visual information was less necessary for comprehension. As Tyrone (MGL) and Ashley (GLA) explained, the harder the book, the more they used pictures to understand it.

In response to a book such as *Zoo*, with an incongruent text-picture relationship, GLA readers understood that picture alone content was necessary for story comprehension. They utilized more picture alone content in their explicit retellings and as a source of inference and less text alone content for inference making. In other words,

their pattern of recall shifted for *Zoo* in response to its text-picture relationship. In contrast, SGL readers relied more on textual content as a source of explicit and implicit recall because it told the story's simple strand on which they focused.

Next, in response to all books, SGL readers used a greater percentage of explicit picture alone content after a delay than immediately after reading. Simultaneously, they used less text alone at that time. Their verbal memory was not as strong as that of other readers, so they leaned more on visual content to retell a story. However, while retelling *Zoo* after a one week delay, GLA readers also increased their use of explicit picture alone content. They understood it was important for story comprehension and recall. In other words, students' reading ability interacted with a book's text-picture relationship to affect the sources of content they used to recall a story.

Categories of inference. In this section, I will summarize the data relating to types of inferences made by each of three reading groups across four books. There are five categories. (See Table 1.) Many factors caused inference making, only one of which was a book's text-picture relationship.

In this investigation, children made *local inferences* spontaneously in response to a small quantity of content. I defined "small quantity" as visual and verbal information on one or two consecutive book openings. (See Table 1.) Inferences pertained to

Elaborations on a sentence kernel, answering the questions "when, where, what, or how."

Explanations about the cause of a kernel, answering the question "why."

This was the most common category of inference for all students, though less able readers constructed the greatest proportion in relation to their total story recall. For the

whole group, local elaborations and explanations accounted for 44-60% of all implicit content in the four sets of retellings. With the exception of *Zoo*, the main source reflected a narrative's text-picture relationship.

However, picture alone content was the basis for 18%-26% of children's local inferences. Educators often think of inference making as a product of words, not pictures. These percentages demonstrate the important role of images, especially in conveying characters' feelings. For example, in response to JoJo's appearance on one book opening, Laverne (MGL) inferred, "JoJo was kind of surprised, and her facial expression was that she was shocked." Similarly, after viewing the younger brother's smile in *Zoo*, Serena (SGL) concluded, "The little brother was happy because he went to the gift shop." Line, shape and color imply a character's thoughts and emotions.

Global inferences were defined as those which emanated from a large chunk of content across three or more openings. (See Table 1.) Those embedded in the data pertained to

The implied main idea, theme or author's message

Characters' main actions, goals, emotions or primary personality traits

Connections between non-adjacent actions or events in the story

Participants in this study were not prone to making global inferences. They accounted for only 7%-12% of the implicit content across four sets of retellings. Of the four stories, *Zoo* evoked the most high quality global inferences, and GLA readers made the greatest proportion of these. They often bridged the gap between incongruent words and images. For example, in the following quote, Ashley (GLA) inferred Browne's message in *Zoo* and supported her inference with specific examples from the story.

I think Anthony Browne was trying to say that people and animals can be the same in different ways and different in some ways. Like in the middle of the story, when the two boys was wrestling, the mom saw baboons wrestling and said they reminded her of somebody. And in another part of the story, the pictures showed people having animal features and stuff. There was a woman with frog feet and men having horns on their heads and noticeable features that animals have.

Ina's (GLA) global inference generalized about the incongruous nature of *Zoo*.

I think the author is trying to tell us that he is trying to make the book funny and a kid's book with a lot of pictures of animals, but when you see the animals, he's making it serious. Also, [he is making the book funny and serious] by the background of people who dress up and look like animals and wear silly things at the zoo.

The strongest readers (GLA) in this study constructed the greatest proportion of global inferences in response to all stories. SGL readers made a similar percentage when retelling *JoJo's Flying Side Kick*. Inferences about JoJo's changing emotional state were easy to construct. As well, the repetitive quality of *JoJo's Flying Side Kick* may have helped SGL readers combine story content. In their investigation of children's inferential abilities in the context of reading, Johnson and Smith (1981) found that memory is an important factor in making global inferences. Children must remember what they read in one paragraph and combine it with what they read in another that is several or more pages away.

I defined *misinterpretations* as faulty inferences that were fostered by text and picture in conjunction with students' limited background knowledge. (See Table 1.) My taxonomy enumerates three causes of misinterpretation found in the data.

Major visual-verbal gaps in the story

Conventions of pictures in picturebooks

Unnamed but pictured narrators

Participants in all groups misinterpreted story content in three of the four books. These faulty inferences accounted for 19.5% of the implicit content in *The Man Who Walked Between the Towers*, 5% in *Wings*, and 2% in *Zoo*. Three roots of misinterpretation were students' limited understanding of the conventions of pictures, particularly the meaning of a picture's frame; unsuccessful attempts to bridge a major visual-verbal gap in the narrative; and confusion as to the identity of an unnamed narrator who also lacks distinctive visual features.

One misinterpretation resulted from students' limited knowledge about the conventions of pictures, particularly the meaning of an illustration's "frame" (Moebius, 1986; Sipe, 1996, Whalen-Levitt, 1986). A frame is a window into the world of story, usually consisting of a white border around the artist's illustration. Whalen-Levitt (1986) describes its purpose as making the transition into the story world as smooth as possible. Most children have enough experience with picturebooks to understand that this framed image is merely a representation of reality, not reality itself.

However, two of the picturebooks in the study, *The Man Who Walked Between The Towers* and *Wings*, ask children to perceive a double illusion. Framed images not only separate the story world from reality, they go even further by differentiating a story character's thoughts or imaginings from actions. Children did not make this distinction and perceived only one illusion. For example, in *The Man Who Walked Between the Towers*, Philippe imagines going to the police and owners of the towers asking for permission to tightrope walk between the twin buildings. He also imagines that the men respond by motioning an emphatic, "No." Both the words and two large illustrations describe Philippe's thoughts. To clarify this, Gerstein surrounds the two images with

wavy lines which act as supplementary picture frames. They indicate that the two scenes differ from others in his story. Children appeared to be unfamiliar with this picturebook language and misinterpreted the images. Eight of the twelve drawn from all three reading groups assumed this scenario actually occurred, that Philippe literally went to the owners to request permission. Possibly, the vivid images coupled with the words increased the chances of misinterpretation, evidence that pictures can detract from comprehension as well as enhance it.

A similar misinterpretation occurred in response to the book, *Wings*. In this case, the confusing picture does not have a distinctive frame around it, only the traditional plain white border. Midway through the story, the female narrator imagines that Ikarus Jackson is behind bars, or in jail. Myers is trying to illustrate her thoughts or fears that Ikarus might be sent to jail for his unique qualities. The picture shows a series of thin strips of brown paper pasted in front of Ikarus's cut-out figure. The words tell, "Could the policeman put him in jail for flying, for being too different"? This interaction of words and image confused three of the twelve children. They interpreted the scene literally and assumed that Ikarus had actually been put behind bars. Since the picture is not surrounded by a distinctive frame, background knowledge about the conventions of pictures might not have prevented the children's misinterpretation.

Tyrone (MGL) was sensitive to this problem and discussed the difficulty of constructing meaning from words and images. After reading, he commented how confusing the interplay of text and pictures were in *Wings*. He explained that "when the sticks were over [Ikarus], the cage stuff, it mixed me up. He really wasn't in

jail but in that picture it said he was.” Tyrone, like several other children in the study, appeared to be unfamiliar with the different levels of illusion in picturebooks.

Another source of misinterpretation in this study was a large word-image gap or “indeterminacy” (Iser, 1978) in the story. Seven of the twelve participants were unsuccessful in their attempts to bridge it. Lacking the appropriate background knowledge about a world event, the fall of the twin towers of the World Trade Center, they misapplied content from early in the story to fill the gap. More specifically, as his story of Philippe Petit draws to a close, Gerstein abruptly moves ahead in time almost thirty years at the turn of a single page and without transition. In the next to the last opening, he tells, “Now the towers are gone,” and shows the skyline of New York devoid of the World Trade Center. Then in the final opening, he redraws the towers transparently, and visually and verbally connects two different concepts, our memory of the twin towers and Philippe’s tightrope walk. There are no explanations. In the following quote, Dawn talked about her confusion:

All the pictures helped me except for one. When it said the buildings were gone, I didn’t get it. I didn’t understand why the towers were gone. All I knew was that the towers wasn’t there. The pictures didn’t help me understand ...whether they took them down or they fell down.

All but one participant in the study were either unaware of the act of terrorism on September 11, 2001 or unable to connect their limited understanding of that historic event with Gerstein’s book.

Picturebook time appeared to be a source of confusion for children. How many days, months or years can possibly elapse between two book openings? After Amy completed her description of Philippe’s arrest by New York City police and subsequent

sentencing in 1974, she stated, “A couple of days later, the towers were gone.” Her thinking certainly seems logical. Next, the children wanted to understand why the towers were suddenly gone. In their desire to create meaning, they used the known to explain the unknown and speculated or inferred why the towers might have disappeared. Four readers hypothesized that the towers must have been taken down so that no one will walk between them in the future. Ina stated:

They took the buildings down that he walked across. I guess they thought it was dangerous because if he did it then someone else will do it, and someone will get hurt, and it gonna be their fault, mostly ...So they took them down.

Similarly, Serena (SGL) announced, “They took them away because they didn’t want him to get on them no more or anyone else again.” In contrast, Allan surmised that Philippe’s morning walk back and forth on a rope caused the towers to be “messed up, broken in half and smashed,” so they will have to “fix them up again.” These explanations make some sense in view of earlier words and images.

Constructivists Graesser, Singer and Trabasso (1994) refer to the concept of “search after meaning.” They propose that “readers attempt to construct a meaningful referential situation model that addresses the readers’ goals, that is coherent and that explains why actions, events, and states are mentioned in the text” (p. 372). While some children simply retold the story of *The Man Who Walked Between the Towers* without addressing its obvious gaps, others needed to openly construct inferences to fill them in. Interestingly, students who verbalized their “search after meaning” resided in all three reading groups.

Another cause of misinterpretation in this study was the author-illustrator's creation of an unnamed narrator who lacks distinctive visual features. Three readers of *Wings* and five of *Zoo* misinterpreted the narrator's identity. In the case of *Wings*, the narrator, as every other character, is a cut-out figure. Only shape and color define her. She is presented in shades of yellow with the hint of a skirt on her lower body and a ponytail at the back of her head. While she is Ikarus's female friend, three children either referred to her as "he" or "teacher." Since another figure actually represents the teacher, these children were not very observant.

In the case of *Zoo*, the unnamed narrator's identity was also problematic. He is the older brother in the story's fictional family of four. His younger brother is named Harry. However, both younger and older brother have similar features and outfits. Their only distinguishing visual characteristics are their height, hair color and T-shirts. Five children often had difficulty differentiating between them. They used the name "Harry" for the wrong brother or attributed actions of one to the other.

However, on some book openings, it was easier to assign the correct label than on others. Story content surrounding the boys' identities was more or less helpful. Consequently, children moved back and forth as they connected names to behaviors. One student, Kia, was aware of her own misunderstanding and decided to camouflage it. She simply called each brother "he," regardless of his identity. While Browne might have created similarities between the boys in order to generalize about them, it was confusing to his readers.

In three of the four books in this study, visual and verbal content unintentionally conspire to mislead the students. Their limited background knowledge contributed to the

problem. Misinterpretations emanated from the meaning of a picture's "frame," a large visual-verbal gap in story content, and the existence of an unnamed narrator who lacks distinctive visual characteristics. While the interplay between words and images in picturebooks can enhance and clarify story meaning, it had the opposite effect on several occasions during the course of this study.

Reader *associations* with picture books accounted for a large proportion of children's inferences. (See Table 1) In the taxonomy that emerged from the data, specific examples were characterized as

Story-to-personal experience

Story-to-book or film

Story-to-real world event

Story-to-fantasy world

Story-to-advice

Associations were responsible for 16.5% - 32% of implicit content in the four sets of retellings. While material in the text-picture overlap usually initiated students' connections, their inferences often developed a life of their own based on background knowledge. MGL readers, the most talkative group, made the greatest proportion of associations in relation to length of their retellings. Children identified most often with the ostensible subject of *Zoo*, theme of *Wings*, and main character and theme of *JoJo's Flying Side Kick*. These were familiar to students and encouraged a variety of connections.

Personal associations, the most common type, were usually text-to-life (Sipe, 2000) in that children used words and images to illuminate something in their own lives.

Films were the next most frequent source, followed by real world events, as in response to *The Man Who Walked Between the Towers*. Some kernels of content also related a story to the reader's fantasy world. For example, after reading *Wings*, Dawn talked about her desire to fly. She related, "I wish I could fly one day. I would fly anywhere I want to instead of driving. I would fly to Disney World and everywhere in the world." Story-to-advice was the final type of association. Ikarus's plight in *Wings* inspired Laverne to advise new students in a classroom. She explained how they might gain acceptance by their peers. Students made many associations with the four picturebooks used in this investigation, even with those they favored the least.

Evaluations of story and characters were scattered across groups. They generally originated from the text-picture overlap. In the four sets of retellings, evaluations accounted for only 3%-7% of all inferences, and Philippe Petit's daring tightrope walk evoked the greatest proportion. For example, two students viewed Philippe's risk taking behavior as "weird" and "plain old dumb." Most evaluations pertained to behavior of characters, but at one point, Ina criticized an entire narrative. Referring to the way characters treat animals in *Zoo*, she announced, "The book doesn't have manners. It is saying stupid things." Children in all three groups constructed a small percentage of evaluations.

Each reading group tended to make particular types of inferences. In relation to the length of their retellings, the strongest readers (GLA) produced the largest percentage of global inferences. In contrast, the least strong readers (SGL) created the greatest percentage of local and faulty ones as well as misinterpretations. MGL readers, the most talkative, excelled at making personal associations. Evaluations were limited in number,

and each group was responsible for a small percentage. Many variables, including the text-picture relationship, had an impact on the kinds of inferences that children constructed as they read narrative picturebooks.

Cued recall and reading ability. Despite the documented facilitating effect of illustrated text during explicit story recall (Filappatou & Pumfrey, 1996; Levie & Lentz, 1982; Schallert, 1980), SGL readers still performed considerably less well than the other groups on the cued recall measure for all four books. (See Table 14.) I had surmised that books with a greater proportion of overlapping text-picture content might narrow the comprehension/memory gap between reading groups. However, I used as a model for questioning, the QARs, or Question-Answer Relationships (Raphael, 1986; Raphael & Au, 2005) and Cortese's (2003) application of QARs to picture information. Several questions required explicit recall of visual and/or verbal information that is "right there" on the page. Higher level questions asked readers to "think and search," connecting visual and verbal content from different places. "Author and you" questions asked readers to reconstruct the author's implied message. I selected this model because it resembles the kinds of assessments that classroom teachers and commercial programs utilize. However, it requires more than retention of illustrated story content, the measured outcome of much early experimental text-picture research (Levie & Lentz, 1982). It necessitates the kind of higher level thinking that differentiates many strong from weak readers. The cognitive demand of the QARs quite possibly masked the facilitating effect of illustrated text in a picturebook.

Table 14. Cued Recall Range By Reading Group

Book	Group:	GLA	MGL	SGL
The Man Who Walked		6.0-8.0	6.0-7.5	3.0-7.5
JoJo		6.5-8.0	6.5-8.0	4.0-6.5
Wings		7.0-7.5	5.5-7.5	3.5-6.5
Zoo		4.5-7.5	4.0-6.0	3.0-5.5

Variables in the Reading Transaction

In this study, explicit story recall and inference making were related to a narrative's text-picture relationship, but other factors were causative as well. As Rosenblatt (1982, 1986, 1994) hypothesized, these were characteristics of the reader, text [and sequence of pictures] at a particular time under particular circumstances. Reader characteristics included a participant's grade level and reading ability as well as his or her background knowledge, response style, and expectations about picturebooks. Features of text included its reading level, structure, topic, theme and actions of characters. Qualities of pictures were also influential. It made a difference whether they were realistic and detailed, vague, or abstract. Time was also important. Meaning made immediately after reading differed from that constructed after a prompt or a one week delay. Finally, circumstance was significant, which includes context of the reading event and type of activity. The method of reading was an independent one in a one-to-one setting though children received help with word recognition. A narrative picturebook's text-picture relationship was just one of many variables in the reading transaction.

Readers' Expectations, Preferences and Advice

In the final session, I asked the participants what they expected of picturebooks and what advice they would give to author-illustrators. Quotations below express the expectations, preferences and advice of five students:

Amy (GLA): Pictures should tell the same story and not be complicated. They should be clear and show what you need to know. ...I would tell the artist to write the words of the story, then draw the pictures from how the words is to go along with the story. Make pictures the same as the words and don't make crazy pictures like in *Zoo*.

Allan (SGL): I want the pictures to tell the same as the words. I want to remember how the pictures tell the story. When pictures show actions, it helps me the most.

Tyrone (MGL): I want pictures to tell more about the story than the words tell to help me understand the story because it is a picturebook. In a picturebook, they should show more than the words.

Dawn (MGL): Make pictures with a lot of details and add a lot of flavor and taste. I want to put mustard and ketchup and cheese to add flavor. I liked *JoJo's Flying Side Kick* and *The Man Who Walked Between the Towers* the best. They had pictures with lots of details.

Ina (GLA): Maybe pictures should talk about the same thing as the words but in a different way. I don't want them to tell the exact same story, but help me to understand the story better.

At least four, if not five, of the quotations describe symmetrical and complementary relationships.

Twelve participants and I worked together during this study to increase our understanding of text-picture relationships in narrative picturebooks. By introducing one book at a time, each reader was able to contrast one relationship with the other. This raised the group's level of consciousness about the concept. While insight was greater for some students than for others, all developed preferences. They favored symmetrical

and complementary relationships in which detailed words and images either overlapped or, by extension, filled in each other's gaps. Books in which text carried the narrative and text and picture contradicted one another were not as well received. Participants expressed the view that these were not as helpful for story understanding, recall and enjoyment. The visual-verbal relationships examined in this study are four ways in which words and images in narrative picturebooks accompany each other and intertwine. All have value and can be used in the classroom for different purposes.

CHAPTER 5

IMPLICATIONS OF STUDY

Implications for Teaching

The purpose of this study was to examine children's responses to four narrative picturebooks, each exhibiting a different consistent text-picture relationship. I questioned their influence on fourth graders' explicit recall and inference making. I also questioned how a child's reading ability affects this process. Results show that text-picture relationships have an impact on the sources of content children recall about a narrative, both immediately and after a delay, kinds of inferences they make, expressed ease with which they recall a story, and their expressed level of satisfaction with the reading-viewing experience. Reading ability affects children's transaction with picturebooks as well. In the following sections, I will describe some of the insights gained from this study and their implications for the classroom.

Choosing Books with Different Text-Picture Relationships

Despite the personal nature of the reading process, participants as a whole group in this study were surprisingly uniform in the sources of explicit and implicit content they used to retell each story. They were also uniform in their preferences for specific text-picture interactions. In the three traditional narratives with congruent words and images, the sources of content children recalled reflected the book's text-picture relationship. In the multi-stranded narrative with ironic or contradictory words and images, the main source of content students recalled reflected the story's most simple strand. Within these parameters, participants in three reading ability groups exhibited somewhat distinct patterns in their use of words and images.

The twelve participants in this study do not necessarily speak for all readers in every grade, school, and community. Since narrative picturebooks represent a large portion of the reading material in today's primary and intermediate grade classrooms, it seems reasonable that teachers understand the variety of text-picture relationships exhibited in books, suitability of different word-image combinations for diverse ability groups, reading contexts and purposes, and preferences of their students for one type or another. The following are some specific implications of my research for using picturebooks with different text-picture relationships in the classroom.

Assess student expectations and preferences for specific text-picture relationships.

Children's reading interests and preferences are of major concern to educators (Huck & Kiefer, 2004). The concept of preference usually refers to a book's genre, topic or theme. However, results of this study show that this concept applies as well to a book's text-picture relationship. The twelve participants initially expected the picturebooks they read to have congruent words and images. As the study progressed, they expressed a preference for those in which 1) images are loosely symmetrical or overlapping with the words, such as in *The Man Who Walked Between the Towers*, and in which 2) words and images are complementary, such as in *JoJo's Flying Side Kick*. These two traditional relationships are exhibited in the so-called twice told tale.

Nodelman (1988) clarifies the concept of symmetry by explaining that "the words of the text so permeate our experience of the pictures that the two seem to mirror each other...but they do not in fact do so" (p. 193). Each symbol system communicates in a different way, transforming the other into a rich narrative source. Pictures anchor and limit the words at the same time that words are anchoring and limiting the pictures.

In response to final session questions, individual participants in this study expressed the idea that the relative congruency of two rich narrative sources enhanced their story comprehension, recall and enjoyment. However, these preferences are not necessarily universal.

In addition to assessing preferences, teachers might want to weigh advantages and disadvantages of different text-picture combinations. For example, one disadvantage of narratives with loosely symmetrical or complementary relationships is that they might discourage global inference making. This was precisely the case with *JoJo's Flying Side Kick* in which children's inferences were mainly local ones and associations. The relatively tight fit between words and images can leave few gaps for readers to fill (Nikolajeva and Scott, 2001). Text-picture relationship is just one of many variables teachers need to consider when evaluating narrative picturebooks for their classroom.

Select books with symmetrical and complementary text-picture relationships for less skilled readers. Less skilled readers in this study profited most from books in which words and images on each opening either loosely overlap or complement the other. Since their word recognition skills were not strong, a book in which text carries the narrative put them at a disadvantage. Moreover, less able readers as a group leaned somewhat more than their skilled peers on detailed, supportive images to recall explicit content, especially after a delay. If a student has difficulty understanding or remembering verbal symbols, he or she looks to visual ones for help.

Depending upon the student, memory for symmetrical and complementary text and pictures can increase the quantity of explicit information contained in his or her story recall. For example, Serena's (SGL) tested reading level was early third grade mainly

because of a weakness in word recognition. However, I supplied the difficult words as she read and, by her own admission, she relied heavily on picture content. These two supports raised her level of performance beyond that of other SGL readers. Both the length of her oral free recalls and scores on comprehension questions were similar to those of the MGL group. This example supports Filippatou and Pumfrey's (1996) finding that overlapping words and images facilitate story recall for some, though not necessarily all, less skilled readers.

Group percentages are confirmed by self-reports. Many of the participants expressed the idea that visual content which reinforced textual meaning helped them better understand and remember the stories. A few of the stronger readers (GLA) viewed this as an occasional occurrence whereas most of the others, particularly in the SGL group, felt this was generally the case.

Of course, good readers resemble poor readers when material is difficult. Both Ashley (GLA) and Tyrone (MGL) admitted that they more frequently consult images when the text is challenging. After his review of experimental literature, Peeck (1993) stated that "learners will be more likely to pay attention to pictures, and illustrations are more likely to have beneficial effects, when the material is difficult to comprehend, and not readily understood without a picture" (p. 230).

Choose books with congruent text-picture relationships for independent reading. Independent reading, in which there is little teacher input or peer interaction, is another situation in which narratives with congruent words and images are helpful. Traditional picturebooks exhibit this visual-verbal relationship. In the current study, students read all four books independently without before or after-reading guidance or discussion. This

method of reading does not offer any supports or scaffolds. Most of the participants in the study expressed the need or desire for picturebooks that are relatively transparent, that show and tell a story without any incongruities. Books with supportive words and images are good choices.

Introduce books with incongruent text-picture relationships. While some readers favor and profit from books with reinforcing words and images, the purpose of education is not just to reflect what students expect and prefer but also to broaden their experiences. As Sipe (2000) points out, books have the potential to offer readers more than one type of literary pleasure. For example, while there is “the pleasure of seeing one’s world mirrored and affirmed in literature, there is also the pleasure of being surprised and unsettled” (pp. 256-257). Narratives with incongruent text-picture relationships, such as *Zoo*, have the potential to offer readers unexpected surprises.

Three of the books used with readers in this study exhibited characteristics of traditional picturebooks with which children were familiar. The story unfolds in a linear fashion, pictures and text support each other all or most of the time, and author and illustrator exert control over a story that offers a single perspective. In contrast, the fourth book, *Zoo*, belongs to the sub-genre of postmodern picture book. Several characteristics are nonlinearity of narratives, irony and contradiction, and multiple perspectives (Goldstone, 2004). Intermediate grade students do not generally expect narratives to exhibit these characteristics. When participants in the study read *Zoo*, they were given an opportunity to coauthor the story by making high level inferences. Consequently, children made somewhat more global inferences in response to this book than to the other three.

However, readers were not given support in this process. Independent reading was an insufficient method, and most of the students met with an overabundance of unexpected surprises. They were unable to make use of the contradictory picture alone content that Browne included. In turn, most participants could not decipher the story beyond its most literal, textual level. Based on their end-of-study responses to questions, even strong readers who mediated between incongruent visual-verbal symbols to construct complex story meaning did not seem to savor the experience. Nonetheless, postmodern picturebooks are not anomalies, and they are increasing in number. It would be advantageous to include samples of this sub-genre in the reading curriculum.

In addition to encouraging readers to make high quality inferences and coauthor a story, they serve other purposes. Goldstone (2004) suggests that children's books help young readers to better understand their world, to prepare them to be capable adults. Another advantage of ironic picturebooks, based on my own experience, is that they reflect real world communication. It is not always a tidy process. For example, during face-to-face interactions, one person's words, facial expressions, and body language do not always convey the same message. A smile is sometimes coupled with harsh words whereas a frown is often coupled with kind ones. Children need to be aware of this occurrence both as initiators of messages and as receivers. They need practice interpreting situations in which communication produces mixed signals. Ironic or contradictory picturebooks provide this opportunity.

Furthermore, postmodern picturebooks reflect the modern technological world in which we live (Anstey, 2002). Literacy today requires experience with multi-media, such as sounds, words, images and motions. Children and adults are required to interpret

creative arrangements of these symbol systems, such as those provided by computer software and the World Wide Web. Anstey (2002) suggests that the term literacy is no longer appropriate as it focuses on language alone. She prefers the word “multiliteracies” because it “focuses on the many modes of representation and forms of text that have been made available through multimedia and technological change” (p. 446). Postmodern picturebooks offer reader-viewers one kind of literary experience that they should have in their repertoire.

Teach students how incongruent text-picture relationships work. Readers need instruction and practice before transacting with non-traditional picturebooks. While I did not directly teach students in my study, I gave them practice creating meaning from four contrasting picturebooks. The experience enabled many of them to extrapolate the concept of text-picture relationship. However, only a few constructed complex meaning from *Zoo*, the most sophisticated narrative. Teacher explanation and modeling followed by student practice and discussion should precede independent reading of non-traditional books. For example, in her doctoral research, Lohfink (2006) taught fourth graders how to deconstruct stories exhibiting this new grammar, gave them opportunities to read independently ten postmodern picturebooks, and engaged them in conversations about literature. In turn, students utilized high level thinking during discussions about the narratives. While intermediate grade students have much experience with congruent text-picture relationships, they cannot be expected to create meaning from incongruent ones without prior instruction.

To conclude this section, some narrative picturebooks exhibit consistent text-picture relationships on one opening after another. Teachers need to be aware of this

occurrence and consider the interplay of words and images when selecting reading materials for their classrooms. This is especially important for students reading below grade level.

Using Narrative Picture Books in the Classroom

Although this study focused mainly on different text-picture interactions in narrative picture books, some of the research results have implications for use of these art objects in general. In the next section, I will offer some recommendations for using picturebooks in the classroom.

Be conscious of individual and cultural influences on picture interpretation. One of the affordances of this study was the opportunity it gave me to observe individual differences and cultural similarities of twelve African American fourth graders. As adults and teachers, we must continue to remind ourselves that children view the world of words and images through a different set of developmental and socio-cultural lenses than we do, and their personal interpretations are not necessarily mistakes or errors. According to Anderson (2004), the schema that will be brought to bear on a text [and image] depends upon the reader's age, sex, race, religion, nationality ...in short, it depends upon the reader's culture (p. 597). The following is one charming example.

In the book, *Zoo*, Browne paints people with animal features to imply that humans act very much like animals. However, he also paints rosy cheeks on his light-skinned English characters, and, on one page, ketchup stains on the two brothers' faces. Laverne (MGL) was very observant of these visual details. In response to my question, "What is strange about the way Browne drew some of the people at the zoo," she responded:

All of the people have the same skin color but look different....The people have the same red marks on their faces, but in different places. Everybody has the same redness to show they are the same. Browne is trying to say that everybody is the same on the inside.

Laverne did not supply the expected response to my question. What she viewed as a distinctive visual feature of Browne's characters was not what I perceived. Yet she made an interesting inference based on her cultural interpretation of Browne's story illustration. Culture greatly influences what is read and viewed.

Expect pictures to play a role in readers' local and global inference making.

Teachers often think of inference making as an activity that applies to text alone. Results of this study show that students used visual content to elaborate, explain, generalize, evaluate, associate, and misinterpret story information. While Laverne drew a broad conclusion based on rosy cheeks, picture alone content in this study was usually the origin of children's local inferences. In fact, 18%-26% of their local inferences derived from pictures alone. Participants based numerous local elaborations on visual details, such as characters' facial expressions and body language. The best example comes from the book, *Wings*, in which a character's subtle smile caused readers to infer "happiness" and a bent head and slumped shoulders produced a response of "sadness." These inferences influenced the way story information was represented in memory and personalized the story for each student.

In this study, global inferences were frequently based on content in the visual-verbal overlap. For example, after retelling the story of *The Man Who Walked Between the Towers*, Peter inferred that Philippe was "brave" because he "walked between the towers and wasn't scared to fall." This global inference was based on what the book told

and showed about Philippe on opening after opening. Both global and local inferences originating from visual and visual-verbal content contributed to readers' unique representational model of four narratives.

Select picture books that facilitate readers' personal associations. Picturebooks can also encourage children to make associations and explore their personal experiences. Two of the girls in the study talked to me extensively about their lives. While Ina (GLA) often used time prior to the actual session, Laverne (MGL) shared her experiences after the prompt for more story information. Picturebooks appeared to facilitate identification with story and characters since associations grew out of narrative content portrayed in overlapping text and picture. During these associations, Laverne, in particular, verbalized at length about past and present goals, anxieties, and perceptions of injustice in her life. By constructing long associations with each narrative and identifying with characters and situations, she was able to explore a variety of problematic situations and emotions.

McGinley, Kamberelis, Mahoney, Madigan, Rybicki and Oliver (1997) were interested in the potential of narrative to function as a way of understanding one's own and others' experiences. They felt that the "discourse of story invites a certain ambiguity of meaning and events that induces readers to participate in the production of meaning" (p. 45). In their research with third and fourth grade children, the researchers questioned the nature of understanding that young readers gain about themselves and the social world as a result of transacting with stories. One finding was that children used reading to "objectify and reflect upon certain problematic emotions as they related to difficult or confusing circumstances in their own lives" (p. 57). Independent reading of picture

books gives children some opportunity to reflect on their own lives. However, use of picturebooks in combination with group literature discussions enables readers to more effectively share with one another personal feelings and experiences in relation to stories they read.

I also suspected that by giving all students the opportunity to express their feelings about each story, which they did in varying degrees, they sensed my acceptance of them and their points of view. Consequently, at the final session, when I asked for their honest opinions about the value of text and pictures, they felt safe enough to openly share them. Students' personal perspectives were a valuable addition to the other data I gathered.

As the study progressed, it became apparent that readers need not appreciate all aspects of a picturebook in order to associate with it. In response to end-of study questions, students stated that they enjoyed *Wings* and *Zoo* less well than the other two books. They objected to the vague quality of illustrations in *Wings* and its simplistic story. They failed to grasp the multiple perspectives offered by *Zoo*. Yet during earlier sessions, readers made approximately the same percentage of associations with these two stories as they did with *JoJo's Flying Side Kick*. In the case of *Wings*, they identified with the plight of a nonconforming student in a school setting. After reading *Zoo*, they made personal connections with a family trip to the zoo and frequency of two brothers fighting. This experience confirmed my view that picturebooks have many facets, more so than stories on the same reading level without illustrations. Children need not enjoy every aspect in order to derive literary pleasure or personal gain.

Be aware of each reader-viewer's unique response style. Observations of children in this study led me to disagree with some commonly held notions about gendered response style. More precisely, while these styles might apply to groups, they are not valid for individuals. For example, following their study of 84 English children, ages 4-11, Arizpe and Styles (2003) differentiated males from females on the basis of specific characteristics. They felt girls were more persistent than boys in their attempt to gain meaning from pictures, more articulate than boys in discussing picturebooks, and more apt to openly express their feelings about the stories. However, in this study of twelve African American fourth graders, only five of whom were boys, these divisions did not apply on an individual basis. For example, Allan exhibited a more aesthetic stance in relation to each book whereas Serena displayed a more efferent one (Rosenblatt, 1986, 1994). Each child presented a unique mix of traits that made up his or her response style (Smith, 1991). This style was evident regardless of the story he or she read.

Utilize picturebooks with traditional story grammar to facilitate less skilled readers' free recall. During this study, I observed how traditional narrative structure facilitated memory and recall. Two of the stories, *The Man Who Walked Between the Towers* and *JoJo's Flying Side Kick*, exhibit a traditional story grammar. The other two stories, *Wings* and *Zoo*, are more episodic, and one episode is not always casually related to the next. These two structures differentially affected children's memory and recall. They made fewer sequence errors while retelling *The Man Who Walked Between the Towers* and *JoJo's Flying Side Kick*.

Story structure includes an introduction of characters and setting, establishment of problem, sequence of events and resolution. Most children develop during the preschool

years an early awareness of this schema as they listen to and retell stories (Donovan and Smolkin, 2006). As well, it is taught in school as early as the first grade. The Report of the National Reading Panel (2000) advocates its teaching to students “as a means of helping them recall story content....” (p. 14). Knowledge of this structure and the cause-effect relationships within it help to explain its positive influence on memory and recall. In contrast, episodic stories often seem like listings in expository texts. During recall, children attempt to describe one item after another. For example, in *Zoo*, the family visits a series of animals before returning home. While Dad wants to see the gorilla last, other animals are viewed in seemingly random order. Participants had difficulty remembering every animal, order of presentation, and details of family visits with each. The implication is that if teachers are looking for books that less strong readers can comprehend and recall, readability level is not the only consideration. Additional characteristics are traditional story structure and picturebooks with loosely symmetrical or complementary text-picture relationships.

Provide students with background knowledge about conventions of pictures.

Reading pictures is as complex as reading words. An important requirement is background knowledge about pictorial conventions, one of which is the meaning of a picture’s frame. The frame is a window into the world of story, usually consisting of a white border around the artist’s illustration. Whalen-Levitt (1986) describes its purpose as making the transition into the story world as smooth as possible. Most children have enough experience with picturebooks to understand that this framed image is merely a representation of reality, not reality itself.

However, two of the picturebooks in this study ask children to perceive a double illusion. A frame not only separates the story world from reality, it goes even further by differentiating a story character's thoughts or imaginings from actions. In this situation, the artist often draws a supplementary edging around the illustration. For example, in *The Man Who Walked Between the Towers*, Philippe Petit imagines confronting several men, asking for permission to tightrope walk between the twin towers. The frame is a wavy line surrounded by a white border. In *Wings*, the unnamed narrator imagines that Ikarus Jackson has been placed behind bars, or in jail. Only a white border frames the image. However, children perceived only one illusion in response to both stories and interpreted each picture literally as if characters' thoughts were actually actions. While "the act of framing is an essential step in creating the fictive world of a picture book" (Whalen-Levitt, 1986), teachers need to provide students with background knowledge about this and other pictorial codes and conventions.

Use specific directions when prompting for more story information. Specificity of directions made a great difference in children's responses to a story prompt. In this study, participants' immediate story recalls were highly explicit, and most of their inferences were local ones. Following their retellings, I requested that they share their ideas and feelings about the story. They offered nothing in response. Consequently, I added to the prompt three concrete examples of ideas and feelings that were meaningful to them. They were to tell "what you liked or disliked about the pictured story, what the story reminded you of, and your view of the author's message." Once I established new goals for students, and they knew exactly what I wanted, they began to make inferences about the story. When students seem unable to follow directions, they need clearer

wording and specific examples. These can expand the meaning constructed in response to picturebooks.

However, their additions generally included one of three kinds of inferences I requested. Had directions included five possibilities rather than three, they might have made a broader range of responses. Obviously, there is a limit to the number of examples a teacher can present students without confusing them. There must be a point of diminishing returns. Still, it is an area worthy of teacher investigation, either formally or informally.

Utilize picturebooks to assess readers' story comprehension. Many children, such as SGL reader, Serena, have difficulty recognizing words in print. This disrupts reading comprehension even though their cognitive processing skills might not be weak (August, Francis, Hsu & Snow, 2006). Since picturebooks offer students a supplementary symbol system, they have the opportunity to construct meaning by way of a second route. For example, at the time of this study, Serena's tested instructional level in reading was early third grade though her expected reading level was high fourth. However, when reading picturebooks during my study, she was able to answer questions about the narrative as competently as MGL readers and even some in the GLA group. While I supplied the difficult words, she also relied on the illustrations to increase her story understanding. Serena's improved performance showed that her skill in comprehension was actually stronger than it appeared from measures using text alone. Teachers might consider using picturebooks during informal assessment of students' comprehension to gain greater insight into their capacity for understanding narratives.

Consider using sophisticated picture books for middle school students. Lastly, the experience as a researcher confirmed my view that picturebooks are a medium for all ages. While this chapter has dealt with the value of picturebooks for intermediate grade readers, these art objects can be sophisticated enough in content, style and visual-verbal relationship to be used as well with middle school students. Bainbridge and Pantaleo (2001) suggest that “increasingly, picturebooks are intended for an [older] audience of children....They require readers to be especially active in the construction of meaning during the reading process” (p. 401). Students can be taught to explore the multiple possibilities of story and develop their inferential comprehension skills. The narratives work well as teacher read-alouds and classroom reading materials.

In this study, I found that stronger readers tended to use text alone in their story retellings of the congruent stories more frequently than less able ones, especially after a delay. Their verbal skills were proficient for each book, and their long term memories for text were considerably better. Consequently, their need for supportive pictures was less great. This is presumably the case for older students whose word recognition skills are usually well-developed. However, the more words and images provide alternative information, such as in *Zoo*, the more readers need to use visual content in their representation of story and forge a connection. In this so-called interdependent picture book, each symbol system is mutually dependent upon the other to tell the story.

The visual-verbal relationship in a interdependent book can be one of enhancement, in which text or picture significantly enlarge upon the other; counterpoint, in which words and images offer alternative information; or contradiction, such as *Zoo*, in which two symbol systems seem to be saying entirely different things (Lewis, 2001). As

readers interweave words and images, they transform them in the process. The whole is richer than the sum of its parts (Nodelman, 1988). Interdependent picturebooks offer older students a different literary experience than narratives based on words alone. Still, picturebooks and graphic novels exhibiting a variety of text-picture relationships are of value in the middle school curriculum.

Recommendations for Future Research

My research study was quite broad in some ways and narrow in others. It was broad in the sense that I collected and analyzed a large amount of data about readers' explicit and implicit recalls of four stories with different text-picture relationships, responses to questions about story content, and responses about the value of text and pictures. However, it was narrow in the sense that I used only one book to represent each text-picture relationship. Moreover, the qualitative method I employed was only one approach to data analysis. Also, the small number of participants in my study represented one race, culture, grade level and socio-economic group. They do not reflect the diversity of students in the United States. The following section outlines several recommendations for future research.

Design of Study

To test the validity of my research results, I suggest that the design of a future study include several books representing one text-picture relationship. Picturebooks differ from one another in terms of their affordances. Each offers readers the opportunity to construct particular kinds of meaning. Researchers might contrast the impact of two loosely symmetrical books, A and B, with two in which text carries the narrative, C and D. While each set might have the same general word-image relationship, other variables

about each might change their impact on the reader. For example, in this study, *Wings* was used to represent a story in which text carries the narrative. Consequently, most of the content children recalled originated from text alone. However, foreground images in this story lacked detail, and background images were often abstract. While pictures created many opportunities for inference making, they restricted the amount of explicit content children could recall. If a second book with the same visual-verbal relationship exhibits more precise and detailed pictures, the pattern of children's responses might change. In other words, other features of the picturebook might counteract the influence of its text-picture interaction.

Another change in the design of study could be to supplement the delayed recall one week later with a repeated reading of that book. A revisiting of the same narrative might enhance the meaning readers construct after a delay. Work with young listeners (Martinez & Roser, 1985) and older readers, such as those in the intermediate grades and middle school (Pantaleo & Bainbridge, 2001), shows that repeated reading of interdependent picturebooks leads to increased depth of processing and new interpretations. Successive transactions with the same picturebook might make an important difference even when the method of reading is an independent one.

Method of Analysis

Additionally, while the sequential, kernel method of analysis seemed appropriate for this study of four text-picture relationships, it might be worthwhile in the future to use another method for non-linear, ironic stories. In this type of postmodern picture book, according to Goldstone (2002), "the story parts may be jumbled or absent, the reader may move backward as well as forward in the text, and multiple stories can coexist within one

text.” (p. 363). In other words, meaning is constructed in different directions, not simply in a left-to-right forward sequence. As well, in future text-picture studies, it might be beneficial to analyze the quality or level of a reader’s inference instead of its status as a local or global one. The concepts of local and global have less meaning in some non-traditional books.

Research Population

Finally, the number of participants in future investigations should be greater and represent a more diverse group of students at different grade levels. This was a small study including only twelve participants. A future investigation should include two to three times as many. Other population variables, such as age-grade level of readers, might affect results. Stage of development is an important factor in meaning making. For example, a book read by a third grader could be viewed quite differently by a student in the fifth grade. His or her maturity level, background knowledge, and attitude towards picturebooks might make a significant difference. Consequently, this study should be enlarged and repeated with a range of age groups.

For example, Arizpe and Styles (2003) conducted a qualitative study of 21 young listeners, aged four to eleven, who participated in interactive adult read-alouds of three postmodern picturebooks. The researchers found that children below age seven understood the stories less well than older ones. Another larger developmental study with 24 students could be implemented with independent readers in the third and fifth grades. Ages of these children would be eight and ten. However, at each grade level, students would be selected who fall into two reading ability groups, significantly below grade level and grade level and above. Three possible text-picture relationships could be

complementary, text carries the narrative, and contradictory or ironic. Results from this developmental study would show how students at two reading ability levels in two age-grade groups recall narratives with three different text-picture relationships. This is just one of many possibilities for a developmental text-picture study.

In addition to age, a reader's socioeconomic status might influence the meaning constructed in response to picturebooks. Participants in this research project were somewhat homogeneous in regard to social class and culture. This might have been related to their explicit, reporting style of retelling narratives, a style they either learned at home or as members of a particular community. Children from another socio-economic group could possibly recall stories in a somewhat different fashion. For example, they might spontaneously construct more global inferences as they read narratives. These are just a few examples of how a change in participants' characteristics could influence the impact of different text-picture relationships on readers' explicit recall and inference making about narrative picturebooks.

In his text, *Qualitative Research and Evaluation Methods*, Patton (2002) suggests that researchers refrain from drawing grand conclusions at the end of their studies. Rather, he proposes that they look to the future. Each new investigation extends the findings of a previous one, providing useful conclusions on which to base educational practice. While future researchers could possibly modify understandings about the impact of diverse text-picture relationships on reader recall and inference making, it is doubtful that they will contest the value of using picturebooks in the classroom with intermediate grade students.

Children devote more time to multimedia in which words are accompanied by images than they do reading text alone. Visual-verbal literacy is an important skill in the twenty-first century. Text-picture relationships are often traditional ones in which loosely symmetrical and complementary words and images reinforce one another's meaning. However, new modes of communication present these symbol systems in more complex relationships. Reader-viewers need experience constructing meaning from diverse text-picture combinations, and picturebooks provide that opportunity. They offer students rich, multifaceted literary experiences as they journey to become more literate adults.

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APPENDIX A

ESTABLISHING TEXT-PICTURE RELATIONSHIPS

Directions to Rater

I. Determining Content

Your goal is to differentiate between three types of explicit content represented by text and pictures on 20% of the pages or openings of four books.

You have a breakdown of the kernels residing on each of several pages or openings of the stories. Look at the adjacent picture(s) in your copy of each book. Make a decision as to what kernels in the text are also included in the pictures. For those kernels, change the type to bold. This constitutes the *text-picture overlap* (TP). In one book, there are two contradictory pictures connected to a body of text. Analyze each picture separately so the contradiction will be apparent. All remaining kernels in the text that are not in the adjacent picture(s) are considered *text-alone* (T). For example, dialogue is text alone content. Next, determine the explicit content in each picture which is considered *picture alone*. Type your list of kernels on a separate page.

II. Guide for Single Pictures

Look at the picture content that is not in the text-picture overlap. Topics A-G will give you some lenses through which to analyze *picture alone* (P) content. However, mainly include what you see that is central to the story and not included in the text. Then write a series of simple sentences telling what is contained in the picture alone.

A. Narrative Sequence

Location of picture in the narrative sequence. Story structure includes: beginning or

background of story, initiation of goal or problem, plot episodes, reaching goal or resolution of problem, and ending.

B. Setting or Background

Time, place, and scenery.

Minor characters, their relationships and actions.

C. Major Characters and Objects

Identity, appearance, and role of characters or objects.

Facial expressions and gestures which might express emotion.

D. Actions and Relationships Between/Among Major Characters and/ or Objects

Nature and purpose of characters' actions and reactions

Important relationships between/among characters and objects

Diagonal lines (vectors) often establish visual relationships between characters and characters or objects:

1) actions and interactions are established by vectors between characters and/or objects.

2) reactions are established by eyeline vectors between characters and/or objects.

E. Symbolism

Details about characters or objects that have symbolic meaning.

Characters or objects that have symbolic meaning.

F. Conventions or codes

Conventions or codes, such as position and size, line and color, shape, perspective, and frame which might affect interpretation.

G. Style and Medium

Artistic style and medium affect interpretation.

III. Establishing the Text-Picture Relationship

Use the categories and descriptions of specific text-picture relationships in Chapter 3.

Compare content in three categories – text alone, picture alone and text-picture overlap (in bold letters) and look at role of pictures to determine the text-picture relationship for each page. See example below.

Gerstein, M. (2005). *The Man Who Walked Between the Towers*. CT: Roaring Brook Press.

A. Text: Words in bold are in text-picture overlap.

Pages 8-9 (originally 59 words)

Early on an August evening,
he [entered the south tower]
and a friend entered the south tower
They got a reel of cable
 It was four-hundred and forty pounds.
and [they got] other equipment into the elevator
[They] took it to the unfinished top ten floors
and [they] waited till nightfall
when everyone had gone.
Then they carried everything up the stairs to the roof.
 [There were] one hundred and eighty stairs.

B. Picture alone: One possible detailed analysis of content in the pictures. Words in bold are in the text-picture overlap. All reader- viewers would not notice the same picture content.

Picture 1.

Two men [are dressed like construction workers.] [from text on previous page]
 They wheel two crates and a long package **to an elevator.**

Picture 2

An elevator operator reads the paper as they move to the **top of the tower.**

Pictures 3-4

The **stairs** are very steep.

The **men** look like they are struggling with the **heavy equipment**.

Picture 5

The **men** stand with their **equipment** on the **roof of one tower**.

The **night** sky is filled with stars.

Lights shine in the city far below.

Text-picture Relationship: Words and images are loosely symmetrical.

APPENDIX B

RESEARCH PROCEDURE AND DIRECTIONS

Meeting #1

Orientation session. Meet with two students at a time in a quiet room. Request that they take turns reading a grade level picturebook and practice procedures to be used in the study. Offer a choice of two books.

Meeting #2

Exhibit the cover of Book # 1 and give directions for reading.

Directions for reading: “Today you are going to read aloud one picturebook, beginning with the cover. Pictures and words work together to tell a story. Please look very carefully at each picture and think about what it shows before and after you read a page. You may stop at any time to look back at earlier pages and pictures. When you have finished the book, I will ask you to tell me about it from beginning to end.”

Directions at end of reading: “Now go back to the front cover and turn the pages very slowly. Look at each picture and think about the words. Try to remember what both together tell you about the whole story.”

Directions for immediate free recall at end of total story: “Now close the book, and pretend you are telling this story to a friend who wants to know everything about it from beginning to end. Also, tell me any ideas and feelings you have about the story.”

Prompt at end of retelling: “Please add anything else you remember as well as your ideas and feelings about the story. Tell me what you liked or disliked about the book, anything the book reminds you of, and your view of the author’s message.”

Directions for comprehension questions (cued recall): “Now I would like you to answer some questions about the story.”

Meeting #3

Exhibit Book #1 read the previous week, cover only. Ask students to freely recall and respond to this story.

Directions for delayed free recall: “Do you remember the story you read to me last week called _____? (Exhibit book cover only.) Pretend you are telling this story to a friend who wants to know everything about it from beginning to end. Also, tell me any ideas or feelings you have about the story.”

Display Book #2. Students will follow the same procedure used during the previous session, to read, retell and answer questions about a new book.

Meeting #4

Exhibit Book #2, cover only. Delayed free recall of Book #2.

Oral reading of Book #3. Immediate free recall with prompt and comprehension questions.

Meeting #5

Exhibit Book #3, cover only. Delayed free recall of Book #3.

Oral reading of Book #4. Immediate free recall with prompt and comprehension questions.

Meeting #6

Exhibit Book #4, cover only. Delayed free recall.

Ask final questions pertaining to comparison of books and value of text and picture in each book.

APPENDIX C

SAMPLE CUED RECALL QUESTIONS

Gerstein, M. (2005). *The Man Who Walked Between the Towers*. Roaring Brook.

1. What is this story mostly about? (Think and Search)
2. What does Philippe do in life, and why does he want to walk between the towers? (Right There)
3. How does Philippe get a thick rope to the top of one tower? (Right There)
4. How does he get a thick rope from one tower to the other, and what are his problems? (Think and Search)
5. Tell four ways Philippe performs on the tightrope. (Right There)
6. What parts do policemen and policewomen play in this story? (Think and Search)
7. What is Philippe's punishment for walking between the towers? (Right There)
8. Try to remember the last two pages and pictures of the story? How do they look and what do they tell you about the ending? (Think and Search)
9. What does this story remind you of in your own life or another book you have read? (Author and You)
10. What helped you the most to understand this story, the words, the pictures or both together? Give two examples of pictures that helped you understand the story. Did pictures tell the same or a different story than the words? (On Your Own)

Pinkney, B. (1995). *JoJo's Flying Side Kick*. New York: Simon and Schuster.

1. Master Kim tells his class how to do a flying side kick. What three actions are necessary to do the flying side kick? (Right There)
2. Describe the tree that frightens JoJo. What is real and what is imaginary? (Right There)
3. JoJo gets advice from her mother about doing a successful kick to get her yellow belt. What advice does she give her? (Right There)
4. JoJo also gets advice from her friend, P. J. What is his advice? (Right There)
5. What have you learned about JoJo's grandfather? (Think and Search)
6. JoJo finds a way to get her yellow belt. Explain how she follows everyone's advice and breaks a piece of wood. (Think and Search)
7. Picture in your head the last page or ending of the story. What does the picture show? What does the author mean? (Author and You)
8. What lesson is the author trying to teach us in this book? (Author and You)
9. What does this story remind you of in your life or another one you have read or heard? (Author and You)
10. What helped you the most to understand this story – the words, the pictures or both together? Give two examples of pictures that helped you. Did the pictures tell the same story or a different story from the words? (On Your Own)

Myers, C. (2000). *Wings*. New York: Scholastic Press.

1. What is the story mostly about? (Think and Search)
2. Give two reasons why the girl in yellow likes Ikarus. (Think and Search)
3. For what two reasons does the teacher ask Ikarus to leave the classroom? (Right There)
4. How do the students show that they do not like Ikarus (3 ways)? (Think and Search)
5. Why does Ikarus sit on a roof? (Right There)
6. Why is there a picture in the book of Ikarus behind sticks or bars? (Author and You)
7. Try to picture the ending in your head. Describe how the story ends. (Right There)
8. Why did the author write this story? What lesson is Christopher Myers trying to teach us? (Author and You)
9. What does this story remind you of in your own life or another story you have read? (Author and You)
10. What helped you the most to understand this story, the words, the pictures or both together? Give two examples of pictures that helped? Do the pictures tell the same story or a different story than the words? (On Your Own)

Browne, A. (1992). *Zoo*. New York: Alfred Knopf.

1. What is this story mainly about? (Think and Search)
2. How does the family feel about most of the animals at the zoo? Describe three animals the family saw at the zoo and how they felt about each. (Think and Search)
3. What is strange about the way Browne drew some of the people at the zoo?
(Right There) Why do you think Anthony Browne painted people this way? (Author And You)
4. How do you feel about the Dad? Describe three things Dad does in the story that causes you to feel and think this way. (Think and Search)
5. What do Dad and the boys like best about their trip to the zoo? (Right There)
6. What does Mom say about people and zoos? (Right There)
7. Where is the older brother on the last page of the story? What do you think he is dreaming about? (Author and You)
8. What message or lesson is the author of this book trying to teach? (Author & You)
9. What does this story remind you of in your own life or another book you know? (Author and You)
10. What helped you the most to understand this story, the words, the pictures or both together? Give two examples of pictures that helped you. Did the pictures tell the same or a different story than the words? (On Your Own)