VISUAL PERCEPTION IN RELATION TO LEVELS OF MEANING FOR CHILDREN:

AN EXPLORATORY STUDY

Xinyu Yu, BA, MLIS

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APPROVED:

Samantha Kelly Hastings, Chair
Shawne D. Miksa, Co-chair
Brian C. O'Connor, Committee Member
Cathleen Norris, Committee Member
Herman L. Totten, Dean of the School of
        Library and Information Science
Sandra L. Terrell, Dean of the Robert B.
        Toulouse School of Graduate Studies

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This study explores distinct levels of meaning from images of picture books perceived by 3- to 5-year-old children and investigates how the certain visual perception factors influence children's meaning making and if these factors are correlated. The literature review supports associations among visual perception, information, picture books, meaning, and children. Visual perception serves as the first channel that filters and interprets visual information, and picture books provide visual and verbal experience for children, who constantly search for meaning. Children age 3 to 5 years are potential users of picture books because pictorial information is considered useful to children's learning tasks. Previous research reveals that various factors influence visual perception, and meaning has been mostly associated with its semantic significance in information retrieval. In information science, little research has focused on young children's own way of categorizing information, especially visual information. In order to investigate the distinct levels of meaning perceived by children, the investigation employed both qualitative and quantitative methods including unobtrusive and participant observation, factor analysis, content analysis, and case study. The result of this study contributes to understanding the cognitive process of children related to visual literacy and their interpreting visual information in a digital environment.

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I dedicate this work to my late brother, Jiang Yu, and my father, Huaiyan Yu, and my mother, Hengshu Lin. Their unconditional love and integrity forever inspire me to complete this challenging work.

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CHAPTER I

INTRODUCTION

Introduction

Visual information has continued to expand its scope of presence in today's society from print to digital and calls attention to understanding meaning of visual representations in visual communication. Visual communication, visual literacy, and visual thinking rely on the development of visual perception. Visual perception, directly related to the eyes and processing information from the environment, has been a common research interest across disciplines (Stern & Robinson, 1994). Visual perception is not only a child's first information processing channel at birth (Russell, 1956), but it is also visual thinking (Arnheim, 1969) and a pattern-making process organizing information into meaning (Myers, 1989). The life of a child is always related to learning and visual perception. Picture books may provide sources of such life involving learning and development of visual perception. The purpose of this study is to explore how images from picture books help develop literacy and whether meaning influences literacy. The study investigates the levels of meaning in relation to picture books through children's visual perception, an innate learning ability, and facilitates an analysis of relationships between image and literacy. Whether picture books enhance levels of meaning from previous studies needs to be assessed with proper research methods. This study proposes a typology for visual analysis of picture books based on a relationship of meaning with visual perception, children, and images.

This study focuses on how a child perceives the cover and illustrations in a picture book. A cover is often a source of information that may underlie contents, and a

picture book's illustrations represent art style, many visual elements, and story collaboration between the illustrator and author. The association between picture books and children, and between children and visual perception all lead to the studies of meaning.

The 1991 Carnegie Foundation's report (Boyer, 1991) indicates that 35% of children in the United States had a low level of skills and motivation toward learning before entering the public school, and as a result, 90% stayed behind in their later academic performance. This study showed that children's early experiences with picture books have the most significant correlations with success in learning to read. Families' socio-economic backgrounds, income levels, and mother-child relationships influence picture book reading and learning. Families that have more picture books and enjoy reading are likely better prepared for their children's readiness for schooling (Public Library Association [PLA], 2007a). As the technology and information structure change, children must have literacy skills in selecting, organizing, and evaluating information. One type of relevant skills is to understand visual information.

Visual information bears a different mode of communication and way of understanding and interpreting than verbal information. Stewig (1995) describes that studying illustration as an independent visual artifact may raise awareness of developing a child's visual sensitivity to become a "knowledgeable consumer of art in books" (p.223). Bamford (2003) advocates that children need to become efficient readers of images by acquiring visual literacy in a process of visual communication and eventually make judgments of the accuracy, validity, and value of images. The United States education policy has called for schooled students to become "effective users of

information and ideas" (cited in Cooper, 2002a, p.904). Through various stages of growth, a child's visual perception that changes and corrects itself has an impact on processing information related to symbols such as mathematical learning and language. In a digital environment, the study of visual perception will shed light on a child's self-development, information seeking behavior, and learning.

Researchers in disciplines pursue studies of meaning yet seldom focus on visual meaning. Meaning in nature is usually context-dependent and arbitrary (Manning & Cullum-Swan, 1994). The analysis of semantic meaning has been predominant in philosophy (Grice, 1957), psychology (Ellis, 1930), and information retrieval research (Mai, 2001; Warner, 1990). The availability of visual information already challenges the traditional analytical methods that solely rely on linguistic messages (Enser, 1995). Visual information needs more adequate ways to express its significance (Choi & Ramuseen, 2003, p.499). There are different means of representing and retrieving words and images. Lewis (2001) indicates that words are flexible to change meaning, as opposed to pictures which carry out visual significance beyond words. Kiefer (1988) points out that verbal and visual information function to express different meaning (p.261). The availability of visual information sees a rising need to encode visual meaning as well as a shift of emphasis from linguistic meaning to visual meaning in research (Enser, 1995; Hillmann, 1993). Even so, meaning remains elusive, but more research focuses on human interpreting levels of meaning or computing vectors of meaning. The well known theories with levels of meaning are the dual coding theory in cognitive psychology and Erwin Panofsky's iconological studies in art history. The dual coding theory posits that human beings process information through visual and verbal

systems. Panofsky's theory explains how an individual can perceive works of art on 3 levels: pre-iconography, iconolography, and iconology. Art librarians and researchers have applied Panofsky's 3 levels of meaning in analyzing art collections and information objects.

Picture books are learning tools in public libraries, preschools, kindergartens, and at home, particularly with young children. Researchers believe that picture books contain information and sign systems that help a child develop knowledge, concepts, and meaning. Uniquely in children's literature, picture books provide verbal and visual experience for children. Parents, teachers, librarians, picture book writers, and illustrators, and publishers are all involved in creating meaning of concepts and stories in picture books for children.

The current study not only explores possible levels of visual meaning with children but also investigates how the factors in visual perception may influence a child in perceiving images. Meaning is the core to all children's visual perception activities, a contingence of information seeking. In particular, this study focuses on a group of children ages 3 to 5 because they are likely users of picture books as well as ones who experience a critical period of understanding symbols and learning language before beginning elementary school. Picture books demonstrate various unique qualities. In particular, they demonstrate a unity between words and pictures that together tell stories to children. With picture books, meaning is still inseparable from use of language to express and concepts to understand. This exploratory study looks at covers and series of illustrations that bring stimulus to 3- to 5-year-old children.

Purpose of the Study

Walter (1997) believes that reading time is still a favorite of many families, and printed picture books are irreplaceable because of their aesthetic perceptual qualities alongside stories. Timeless picture books and reading picture books will not be obsolete. Electronic technologies only function to enhance reading those timeless picture books. The Public Library Association reports that picture books are beneficial tools to help children prepare for school readiness in many ways such as vocabulary, meaning of the print, pleasure of learning, and structure of stories and language (2007a). Visual information becomes more available through technology to call for training of visual literacy in schools. Visual literacy represents the competence or critical skills of understanding and interpreting visual information. Though visual perception is one of the essential human perceptual abilities, it can still be refined through training. Perception involves selecting, evaluating, understanding, and interpreting information. A child's life starts with learning (Bruner, 1966; Russell, 1956), and learning enables a child to integrate knowledge for future information retrieval and school success (Stripling, 1995). Picture books are definitely one of the means to a child's learning and gaining visual literacy.

Either in early childhood classrooms or at a family's home, picture books provide function as learning or recreational reading tools for children. Picture books generate information to children, both in content and graphic representations (Stewig, 1995). Physically, children demonstrate their visual perception marked by a continual change with their age and a daily life experience they frequently relate to, such as learning to read. Educators are devoted to helping children improve their visual perception. Each

year, various types of picture books are published in different languages worldwide. Some picture books across culture and language have become all time favorites, like Beatrix Potter's *Tale of Peter Rabbit* (1902) and H. A. Rey and Margaret Rey's *Curious George* (1940). Reading picture books, by integrating verbal and visual features, convey meaning to children., Research has found that with regard to learning picture books provide visual experience to children in satisfying their information needs, zest for pictures (Hurll, 1914) , and knowledge about the world (C.L. Anderson, 1998). The interaction between children and picture books is a meaning-making process in which a child brings his or her own familiar experience, concept, and language to construct a relationship between illustrated art and reality.

Perception has a relationship with meaning through pattern making (Stern & Robinson, 1994; Toch & MacLean, 1970). Bimbo (1999) describes visual information retrieval as a new subject of research in information technology and an extension of traditional information retrieval designed to include visual media. In his view, visual elements, including color, texture, object shape, and spatial relationships, are directly related to perceptual aspects of image content. High-level concepts, such as the meaning of objects and scenes in the images, are used as clues for retrieving imaging with similar content from a database. Some visual elements, such as color perception, are directly related to the perceptual image content and are more tangible to measure (Chang, 2003). These visual elements are often employed by machine retrieval methods (Jörgensen, 1998).

Throughout childhood, while children experience physiological and psychological development of visual perception, they develop concepts and search for

meanings that can guide their actions. The survey conducted by the National Center for Education Statistics (2004) discovered that early reading is crucial to future literacy and success of learning in mathematics, both of which are well interacted. Though multimedia and computers have largely occupied children's lives, research proves that young children particularly spend more time reading for fun (Evra, 2004).

Statement of the Problem

This study investigates levels of meaning in which children perceive images by viewing picture book covers and illustrations and related factors that influence children's perception. Several aspects of research pose problems for this study. Meaning has been a topic of many studies in various disciplines in which approaches are divided. Art historian Erwin Panofsky breaks down the depth of meaning in a cultural perspective. Cognitive psychologists Sadoski and Paivio emphasize mental differences of processing verbal and visual information. In information science, visual meaning differs from linguistic meaning in the representation and retrieval process, and both types of meaning need understanding to meet the users' needs. When adults view works of art or distinguish between words and pictures, they form levels of meaning. Children's visual perceptual ability differs from that of adults, and so does their retrieval of meaning. It is not so clear whether children can perceive as many levels of meaning as adults or in distinct ways of their own. Children, between 3 and 5 years old, demonstrate a distinct difference of visual perception by age. Visual perception is behavioral and cognitive and visual perception changes with age and the way that each child interprets

meaning. To what degree those factors influence visual perception and levels of meaning need more assessment with children.

Background of the Study

This study initiates an exploration of children's information retrieval, the relationship with words and illustrations, and information seeking activities. Verbal information and pictorial information, while complementary, show that there is a different retrieval process in nature. Zachery, Iyengar, and Barhen (2001) posit that the difference between textual and visual information lies in their retrieval process: visual information retrieval focuses on perceptual similarity, and textual retrieval on semantic similarity (p. 841). Verbal information is still a means of understanding users' needs (Choi & Rasmuseen, 2003). Two major image retrieval approaches, Content-based Image Retrieval and Concept-based Image Retrieval, prove their efficiency in retrieving different aspects of visual information, but have their own constraints on increasing volumes of visual information on various media and satisfying needs of different user groups. Popularly regarded as an "intuitive and efficient" image retrieval of visual features stored in database, the Content-Based Image Retrieval (CBIR) proves effective in retrieving pictorial information where verbal information falls short (Zachary, Lyengar & Barhen, 2001, p.840). Jörgensen (2003) expresses that CBIR provides little access to subject. In contrast with CBIR, Concept-Based Image Retrieval investigates meaning in identifying high-level concepts (Heidorn, 1999, p.303). Shatford (1986) posits that the analysis of the subject of a pictorial work needs to discover meaning of images and the relationship between meaning and verbal description. Children in relation to their

development and cognitive levels, demonstrate their criteria to approach graphic

materials (Hirsh, 1999). To put all these into perspective, it is necessary to delve into

contents of materials and understand the nature of needs. Unlike with other user

groups, information science research of children as a user group has to take child

development psychology into account because of children's special developmental and

growth levels. Picture books that contain many visual elements and a balance of words

and visuals may serve as an instrument to study children in context.

Unlike adults, children face hurdles of literacy, and their access to information

may have to depend on external help from parents or teachers and graphics. Children

process from birth information and ideas which do not only come in the textual form

(Cooper, 2002a). Picture books are children's early learning resources, and they

combine both visual and verbal experience for children (Stewig, 1995). In this study,

with a goal to combine Content-Based Information Retrieval and Concept-Based

Information Retrieval to study children's interaction with picture books, it is nevertheless

important to understand children's information seeking through picture books with

meaning and concept development. Meaning parallels concept in relation to perception

in child development. Meaning is the goal of visual thinking and stands as a high-level

concept of information retrieval. Children's grasp of meaning is marked by their growth

and information strategies (Siegler, 1996). Meaning involves how children categorize

and solve problems through their conceptual framework, a mental model (Borgman,

Chignell & Valdez, 1986). Young children, teenagers, and adults perceive differently

because of their conceptual development (Piaget& Inhelder, 2000; Vygotsky, 1986).

Arnheim (1996) recognizes concept in its role of guiding cognition of both verbal and

visual information. Hall (1960) refers to perception as to "satisfy needs and adjust to the demands of the environment and perceiving, with remembering, and thinking, integrated as the most important human cognitive process" (p.121). Visual sense dominates other senses in information processing (Hall, 1960). Visual perception is one of the key sensory experiences for a child (Russell, 1956). Perception and conception, both of which produce effects on literacy and success of learning for children, are interrelated.

Meaning can be conceptualized into different levels because of its subjectivity (Choi & Rasmuseen, 2003). Picture books combining both images and text function to interpret events, facts, and social values (Lewis, 2001; Kendall, 1999). Many picture books, characterized by their aesthetic and literary values (Kiefer, 1988), help develop children's perceptual ability and refine thoughts (Arnheim, 1974; Hurll, 1914). The following study involves an exploration of picture books in relation to visual perception from child psychology, art education, cognition, education, communication, and information science. The intrinsic motive of children is learning (Bruner, 1966). Many factors may have influenced individuals' perception (Bruner, 1951), however, the success of communication through a process of visual perception between subjects and objects relies on a combination of the external environment and internal faculty of the perceiver (Flavell, 2000). Picture books may involve a succession of story plots with a certain format that caters to interest and thinking of children. Children's caregivers, which can include parents, teachers, librarians, children's book publishers, and illustrators, often pre-select and classify picture books for children as they wish their children to read and accept in realities and morality. But children have a different way of categorizing objects from adults (Markman, 1987), and little is sure about how

children categorize information (Keil, Smith, Simons & Levin, 1998). The classic

psychology on perception has indicated that perceivers are not passive viewers, and

perceivers develop their personality and strategies in searching information and fulfilling

their information needs (Bruner, 1951; Siegler, 1996). Children in particular experience

quality changes in their interaction with objects of the world (Bruner & Anglin, 1973).

Perception and conceptual development have a close association in interaction

between perceivers and the external objects. This study assumes that younger children

may construct concepts to express meanings in levels through retrieving useful

information for growth and life.

Though studies have made efforts to tap into children's information retrieval

(IR), information needs, and information seeking behavior, the depth of research is

largely limited to teenagers and young adults' behavior involving research paper

(Kuhlthau, 1991), online catalog (Hirsh, 1996, 1999), encyclopedia (Marchionini, 1989),

categorization abilities (Borgman, Chignell, &Valdez, 1986), and mental model

(Marchionini, 1989). As Cooper (2002a) describes, most of the past studies focus

mainly on older children but rarely discuss children's reading materials as well as critical

time from visual information to alphabetical information retrieval. Reading picture books

is an information-seeking process of children that satisfies their needs of learning about

themselves and the surrounding world. Children's experience with the world, mental

inclination, and support from their caregivers affect children on their levels of

interpreting the theme, story, and meaning of picture books. From the study of picture

books, language and visual perception relevant to text and stories, spoken and written,

learning through the classroom or through extracurricular activites, and conceptual

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development in understanding the story of picture books are 3 perspectives of problems of this study. Above all, meaning is the core of a sense-making process of picture-book reading.

Picture books provide an information seeking activity that reflects what children are motivated to read, learn, and what skills they use to cope with the surrounding environment. Therefore, this study is not simply about information retrieval but information seeking more importantly. Children search and retrieve information, and at the same time apply strategies in order to satisfy their deeper needs of information about the world and themselves. With the formation of mental models through learning, children, possibly guided by their curiosity and zest for learning, derive information strategies from their capability at different ages to visualize information in picture books. There are digital libraries and archives for children, teachers, and researchers that improve exchange and access of picture books. However, the very vital characteristics of picture books lie in social transmission of language and strengthening family relationship through reading, which technology may not fully capture yet.

Research Questions

1. What are the distinct levels of meaning from images of a picture book perceived by 3- to 5-year-old children?

2. What are the factors in visual perception that contribute to children's understanding and interpreting of images in a picture book?

3. What factors or groups of factors influence degrees of visual perception or meaning?

Significance of the Study

This study is theoretically relevant because it explores how images may influence

the literacy of 3- to 5-year-old children and how those children understand and interpret meaning based on visual perception. The purpose of the study is to investigate how some visual perception factors affect children's processes of making meaning with information in picture books, and to distinguish meaning of visual information meaning from that of verbal information. Picture books serve an aid for children in acquiring language skills and preparing school readiness. This study involves analyses of image, visual information retrieval and information seeking studies of children. In this study, the target population is to young children ages from 3 to 5. Research of this age group's information seeking behavior is "marginalized" because this age group belongs to "nonreaders, emergent, or beginning readers" (Cooper, 2002a, p.904). Cooper (2002a) points out that the children of this developmental stage are more spontaneous, not yet retrained to thinking culturally. This evidence provides for the significance of studying this age group and may suggest clues to how a child categorizes information in his or her own perspective and explain children's information seeking behavior.

Picture books are used particularly by young children. Though digital formats have made picture books digitally accessible, teachers and parents still read to young children on the first basis. Dresang (1997) demonstrates that research on printed picture books is constructive to the use of digital technology and format, and visual information (p.654). The results of this study are expected to support Dresang's work and broaden new studies not only related to children but applicable to studies in still images and visual media.

This study includes research on preschool children and how they become literate by relying on visual information in picture books. Tolchinsky (2004) describes that the

approach to looking at children's literacy from a developmental perspective and to

exploring the literacy process is alternative to formal teaching during school. This

alternative approach demonstrates children's ability to form and interpret messages.

Children's processes of becoming literate help them establish "original and precocious

ideas," which is beneficial to further learning (Tolchisky, 2004, p.11). The significance

of this study lies in its interpretation of meaning from images and how such an

interpretation may influence learning and visual literacy.

Limitations

The theories in this study have strengths and weaknesses. They are relatively

new and underdeveloped. Visual information retrieval is an emerging field (Gupta &

Jain, 1997). Panofsky's iconological theory has drawn criticisms. Art indexers and

catalogers believe the first two levels of meaning more applicable. Children have only

pre-iconographical level. This study involves studying children's information behaviors in

context of reading picture books as well as illustrations in picture books as works of art

or still images. Validity, reliability, and generalability are complicated by various factors,

particularly with children. Limitations may involve 5 aspects:

1. Research method

The study is largely constrained to child development theory in psychology and

education with a reliance on that multiple factors play roles in visual perception and

learning. It is difficult to develop proper methods to measure meaning statistically or

qualitatively. Meaning itself is arbitrary and context-dependent. Grammatical or linguistic

analysis is subjective and context-dependent, which may influence the results of the study. Research may take observations and interviews- at-large for data collection. Qualitative methods will involve correlation and factor analysis in the end of the study.

2. Theoretical framework

Perception theory and meaning analysis are interdisciplinary. Theories related to visual perception are multifaceted and complex. The study of meaning, mental models, and literacy is still exploratory. Zill and West (2001) report that it is difficult to measure early knowledge and skills of children. Younger children's difficulty to concentrate on or other factors may influence the validity of the study.

3. Nature of children as subjects of research

Children's age and developmental stages vary from one child to the next. Controlling validity and reliability of the study is a key issue especially with children as a research population. Developmental psychologists and educators often advocate studying the whole child to include various aspects of a child's development (Zill & West, 2001). There is no doubt about many factors that affect the growth and development of a child complicate possible measurement of his or her growth. In this study, only a few aspects of a child relevant to developmental psychology and information sciences will be examined, excluding psychological aspects of a child or trying not to study the whole child.

4. Representation issues of materials for the studies

Yamashita (2002) cites 3 difficulties in perceptual studies: validity of materials to represent interest of children, mediocrity of information obtained by the potential research method applied, and researchers' subjective worldview. Yamashita studies children and adults taking pictures of dirty water and describing environmental perception of subjects. This study is an exploratory study with limited research methods that apply administered interviews, surveys, and selection of picture books. Picture book illustrations, like photographs, are still images and are limited in representing interest of children, mediocrity of data, and subject views of the researcher.

Definition of Terms

- Age – Age refers to both a physical age and a developmental age. According to Jean Piaget's 4 stages of cognitive abilities in child development, participants of this study selected from the preoperational stage (2-to 7-year-olds) at which a child is able to represent and express information. Most picture book researchers view an age range between 3 and 13 years old appropriate for using picture books.

- Concept – A concept summarizes related data and a stable percept. It is organized by related sensations, percepts, and images with a label attached. For example, all kinds of cats are labeled as cat (Russell, 1956). Concepts start from labeled categories of ideas (Cooper, 2002b).

- Context – Contex refers to the overall environment in which experience is input (Lindsay & Norman, 1977). For example, in order to understand the story or meaning, a picture book is better to be read in context of a whole book (Marantz, 1977).

- Culture – In a broad sense, culture is a conglomeration of ways of life, property, laws and government, arts and communication, self-expression, and preserved documents (printed or graphic) (Gesell & ILG, 1949). Culture shapes individuals' worldview and interpretations of images, including perceptual habits and daily experience (Messaris, 1994). With respect to meaning and perception, culture is defined as a "historically transmitted pattern of meaning" (cited in Lidz, 2003, p.58). Culture represents a broader and more general meaning accepted by the larger community (Cooper, 2002b.).

- Emergent literacy – Emergent literacy encompasses knowledge skills or abilities about reading or writing that children learn and develop during the preschool years (Ghoting, 2007). Based on research in early literacy, the Public Library Association has listed 5 types of emergent literacy skills for guiding public libraries' storytime programs: phonological sensitivity, vocabulary, print awareness, narrative skills, and print motivation.

- Image – Image has different connotations. In psychology, an image is a mental image produced by an association of perception and thinking (Piaget & Inhelder, 2000; Russell, 1956). Hastings (1995) defines an image as "a surrogate representation of a real painting in either digital or photographic format" (p.3). A picture book consists of a successive series of images usually created by an illustrator who bases on stories of an author. For this study, images, pictures, and illustrations are used interchangeably.

- Image attribute – An image attribute is a feature, component, and property of a stimulus represented by an information processing system. Such an attribute can be

articulated from image data, characteristic of perceptual, semantic, and emotional (Jörgensen, 1998, p.164).

- Information – Refers to processing inwardly from the constructions involved in perceptual recognition to those involved in the higher mental processes, and then "outwardly" to those involved in converting knowledge into action (Bruner & Anglin, 1973).

- Levels of meaning – Levels of meaning are the depth of representations and understanding through interaction of a reader or user and a document or a collection. In this study, levels of meaning are referred to as 3 strata of meaning interpreted in the work of art as Panofsky theorized (1955, 1982). These are also other theories related to levels of meaning such as the dual coding theory.

- Meaning – Meaning is referred to as both the affective generalizations of visual perception, or categorization of perception, as Bruner and Anglin (1973) explain meaning as "the placement of an object in a network of hypothetical inference concerning its other observable properties and its effects" (p. 11). In some theories, it refers to the arrangement of abstract semantic features (Sadoski & Paivio, 2003). Grund (1993) mentions that "the analysis of meaning, the description and the interpretation of pictorial art" is "one of the most important and difficult tasks for art historians" (p.20).

- Mental model – A mental model is a cognitive representation of a problem situation or system, which is active in the sense that it can take inputs from the external world and return predictions of effects for those inputs (Marchionini, 1989, p.56).

- Perception – Perception is defined as means of gathering and organizing information through senses in order to create meaning. Perception is a complex process

by which humans make sense out of their experiences. Human senses provide data and experiences, thoughts, and values, which enable humans to organize, interpret, and explain their sensational experience (Stern & Robinson, 1994, p.32). Perceptions determine individuals' expectations and guide their behaviors (Kuhlthau, 1988).

- Picture book – Picture book refers to a distinct format of books that has children as the potential audience (Association for Library Service for Children [ALSC], 1978). A picture book usually consists of 32 pages in length (or ranging 24-48 pages) and has illustrations on every page, narrative and with words counting about 500 words, and a story built upon the text and illustrations. In this study, picture storybook is the subject of research.

- Preoperational stage – Piaget defines preoperational stage as 1 of 4 stages in his theory of child development psychology. This stage refers to a period of childhood ages 2 to 7. Such stage is characterized by a rapid development of language and use of symbols. Perception determines a child's reasoning, which belongs to this developmental stage (Wadworth, 1996).

- Visual communication – Visual communication refers to "a process of sending and receiving messages" through visual media (Bamford, 2003, p. 1). Visual communication has a broad range from still images to moving images. In this study, visual communication reflects a type of communication through representations of symbols, which differ from linguistic communication. Enser (1995) points out that linguistic communication has been evolved and dominated as a "method of encoding knowledge" in human history (p.127). Linguistic communication encompasses

"phonetic, morphological, lexical, syntactic, semantic, and pragmatic components" (p.127).

- Visual experience – Visual experience refers to a state of mind in which an individual makes sense through stimuli. Visual experience shows that one has a capacity to describe psychophysical characteristics of stimuli and identify them with previous experience (Binder, 1955).

- Visual information retrieval (VIR) – VIR is a way of retrieval by which an image-based information content is elicited, stored, and retrieved from visual media and "beyond text-based descriptor" (Gupta & Jain, 1997, p.72). It is considered the most important tool in visual learning and providing different strategies for effective communication.

- Visual literacy – The definition of visual literacy has been contributed by knowledge of various disciplines such as psychology and linguistics. Visual literacy implies learning by experiencing and understanding meaning and elements of images or concrete objects (Hortin, 1994). It shows a "capacity, or a competence to perceive, to understand, and to communicate by using visual images" (Hillmann, 1993, iii). Visual literacy reflects a "need for understanding a picture's main idea" (Lacy, 1986, p.12). The degree of visual literacy as a competency varies among people who are able to see (Breitenstein, 2003). The ethic background and age are found significant factors in visual literacy research (e.g., Hillmann, 1993).

- Visual perception – Visual perception "equals seeing plus cognition" (cited in Hortin, 1994, p.7). Dondis (1973) suggests that "the power to organize the visual information, depends on the natural workings, the needs and propensities of the human

nervous system (p.106). Rudolph Arnheim saw visual perception as "an activity that reflects intelligence," namely the "active concern of the mind" (cited in Enser, 1995, p.127). Visual perception offers a direct interpretive experience of seeing (Dondis, 1973) and, it also has a relationship with visual literacy (Hillmann, 1993).

Structure of the Dissertation

The whole dissertation consists of 6 chapters. Chapter I introduces the background, purpose, goals, significance, and limitations of the whole study. The major terms related to meaning, visual perception, and picture books were explained. The research questions are as follows: What is the meaning of images in a picture book? Are there distinct levels of meaning perceived by children from 3-5 years old? What are the factors in visual perception that contribute to children's understanding and interpretation of images in a picture book? Are there factors or groups of factors that influence degrees of visual perception or meaning?

Chapter II reviews the literature that connects picture books, visual perception, and meaning from findings in related disciplines of child development and cognitive psychology, reading and art education, and information science.

Chapter III lays out the research design of data collection and analysis along with corresponding research methods. I also detail rationale, participants, and selection of picture books for interviews as well as how to answer each research question. A topology is synthesized and proposed in the end of this chapter.

Chapter IV reports how data was collected and analyzed. The results for each method are analyzed and presented. Reliability and validity checking is reported.

Chapter V revisits Erwin Panofsky's theoretical representations for levels of meaning and evaluates how each research question is answered. Discussions include different aspects of analyses of methods and results. Limitations of this study are described.

Chapter VI reflects how the study was completed and offers future research agenda.

Summary of the Chapter

This chapter offers a background and purpose of the whole study based on previous studies. Meanwhile this chapter has clearly identified relationships of picture books, visual perception, and meaning to prepare a literature review in the next chapter. This chapter discusses research problems of the study, research questions, and explanations of major concepts and limitations. Studying children poses special challenges in controlling confound factors and building the depth of the study. The research questions focus on how children visually perceive meaning and explore whether there are distinct levels. Understanding children's perception of meaning naturally leads to analyses of factors to influence children's visual perception and levels of meaning. The significance of this study was in studying a marginalized age group, 3 to 5 years old, and their information seeking or retrieval behavior in reading picture books. The 3- to 5-year-old children are strongly influenced by their "visual" perception.

CHAPTER II

LITERATURE REVIEW

Introduction

Most literature reviews of this type of study center on children's interactions with picture books based on visual perception theories that evaluate their visual experience as a meaning or sense-making process. This literature review consists of 3 parts: picture books, visual perception, and meaning. Meaning bridges the gap between picture books, children, and visual perception, and serves as the ultimate goal of the 3 entities. Visual perception involves a consciousness of meaning, language development, concepts, and learning. Though visual perception exists at birth, whether learning has an impact on it is a concern for both educators and scholars in other fields. Given that picture books are rich in meaning and visual elements regarding information retrieval, an examination of visual perception in relation to picture books may shed light on children's information retrieval and system design. The review of visual perception studies includes the literature related to cognitive psychology, child development psychology, art education, and reading education. In addition, two perspectives exist: literacy and frame of reference, including culture (family and school environment) and age, are the cause and effect of visual perception. Visual perception theories provide a framework to the investigation of the problem of how best to study the relationship between picture books and meaning.

Picture Books and Children's Information Studies

Picture books are learning tools, information resources, and sign systems.

Children who start developing language and concepts during their first 4 years have to have "play experiences with real objects and events to enable to understand the meanings of symbols such as stories and pictures" (cited in McGill-Franzen, 1993, p.76). As a distinct genre, picture books provide children with a narrative language model and visual experience. Children can use picture books for appreciating art, learning a language, and gaining experience about their environment.

In contrast with the often-articulated information needs of adults, information science researchers claim that it is difficult to pinpoint children's information needs (Walter, 1994) and to know more about how children evaluate information (Hirsh, 1999). However, children, particularly younger children, may have pictorial information needs as they try to understand the meanings of objects and their environment by interacting with real objects and events. They also apply various information strategies to acquire information. Picture books play a relatively prominent role in children's lives, which may help provide researchers with a clue to understanding their informational needs.

Definition of a Picture Book

In the terms and criteria for the Randolph Caldcott award, the Association for Library Service for Children [ALSC] board (1978) adopted and defined the following characteristics:

A picture book is generally recognized as a work of art that is characterized by a balance of illustrations and words, has 32 or more pages, a narrative and plot and is dominated by illustrations and colors. As a whole, picture books provide a visual and verbal experience for children, especially at a younger age.

A picture book has a distinct illustration style. Its illustrations are still images that offer first-hand information to children. Children ages 1 to 13 can use picture books to explore visual language. The story and pictures in a picture book are of equal importance (Owens & Nowell, 2001). In early childhood, picture books can help children develop visual literacy through images and stories (Thibault, 2003). Picture books demonstrate sophisticated visual features and conventions and communicate information, feelings, and meanings through an integration of verbal and visual features.

Picture books are characteristic of children's books because they deal with children's concerns and reflect childlike qualities. A picture book is "a distinct format of books which has children as potential audience" (PLA, 2007a). C. L. Anderson (1998) defined a picture book for children at preschool or early school age, with more pictures than words, more colors, and legible typefaces. What picture books reflect is the "childlike qualities, of youthful simplicity and youthful exuberance" (Nodelman, 1988, p.21).

These picture books provide children with a verbal and visual experience, and represent two art forms, pictorial and literary (Stewig, 1995). Dresang (1997) points out that in recent years the design of picture books has been to incorporate "a total effect represented through the interaction between words and pictures" (p.652). Picture books not only help develop children's reading skills but also provide them with illustrations that can be easily understood and graphically interpreted (McConnell, 1998). Trifonas (2002) summarizes that a reader of a picture book can experience a cross mediation of visual and verbal communications, "novel to the work but dependent on the world of the self" (p.78). In a word, the text and illustrations complement each other and create a

model of language. The understanding and interpretation of a picture book depends on personal experience with the picture book and everyday life.

A picture book, as a work of art, has a depth of aesthetic values that help children to gain visual skills and learn to understand the real world. The story, the succession of images, childlike qualities, and the relationship between text and illustrations distinguish picture books as a special genre for children. Most importantly, picture books provide children with a learning tool, in addition to a verbal and visual experience.

<center>Children's Interest in Visual Information</center>

Picture books are learning tools for children's reading and aesthetic experiences, and the use of picture books can help to explain how information is cognitively processed by children. Bang (1991) claims that human feeling arises from viewing pictures, which are extended representations of the real world. A very young child favors picture books for an information gathering tool because pictures are "more visually informative than the computer search" (Cooper, 2002a, p.918). Children use picture books to understand their environment and the world, but they also simply have fun reading. Lurie (2003) explains that teachers and parents often choose picture books to help develop their children's minds, because the books serve as guides to satisfy children's informational needs. Studies have shown that children prefer using visual representations in information seeking situations (e.g., Cooper, 2002a).

Children at the preoperational stage of development prefer directly perceivable visual information (Cooper, 2002a). Research finds that picture books hold children's

attention (Stewig, 1995) and satisfy their emotional needs (Harper, 2001). Children

construct knowledge through 3 modes, enactive, iconic representation, and symbolic

(Bruner, 1966). The 3 modes indicate a process of learning that children learn through

action, understanding pictures, and grasping concepts. Vandergrift (1980) mentions,

"Children live in a highly visual world" (p.64). The illustrations are their first point of focus

(McConnell, 1998), and graphical representations reflect their knowledge of world as

well as their level of cognitive maturity (Hillmann, 1993). Hirsh (1999) proves that

children spend a large portion of their time looking for pictures in their search process.

Mathis (2002) analyzes the literary qualities of picture books for helping to tell a story

and define a concept.

Hurll (1914) comments that the child's major interest in pictures underlines one

recognition principle by which children identify with familiar objects and surroundings.

Such recognition principle supports both the importance of the internal mental

representation and the external factors that are related to personal experience and

social environments. Hurll also details 3 principles of children's recognition of pictures:

(a) their ability to identify objects from familiar surroundings, (b) their curiosity to

increase their knowledge, and (c) their zest for stories (pp.7-8).

Smith (2003) studies young children's inclination for a single aspect of a work of

art based on Jean Piaget's centrion concept. Hunt (1994) claims that children's

perceptions are "unspoiled" and says that they can see the details of a scene (p.13).

Lurie (2003) acknowledges that children can recognize pictures long before they are

able to read. Nodelman (1988) refers to pictorial recognition as an ability that has to be

learned, because it affects an understanding not only of the relationship between

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pictures and words, but also of the consequent relationship between picture books and their intended audience, young children or adults. Thomas, Nye, Rawley, and Robinson (1994) mention that there is a concept change with age progression in recognizing the defining features of a picture. Arnheim (1996) indicates that children explore an association of their world and their cognition of concepts by seeing "happenings, people, and things acting upon each other" (p.113).

Pictures, images, or graphic materials play a certain role in a child's life. Educators also focus on helping children to evaluate visual information. Lacy (1986) lists 4 basic skills for children to evaluate visual materials: (a) distinguish between reality and unreality, (b) appreciate the details that contributes to the whole, (c) identify the unique properties of the medium, (d) understand the main idea conveyed by the visual message. Lacy sees that picture books apply artistic elements that children like and understand through representations of line, color, shape, space, and texture, which all convey the author's intent. The book cover or jacket, the story, and the illustrations underline a relationship between the images and the text.

Use of Picture Books

Each picture book encompasses a sign system that conveys meaning in different ways, for instance, by means of literary and aesthetic styles, visual elements, representations, and stories (Mathis, 2002). Picture books are one of the earliest instructional tools in a child's life. Parents and teachers have recognized picture books as indispensable reading tools in the daily life of kindergarteners, preschoolers, and elementary school students, because of the visual experience, language learning, and

leisure reading. Picture books play a significant role in helping middle-school children learn literary elements (Mathis, 2002). Lacy (1986) compares picture books with electronic images for providing children's enjoyable opportunities in visual exploration, interpretation, and reflection. In other words, picture books enable children to explore and reflect on the information within.

Picture books differ from commercially prepared textbooks (Kiefer, 1988). Marantz (1977) explains that picture books potentially create "a state of mind where new and personal meaning can take shape" (p.261). In the same vein, a good picture book can be read repeatedly and provoke curiosity and new perspective (Marantz, 1977). C. L. Anderson (1998) states that picture books help children to understand issues and realities. Chesner (2000) describes a critical need for schooled children to develop visual skills in order to become discriminate viewers and aesthetic appreciators through picture books. By developing visual skills, picture books also help children to learn about the world and assist them in developing visual skills and interpreting narratives (Chesner, 2000).

Illustrations

Evans (1998) mentions that illustrations are a fundamental feature in children's picture books which create layers of meaning with texts (p.27). Picture books present "a continuity of images, much like a film" (Marantz, 1977, p.148), with aesthetic and literary values (Kiefer, 1988) and by which children can comprehend and shape new and personal meanings (Kiefer, 1988; Marantz, 1977). Illustrations can be treated like still photographs but have to be understood as a whole because of "their sequencing and

association with the overall design of page and book" (Marantz, 1977, p.148). Kiefer

(1988) posited that picture books possess two different modes of communication, verbal

and visual, to help children to express and understand meanings. Picture books

influence children's language learning and literacy acquisition, and connect readers to

themselves, authors, illustrators, and the world (Kiefer, 1988). Children can relate to

their personal needs and experiences through picture books (Kendall, 1999).

Book Cover

Book covers serve as first impressions of stories and they provide access to

information. O'Connor and O' Connor (1998) explore a book jacket cover as both a

mechanism for user access and representation of information. Kearns (2001) indicates

that children use visual cues like book jackets and cover pictures to explore relevant

information. Children enjoy looking at picture book pictures, covers, and titles (Cooper,

2002a). Hirsh (1996) demonstrates that children are attracted to graphic interfaces.

Lacy (1986) compares the cover or jacket of a picture book to "a poster that reflects

mood, text, and artistic style in a book" (p.7). Lewis (1989) generalizes that a child

rejects or accepts a book by a quick examination of the cover and illustrations. Children

have a strong interest in pictures. A book cover provides visual cues and guidance to a

reader. A child starts his or her information gathering from a first look at the cover.

Story

A story is an inseparable part of a picture book. Mathis (2002) observed the

function of the story as "to internalize the reality of the themes in life and literature"

(p.131). Hurll (1914) concludes that children's interest in pictures can lead to an awakening of the imagination with their zest for illustrated stories that describe the world they inhabit. Barry (1997) points out that those images are stories made up of processed visual experience, and children are always seeking meaning. A child's visual comprehension develops earlier than verbal comprehension (Barry, 1997). The stories in picture books are prominent because they can "help students internalize the reality of the themes of life and literature" (Mathis, 2002, p. 131). A picture book consists of 3 stories: the story of the words, the pictures, and the combination of the two. Children's strong interest in pictures, illustrations, and graphics may provide a basis for their understanding and interpretation of concepts and stories in graphic representations and image retrieval. Children find visual cues through covers, book jackets, and the identification of familiar objects.

Informational Needs and Children's Information-Seeking Strategies

Children's information needs are pictorial, meaning-making, and experience changes with age and learning. Not only do children think differently than adults, but they also encounter different problems in their search for information, such as with reading and language experiences (Cooper, 2002b). Pictorial needs arise in the process of retrieving visual information (Enser, 1995). Piaget and Inhelder (2000) conclude the reason that children have little knowledge about the physical world is that they are not capable of adapting their knowledge in the way adults do in order to satisfy the affective and intellectual needs of their personality. The equilibrium between assimilation and accommodation, as Piaget calls it, motivates a child to assimilate rather than adapt to

the physical world. Play and language are important means for children to fulfill their need for assimilation; meanwhile he or she uses representation through symbols or signs to accommodate the external models (p.58). Because young children have little knowledge of the living world and developing conceptions, they maintain a balance between assimilation and accommodation. They need a large amount of visual information to represent their thoughts. This may explain why their information needs are distinctly pictorial rather than textual, particularly younger children.

Shenton and Dixon (2003) define an information need as a desire or necessity for the fulfillment of a purpose, advice, interpretations, or messages that carry meaning (p.1032). Hirsh (1999) believes that children's information needs are less discriminating than those of adults because of their limited knowledge of literature and ongoing cognitive and developmental changes. Hirsh found children's information needs were in school-related assignments (p.1266). In art class when children look at pictures, their information needs are imagination, expectation, and curiosity (Arnheim, 1974; Hurll, 1914). Bruner (1966) states that all children possess intrinsic motives to learn and their curiosity is the prototype of learning. To activate or satisfy curiosity, children rely on a cycle of activity that carries out curiosity. Children adjust their center of gravity in the perceptual field with their change in needs and motivations (Vygotsky, 1978). Kuhlthau (1988) considers that children of different ages have information needs that come from both school-related assignments and their personal lives (p.51). Kulhthau also mentioned that reading to children and exposing them to various books can meet their basic information needs in early childhood (p.52). In her view, library materials are useful to encourage children to read.

A large body of literature claims that children cannot articulate their information needs as adults can. Children often apply various information-seeking strategies to fulfill needs or solve problems such as in an assignment. Marchionini (1989) sees children's information-seeking process as a cycling process of problem solving and believed that there is an interaction of experience, knowledge, and information (p.54). Patrick Wilson believed that the interaction between the user and the information system is guided by both affective needs and cognitive needs (cited in Kuhlthau, 1991). Brenda Dervin views the information-seeking process as a sense-making activity, because it offers a point of view to an individual (cited in Kuhlthau, 1991).

In the process of information seeking, there requires strategies. Kuhlthau (2004) defines a strategy as a tactic applied in seeking information or working through a stage of the search process. Kuhlthau (1985) states that the level of information needed is similar to the cognitive psychological stage of incorporating new information and that there is a need to apply strategies. Kuhlthau (1991) developed this process into the Information Search Process, a constructive activity of finding meanings. Bruner (1962) concludes that human perception, memory, and thought processes are governed quite early, with strategies to cope with an overwhelming amount of knowledge (p.65). Cooper (2002a) considers it beneficial to understand early readers' information-seeking strategies for the development of teaching methods and information systems (p.908).

Cognitive psychologists have different views on the development of children's mental state at a certain age (Siegler, 1996, pp.84-89). Problem-solving involves information strategies that characterize the movements of information-seeking behavior (Cooper, 2002a). Siegler (1996) explains the differences between preschoolers and

early elementary students, in which the older children apply accurate strategies in accomplishing given tasks. Their mental development increases steadily with age and they may use overlapping strategies to accomplish a given task. Siegler (1990) finds that children often integrate new information with previous information when they read stories; as such they form a logical connection (p.7). This illustrated that children's strong interest in graphics, in addition to their pictorial information needs, often motivate children who use images with stories in picture books to relate to their experiences.

Children's information retrieval has been little studied in information science. In Borgman, Chignell, and Valdez's (1986) pilot study, I found there is little knowledge about children's characteristics in terms of their information needs, use, and retrieval abilities. To design an information retrieval interface for children, Borgman, Chignell, and Valdez (1986) assess elementary school students' word-based categorization ability to organize their knowledge of science. In this study, the retrieval domain and prior knowledge were considered useful in determining the relevance of the retrieval task. They applied familiar animal and plant terms from elementary school textbooks and discovered some meaningful groupings of concepts. Domain knowledge, categorization abilities, and culture strongly affect how children retrieve information.

Children's information-seeking process, which is similar to Piaget's view of intelligence, reflects "an affective and a cognitive aspect" (Wadsworth, 1996, p.32). Under the auspices of visual perception, humans are constant meaning makers (Chandler, 2004). If children continue making sense of their environment through visual information needs, information-seeking strategies, and the process of information-seeking consists of both sense-making and problem solving, then the visual perception

is a channel to interact with picture books. Jean Piaget found that children have pictorial information needs in the process they accommodate and assimilate in the world. With the help of images, they are able to seek and retrieve information and make sense of their surroundings.

Previous research on children's information retrieval, information-seeking, informational needs, and information strategies indicates that the retrieval domain and prior knowledge determine how children based on their application of certain strategies, based on age, to fulfill a given task. These factors can potentially empower children's performance differences in relation to a task.

Summary

Picture books play educational, recreational, and social roles in a child's life. In education, picture books are used as the learning tools of language, for developing intelligence, and for teaching social values. Reading picture books teaches children to explore their environment and strengthens social bonds with their parents and teachers. The definition given by ALSC (1978) explains a major function of picture books: to provide visual experience in understanding visual features and more importantly, to search for meaning in the learning process and in life. Familiarity, curiosity, zest, and a willingness to learn influence the process of how children perceive the contents of picture books. However, the characteristics of children of all age groups in their developmental stages distinguish between perception and interpretation and thus may add a different value to both activities.

Children's informational needs are not as distinct as adults' are, but children show such needs while conducting specific tasks such as school assignments. Reading picture books may help researchers to understand children's information needs, particularly from a visual perspective. Age, mental development, and individual differences motivate children to adopt different information-seeking strategies in retrieving information from their environment. The findings of researching children's categorization skills through the use of online catalogues, book jacket information, and color comparison provide scholars with a basis for understanding retrieval means and creating possibilities of making digitized picture book collections available.

Visual Perception Theories

Moore and Dwyer (1994) explain that images have drawn research interest from different disciplines because the images can transfer information, emotion, and data (ix). Visual perception studies involve areas such as psychology (Bruner, 1966; Piaget & Inhelder, 2000; Vygotsky, 1978), communication (Shramm, 1954; Toch & MacLean, 1970), education (Siegler, 1990), and art (Arnheim, 1974; Panofsky, 1982). Ingwersen(1982) places perception with pattern recognition, language comprehension, and the philosophy of science. In psychology, visual perception studies in the areas of cognitive psychology and child development explain the association between the utility of visual perception and the growth of children. In educational practice, research from the areas of art education and reading education emphasizes visual literacy in relation to visual perception.

Visual perception is one of major perceptual senses in human life, and the

development of the Internet and digital imaging technology has increased its scope of

research interests. Visual perception largely evidences that individuals construct a word

or image and interpret it (Chandler, 2001). Vision is foremost among all the perception

activities, as humans always assign meaning or exercise their own visual concepts

(Chandler, 2001; Myers, 1989). Visual perception encompasses a pattern-making

process from the organization of information to meaning (Chandler, 2001; Myers, 1989).

Visual perception conceptually underlies a series of visual concepts: visual literacy,

visual experience, visual language, and visual communication. A child's success in

school is the initial step in pursuing meaning (Russell, 1956). Visual perception

occupies a significant position in a human life and even guides how people use

language (Chandler, 2001).
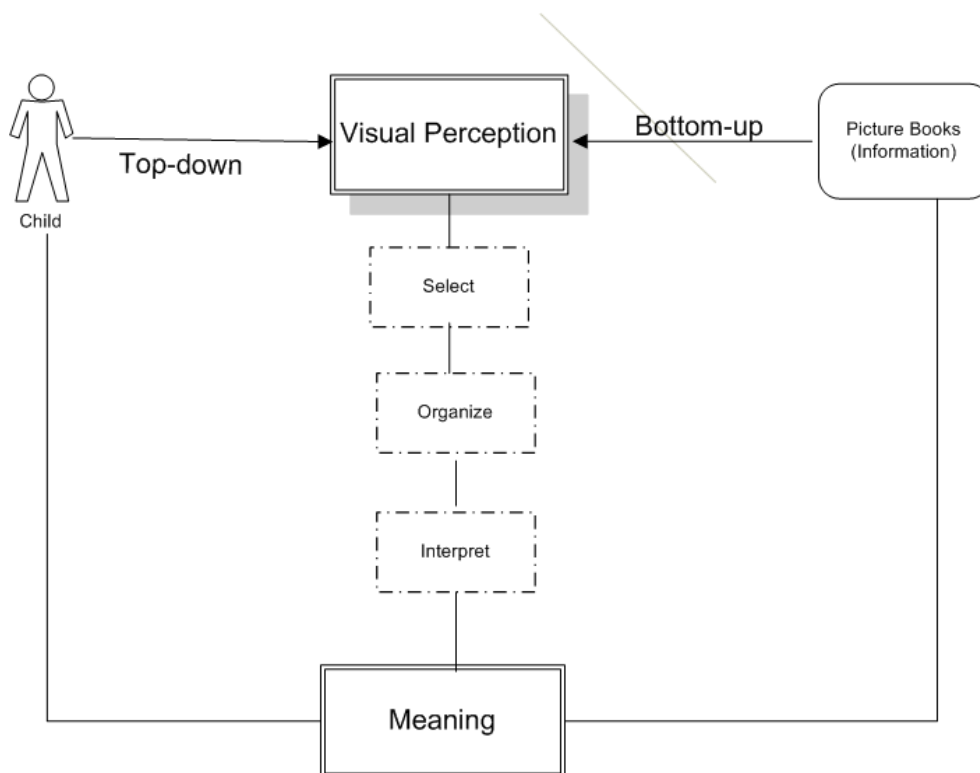
Figure 2.1. Visual perception with meaning, picture book, and child in information processing.

Figure 2.1 indicates a circular relationship among 4 entities: visual perception, picture books (information), and meaning. There are two approaches in relation to visual perception as a starting point, top-down processing (an individual's experience and expectation) and bottom-up processing (external information). All activities are centrally operated through 3 actions: select, organize, and interpret. In a cycle of 4 entities, visual perception is stimulated by information such as picture books, which creates patterns in order to make meaning. Information itself is embedded with meaning.

Definition of Visual Perception

Perception is subjective and changes according to context (Smith, 2003; Tang & Solomon, 1998). Visual perception arises as an innate ability of normal vision and from experience and education (Myers, 1989; Seels, 1994). Craven (1975) considers prerequisites of feeling and empathy in order to see and understand, because humans' visual perception has traits of being "binocular, 3-dimensional, imperfect, and constantly changing with bias, feelings, attitudes" (Craven, 1975, p.6). Stern and Robinson (1994) define visual perception as "an ability to gather and organize information through the human senses in order to create meaning" (p.32). Visual perception is an essential part of perceptual activities and is formed in the brain through the eyes (Nodelman, 1988). Each individual perceives life through his or her environment and life experiences, and children act on this through learning. Visual perception processes in two ways: bottom-up processing and top-down processing (J. R. Anderson, 1990). Bottom-up processing starts from external stimuli or defining features. Top-down processing comes from an individual's prior knowledge and expectations.

There are 3 basic steps in the process of perception: selection, organization, and interpretation of stimuli (Stern & Robinson, 1994). Two types of processing reflect a difference in perceptual rules, which may have an impact on different interpretations of meanings, such as in Gestalt perceptual conventions and Piaget's child development psychology. Visual perception mediates an individual's experience of the world as well as the way he or she constructs meaning.

Visual Perception across Disciplines

Visual perception shapes what humans see and helps organize information from the external environment starting with the eyes and moving to the brain. The Piaget and Gestalt school have different approaches to the organization and interpretation of visual information, so they produce perceptual rules that have striking differences. Children and adults have a different way of perceiving objects, and so they organize information from life differently as well. In information sciences, studies of visual perception are marginalized with psychology and education. Allen (1994) studies the correlation between perception speed and learning. Bilal (2000) classifies 3 types of children's behavior acts: cognitive, affective, and physical, of which visual perception belongs to a physical act. Bilal particularly notes the acts of physical behavior as "externally observable" (p.648). Perception is "essentially an act of classification by the observer, assuming that classes have to be imposed on the data" (cited in Gibson, 1971, p.30). Greisdorf and O'Connor (2002) summarize that perception exists in 3 hierarchical levels: primitive features, objects, and inductive interpretation.

Piaget and Gestalt

Both Piaget's child development psychology and Gestalt psychology have contributed to perception studies, yet each differs in its organizations of perception and its impact on intellectual development. As a result, researchers have claimed that these differences redirect the interpretation of meaning (Courch, Caropreso, & Miller, 1994; Toch & MacLean, 1970). Both schools recognize that perception exists in early childhood. Piaget and Inhelder (2000) viewed perception as having an association with memory, schemes, and individuals' previous experiences. In Gestalt view, forms and structures exist by corresponding to the external world. The Gestalt perception refers to "the ability to discern and recognize identities among patterns or objects in all contexts" (Gardner, 1994, p.66).

These schools of thought argue whether visual perception is a learned experience. Piaget focuses on the development and quality changes in perception with age (Piaget & Inhelder, 2000). Wadsworth (1996) summarizes Piaget's view of intelligence as possessing affective and cognitive aspects (p.32). Piaget believes that children are not born with logic but are motivated with perceptions (Davidsons Film, 1972). For a Gestalt psychologist, perceptual experience that comes from human perceptual qualities is the basis of human conduct, and cannot be learned (Toch &MacLean 1970, p.129). Gestalt reflects on the general principles of organizing environmental information through the natural performance of the eyes. A Gestalt psychologist, Gardner (1994), holds that the 3- or 4-year-olds have already developed their Gestalt perception and have certain perceptual rules because of their language development (p.154).

In spite of a different theoretical approach, both Gestalt principles and Piagetian psychology continue to exert their influence in relevant areas. Moore and Dwyer (1994) apply the Gestalt principles to an extrovert and Piaget's studies to an introvert. Piaget examines the inner experience of human conceptualization and reasoning through visual perception, as children involving various developmental stages. Gestalt psychologists assume rules in visual perception and a correspondence of mental representations between one's internal and the external events. The affective and cognitive aspects of children's intelligence are particularly relevant to the study of children, and Gestalt's perceptual principles reflect an organization of external objects through the human eyes. In this study, Piaget's theory of schemata contributes to the importance of prior knowledge in reading, which helps readers construct meaning; Gestalt's perceptual principles offer an understanding of images' attributes and visual elements.

Perception in Child Development Psychology

Visual perception cannot be separated from perceptions. Perceptions determine an individual's expectations and explain why he or she acts in a certain way (Kuhlthau, 1988, p.419). The differences between Piaget and Gestalt explain how visual perception differs, as does its interpretation. Cultural differences develop different perceiving habits and reorganize the representations of objects and symbols. Some psychologists argue that cultural differences overshadow the general principles underlying the shapes and colors of images, which have to be acquired through education and learning (Bruner, 1966; Goldstone & Barsalou, 1998). The developmental stages and environment that

children experience play a role in perception. In child development psychology, the theories of perception established by Jean Piaget, Jerome Bruner, and Lev Vygotsky are the most cited and compared because of both similarities and differences regarding studies of children's intellectual development and transmission of knowledge.

Piaget contributes to the findings on the stages of child development (Bruner, 1966). Piaget and Inhelder (2000) claim a relevance of determining roles of perceptions and actions in the intellectual development of a child. Piaget saw little importance of training a child's perception. On the contrary, Vygotsky (1978) believes in a strong relation between perception and a child's language development, because language can express meaning and sense that cognitively lead to action. He saw that the purpose for the development of a child's perception is to acquire a meaningful interaction with social environment. In his studies, environment models knowledge so he distinguished individual learning from learning from others, the zone of actual development and the zone of proximal development (Wadworth, 1996).

Bruner (1966) studies how children translate their experiences into a model of world at an order: action, representation, and symbolic. According to Bruner, representation is governed by perceptual principles, both enactive and iconic. The symbolic refers to language or words. His belief is that instruction helps transform a child's visual perception. Bruner sees a kinship among perception, categorization, learning, and decision-making. His view of perception has a basis in sociologists' and humanists' thoughts regarding personal dynamics, in which an individual is an information processor, creator, and thinker (Bruner & Anglin, 1973).

Though perception and action are represented in different stages or models owing to retrieval strategies or perceptual abilities, children's perception has been considered an innate quality as well as part of their developmental abilities. Children's visual perception involves growing and learning through instructions. Gesell's (1949) observations have proven that visual mechanisms not only reflect the motivations and growth needs during childhood and youth, but also help to transform individuals. Russell (1956) describes a logical relationship between perception and learning, because perceptual learning leads to concept formation and learning by imitation.

Piaget focuses on the individual's intellectual development; Vygotsky reveals that social learning can modify perception; and Bruner emphasizes education as a way to internalize perception. Other developmental psychologists bring the interaction of physical and psychological factors of perception into this area. Children's physical growth and developmental characteristics distinguish them from adults as a unique user group of information. Visual perception is developmental and is influenced from a child's internal and external environment. Piaget and Vygotsky both believe that social factors are relevant to children's internalization process of knowledge (Wadworth, 1996). Piaget, Vygotsky, and Bruner all place learning in a relatively important position in a child's development.

Education Approach

Perception is viewed as an initial step toward preparing a child's reading and aesthetic skills. Perceptual ability has been recognized as important in relation to the success of schooling. Recognition of pictures, interest in art, and intelligence

development through a familiarity with visual conventions are all largely emphasized in art education. Art educators have emphasized visual perception as part of an aesthetic education. In reading education, visual literacy, which is based on visual perception (an area often shared by a collaboration of educators and librarians), is visual perceptual competence or a set of skills to interpret images and develop visual concepts.

Children's Visual Perception and Art

Visual perception develops intelligence, and children's visual perception has its own characteristics. Harper (2001) writes that perceptions in childhood form stratagems and hierarchies, assumptions and presuppositions, and interpersonal agreements and cultural characteristics (p.397). Arnheim (1974) notices that children's visual perceptions are often described as immature, undefined, and in other words they "seeing everything." These differences make both life experiences and perception different from person to person. Bruner (1962) explains why art is not "a universal mode of communication,'' and the appreciation of art is measured according to the unique experience of individuals (p.73). In Bruner's words, "to experience" is to categorize in syntax of concepts (Bruner, 1962). Experience is filtered through the "programmed connectedness of senses" (Bruner, 1962, p.120). Kuhlthau (1991) sees that individuals actively and constantly construct their view of the world by assimilating and accommodating new information with what they already know or have experienced. Bilal and Wang (2005) review children's categorization of knowledge, showing that children have capabilities of categorizing information from perceptions and domain knowledge (p.1305).

Reading is a cognitive activity. The novelty and malleability of children's visual perception change, according to age and concept, and is sharpened during the process of learning. Reading is a process of literacy with mental imagery or a representation of words, with a belief that verbal and nonverbal systems exist through reading (Sadoski & Paivio, 2001). The human environment and individual experiences affect visual perception as well. Children's visual perception varies with their age and developmental stages, and their learning experience is a unique aspect of their visual perception, which involves conceptual change and development. By appreciating art and reading, children can develop their visual perception abilities toward verbal and nonverbal information. Literacy also plays a role in the educational process.

In learning and cognitive styles, the ways of processing information, individuals differ in their processing information in wholes or in parts. The differences of processing information in wholes or in parts are differences of field dependent individuals with field independent individuals. The differences determine the success of academic achievement and even career choice (cited in Ford, Miller & Moss, 2001).

Perspectives: The Cause and Effect of Visual Perception

Two perspectives point to the cause and effect of visual perception, literacy and culture. The instances of visual perception involving different physiological and psychological factors help individuals to establish frames of reference, a set of concepts, views, customs, or values. The most direct effect on children—produced through visual perception—may be in an acquisition of language. Language reflects perception and refines children's perception through concepts and storytelling.

Literacy

Visual perception influences children in two ways—through literacy, as a life-long learning process, and through the acquisition of language, as an ability to think and express themselves. Literacy has broader references to the complete understanding of a subject beyond the development of reading skills (Sandlian, 1997) or the skills to understand information and interpret images, sounds, and texts (Bawden, 2001). The significance of literacy is to provide children with various opportunities to access real-world information and create mental maps of ideas (Weinberger, 1997). Seels (1994) dismisses a notion that treats visual perception as a raw, naturally developed ability because visual literacy underlines cross-cultural differences in the construction of meaning. Perception is a series of reactions by the brain and the retina of the eyes, as well as through an individual's interpretation of information in the communication process (Tolchinsky, 2004).

Visual literacy is rising with the increasing role of images used by society (Hortin, 1994). Messaris (1994) argues for visual literacy as a precondition of pictorial interpretation. Understanding pictorial conventions, previous encounters of experience, and exposure to cultural representations all determine interpretation. Arnheim (1969) identifies images with 3 functions: as pictures, symbols, and signs. Mai (2001) singles out a close relationship between symbols and language, which have an interactive role.

The US Department of Education (2003) assessed reading in early childhood education shows that early reading influences the acquisition of math skills. Hurt (1991) strongly supports the idea that children perceive pictures as important sources of information and apply them in the process of learning. Picture books promote very

young children's visual literacy in helping them to communicate with others as well as to understand visual elements in their environment (Gardner, 1994).

There are many phenomenal benefits to a child's learning language by perception. Language is not only a tool of communication, but also an instrument to encode his or her sense of reality (Bruner, 1966). Language represents concepts or concrete objects (Piaget & Inhelder, 2000). J. R. Anderson (1990) concludes that language is the principal means of assessing human thought. J. R. Anderson says that language operates as the symbolic representation of reality and as the aesthetic-sensuous response of the human organism. It determines an individual's cognitive process and monitors behavior. Yoon and Nilan (1999) write that language allows an individual to exchange and share meaning for a mutual understanding in human-to-human communication.

Numerous studies have proven that spoken language largely shapes visual perception. Language determines behavior and has a strong relationship to the culture in that the spoken language reflects cultural values. Language serves as a filter of worldviews (Stern & Robinson, 1994). Edmund Huey (1998) discusses perception in relation to reading as an active movement of mind. Lindsay and Norman (1977) view that language helps to piece meaning from disparate sources.

For a child, language is an essential instrument of social adaptation. It transmits messages in ready-made, compulsory, and collective form and provides the self-expression of needs and experience (Piaget & Inhelder, 2000). Language assures the behavior and survival of children (Bruner, 1962). Vygotsky (1986) concludes that sensory material and the words contribute to children's formation of concepts (p.97). As

he puts it, language indicates meaning and sense, while perception functions in terms of sight. For a child, language is acquired in the context of imitation (Piaget & Inhelder, 2000).

According to Messaris (1994), images render two functions: an imitation of perceptual cues from human interpretation and a full representation of the visible world. Images are analogic and language is categorical. The recognition of images leads to verbalization (Vygotsky, 1978; Messaris, 1994). All forms of perception, including the perception of pictures, are an act of verbalization, which is expressed by a linguistic skill (Nodelman, 1988, p.8). Pictures represent facts, events, and words in the form of captions or fragments of narrative, which influence the way individuals, interpret those facts and events (Lewis, 2001).

Language is a tool that helps us express ourselves and guides our perception in recognition and categorization. Language bridges the knowledge gap for children who can learn through imitation and through interaction with their parents or other adults. Children develop thinking skills by building concepts through language. In the meantime, the development of language ability corrects perceptual errors and sharpens children's perceptual ability. Younger children, through learning and developing language, assimilate into society and adapt their behavior accordingly. The process of perception allows a child to grow out of an innate ability and develop perception through training and learning.

Frames of Reference

Various factors affect the cognitive experience of perception. Vision is

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represented by frames of reference. Stern and Robinson (1994) define a frame of reference as "one's own unique perspective," or how one sees the world. Demographic factors and psychological factors affect the formulation of an individual's frame of reference (p.35). Tang and Solomon (1998) argue that users in the process of retrieving information often rely on two frames of reference to make a relevant judgment of a given document. A wide range of demographic or psychological factors within a frame of reference especially age and culture stand out when determining a change in visual perception. Physically, visual perception changes with age by correcting perceptual errors in a person's past experience (Piaget & Inhelder, 2000). Culture is a relatively broad concept, including worldviews and the visual conventions of a group of individuals, a nation, and a language. Hillmann (1993) examines that ethnic backgrounds and age contribute significantly to visual perception.

Culture

Culture affects perception, as in perceivers' cultural accessibility to information (Tolchinsky, 2004) and cultural typification (Cooper, 2002b). This implies that a relationship between culture and perception comes from both a personal point of view as well as a social level. It is believed that a larger community has a particular way of categorizing or typifying information as well as generalizing meaning (Cooper, 2002b, pp.1223-1224). Gesell (1949) sees culture in a broad way—by emphasizing both levels at as the interaction of inner and cultural forces in a child's growth process (p.4). There are different understandings of cultural symbols and representations, as well as construction of meaning.

A person's ability to see and understand the meanings of visual images may depend on his or her knowledge of culture. Both children's and adults' worldviews are shaped by their culture (Nodelman, 1988; Messaris, 1994). Nodelman (1988) examines whether individuals are able to conceptualize visual images, and asks if this depends on learned cultural conventions. Messaris (1994) believes that representational conventions of images in a certain culture to which children are exposed can affect their worldviews. For example, children's daily life experiences create a mental template in understanding cultural contents of images. A child who lives in the United States can easily associate yellow with his or her school bus.

In their study of children of different ages and cultures, Bruner and Anglin (1973) claim that cultural values determine differences in worldviews. The standard to evaluate the mastery of intellectual competency across cultures has a different social reward (Bruner, 1966). Tolchinsky (2004) believes that cultural accessibility to information is a result of social-economic background and family. Cooper (2002a) applies cultural typification to the classification of information, which involves not only an individual's stock of knowledge but also a cultural understanding. Very young children take a more personal point of view.

Gesell and ILG (1949) provide two environments identified as cultural forces in a child's growth: family and school. Despite the wide use of the Internet, researchers have recognized that reading remains a favorite activity of families (Sandlian, 1997, p.583) and digital technology cannot replace the story services for very young children, provided by public libraries (Walter, 1997).

Parents play an essential role in their child's decision-making process, both in the classroom and at home (Bergen, 1994). Bergen (1994) considers the young children's learning style idiosyncratic because they acquire language or knowledge first from their parents and environment. Applebee (1978) sees the importance of the social relationship between parents and children, which reflects differences in visual perception. A child needs help to develop critical thinking abilities, which they learn from their teachers, parents, librarians, and so forth. Because there are constant errors or distortions of perception that provide incorrect perceptions, children, especially younger children, have difficulty in coping with in their world (Piaget & Inhelder, 2000; Russell, 1956). Younger children cope with their environment by practicing playing (Bruner, 1966). Though with their development in age, children can go back to correct past perceptual errors (Piaget & Inhelder, 2000), and those who are involved in children's life play a part in guiding and instructing children in reading (Cullingford, 2001).

Children first experience literature by being read to rather than reading on their own (Harper, 2001, p. 398). Two pairs of collaborations are suggested in helping children to read picture books: teachers and librarians (C. L. Anderson, 1998), and teachers and parents (Kiefer, 1988; Lurie, 2003). Bergen (1994) underlines that teachers and parents should be involved in young children's lives to provide a learning environment and to teach competent skills. Adults play an important role in bridging the gap of understanding by discussing new ideas and concepts (cited in Kendall, 1999).

The relationship between parents and their children is affective, by which moral feelings and judgment are forced upon children (Piaget & Inhelder, 2000). Parents are often seen as the decision-makers of their children's lives–in the classroom or at home

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(Bergen, 1994, p.90). Parents' choices in picture books reflect a guide by which they want their children to perceive things (Lurie, 2003). Parents who read storybooks to their children help their children with their studies (Owens & Nowell, 2001) by strengthening skills such as written awareness (Justice & Lankford, 2002). Given that parents play a role in reading and selecting reading materials for their children, it is of primary importance to understand how a child's knowledge is constructed based on how parents want to impart their knowledge to their children.

C. L. Anderson (1998) suggests that the partnership between teachers and librarians in visual literacy projects and the role played by educators in promoting an understanding of texts and illustrations in picture books are essential in child development (p.18). Kuhlthau (2004) provides a constructive view of learning with regard to the library media program. In schools, teachers and library specialists are encouraged to work in teams, and librarians serve as additional information to help students with reading and notes taking.

Bruner (1966) argues that education emphasizes skills in handling, seeing, imaging, and symbolic operation. Teachers ought to teach "readiness" for the transfer of skills. In his view, at age 5 or 6, children process internal representation "by representative images, of greater chunks of [the] environment" (p.27); young children play, develop habits, and learn to cope with their environment at this age (p.118).

Visual literacy, the ability to recognize and make sense of visual symbols and pictures, is the operation of teaching visual thinking. In childhood, children's thought processes are malleable and their perception is unspoiled (Siegler, 1990). In terms of education, particularly art education, visual literacy is viewed as a part of cultivating

spatial intelligence (Gardner, 1994). Based on a theory that picture books are capable of communicating illustrations in expressing verbal meaning and visual meaning, Kiefer (1988) advises teachers to help children be the "meaning makers" with their picture books. Teachers and parents consciously categorize picture books according to different topics and label age differences in the categorization process (Messaris, 1994).

Teachers can pass on their attitude toward learning during instruction (Bruner, 1966). Teachers can use complex images from picture books across topics to facilitate children's location of the information they seek (Casbergue & Plauche, 2003). Gesell (1949) recognize how important school life is to children. Through school, a child experiences his/her social culture and develops skills and competence in visual, auditory, manual, and phonetic areas.

Age: Younger and Older

In traditional child development studies, a change in age is a determinant that influences a child's responses or behavior (Nadelman, 2004). Siegler (1996) claims children experience different stages of growth and apply different information-seeking strategies according to their age group. There is an age difference in visual perception between older and younger children (Arnheim, 1974; Bruner, 1966, Piaget & Inhelder, 2000; Vygotsky, 1978). Piaget advocates that perceptual activities develop with age— both in number and in quality (Piaget & Inhelder, 2000). Younger children apply less complicated visual retrieval methods than do older children. At the age of 3 children start to have "a concrete and specific visual memory" (Bruner, 1966, p.13) and they are able to recognize picture representations (Gardner, 1994). Younger children have

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different perceptual approach than older children in the order of naming and drawing objects (Vygotsky, 1978). Children's interest in pictures is developed systematically (Hurll, 1914). Casbergue and Plauche (2003) say that the accuracy of images is more vital to younger children's concentration on illustrations.

Studies show that perception changes with the age and reflects itself in children's physiological and psychological changes. At age 3, children start their memory (Bruner, 1966) and identification of objects (Gardner, 1994); at age 4 children have cultural experience and participation (Gesell, 1949); age 5, children can grasp certain perceptual principles like proximity (Gardner, 1973) and representation of images of their environment (Bruner, 1966). Literacy and frames of reference, which includes a wide range of factors, demonstrate the connections of age and culture with an individual visual perception. Piaget concluded that 3- to 5-year-old children are perception-bound, spontaneous, and self-regulating organisms by thinking and processing classification and serialization. They see how things look to them, not by instruction, but by challenges in new tasks for information, and accommodate visual perception to develop intelligence (Davidson Films, 1972).

Summary

Visual perception involves the interaction between an individual's internal world and his or her external environment. Reading picture books is relevant to child development and is an important perceptual activity that may explain how individuals differ based on physical or social-psychological factors. Visual perception is largely shaped by the organized culture members live in, but it also impacts individuals. In

addition, visual perception involves a social perspective from schools and group reading activities. The change of visual perception paves the way for language development, and children through a direct or indirect interaction with various caregivers receive different benefits from picture books. Caregivers play a role in selecting, interpreting, and transmitting the information inside picture books to children.

Meaning

Meaning plays a role in connecting reading, memory, and comprehension of both verbal and nonverbal information. Lindsay and Norman (1977) write, "As readers, we will remember better and read more effectively if the materials are meaningful" (p.274). J. R. Anderson (1990) characterizes meaning-based knowledge representations by encoding what is significant about an event, lengths of memory, and a network of propositions. He said that meaning representations can serve to encode both linguistic and pictorial information. Bethlehem (1989) emphasizes the fact that the pursuit of meaning adds value to the acquisition of reading skills (p.2), as the German poet Friedrich Schiller puts it, "Deeper meaning resides in the fairy tales told to me in my childhood than in the truth that is taught by life" (cited in Bettelheim, 1989, p.5). The personal meaning users seek is critical both to system design and content representation (Kuhlthau, 1991, p.361).

Information seekers attach meaning to information, and meaning exists in context. Mathis (2002) explains that meaning is particular to the reader of picture books based on his or her experiences and expectations. Perception and meaning are related to each other. As visual perception creates visual meaning (Stern & Robinson, 1994,

p.32), meaning can then be transformed into patterns to create new perceptions, and meaning comes from each perception (Toch & MacLean, 1970).

Hillmann (1993) refers to perception as the meaning attached to information that is received through senses. According to Stern and Robinson (1994), perception is the "gathering of information through our senses and the organizing of that information in order to create meaning" (p.32). The process of perception is to select, organize, and interpret stimuli from the external to the internal world (Stern & Robinson, 1994). Smith (2003) discovers that preschool children who are limited by age and experience in perceiving and interpreting art objects depend on their teachers' instruction to reach a deeper level of understanding.

Information seeking reinforces the interaction between a person and his or her source. Perception plays a role in this interaction as well. According to Yoon and Nilan (1999), information seeking (IS) is defined as:

A dynamic process of a user making sense that involves cognitive behavior at the level of individual perception and an associated communicative behavior at the level of the social context when insight is sought via linguistic means from other sources. (p.871)

Meaning lies in the center of a child's development as the child undertakes to seek information about his or her environment and learns to make sense of it. Meaning is often interpreted semantically and involves a literal understanding of words. In reality, meaning explains how it makes sense in contexts such as in learning and in art. The interaction between individual and pictorial information shows a visual communication that involves mental representations and influences from the environment.

The Definition of Meaning

The definition of meaning includes intention, the significance of linguistic expression, the property of language, consciousness, and a process of making sense. The closeness of meaning is one of the fundamental concepts in the information sciences (O'Connor, 1996). Jörgensen (2003) mentions that the concept of "meaning" has been expressed in different classification systems. "Meaning" is a philosophical construct; the philosopher Grice (1957, 1969) defines meaning as the intention determined in a speaker's performance and a shared convention of dialog. Since the 20th century, meaning has become the property of language. According to the Webster's Dictionary, meaning is defined as the purport, intention, aim conveyed by language, and logical connotation and denotation of a word (Merriam-Webster Online Dictionary, 2005).

Ellis (1930) analyzes meaning in relation to the environment, as a consciousness of images, relations, and their implications (p.50). Kuhlthau (1991) concludes that meaning is a sense-making process within a personal frame of reference (p.361). Meaning is placed in "a network of hypothetical inference that is concerned with other observable properties and effects" (Bruner & Anglin, 1973, p.11). According to Oddy (1977), meaning is subjective; a user who may say that, "this document may contain information I want" (p.2), but to different readers of that document at a different time mean differently. Given that meaning as a concept is elusive in different contexts, it is verbally described and expressed, or simply resides in mental imagery that maps conceptual relationships. Complicated in cultural understandings, meanings are often implied or embedded in a depth of levels (Sadoski & Paivio, 2001; Panofsky, 1982).

Linguistic Meaning

It is easy to think of meaning in a linguistic context because meaning comes from the articulation of words rather than from symbols. Words carry a weight of feeling, intention, and attitudes in reading and speaking. Words can also be ambiguous in expressing their implications (Arnheim, 1969). Korfhage (1997) associates meaning with the identification of semantic structures in documents, and this is the goal of information retrieval (p.239). Grice (1957) recognizes that the utterance of meaning reveals cognition, which is the very attitude and intention of conveying.

Huey (1998) generalizes reading as the most rapid and accurate means of extracting meanings, which are derived from word-sound and utterance. In his view, children and uneducated people make use of spoken words and meaning through their feeling and attitudes. Huey's view of a text is that it can produce mental imagery and enable readers to visualize information by reading. Yoon and Nilan (1999) emphasize that linguistic articulation plays a role in understanding users' perception of informational needs and can help users to derive meaning from the information content.

Literal words do not have particular meanings but play a crucial role in transmitting and describing information. Ellis (1930) points out that a word itself does not have meaning, but the word can transmit meaning attributed by a reader or hearer through experience. Wittgenstein already reveals that ordinary language is a tool to express meanings (cited in Lewis, 2001, p.95). Jörgensen (1998) emphasizes that a person's view or description of an image is a starting point to get to know the mental processes that cannot be directly observed (p.164). O'Connor, O'Connor, and Abbas (1999) also assert that words function to describe entities of images in indexing.

Stories and narratives are vehicles of expressing meaning. Hermans (2002) states that people of all ages and cultures tend to use stories and narratives to convey meanings about their environment and lives. Stories have functions in organizing thoughts and reshaping thinking through the process of listening and reading. Stories are "real-world data" about abstract phenomena, and they convey different realities (cited in O'Connor, Copland, & Kearns, 2003, pp.2-3).

The literal meaning implies that words themselves do not have meaning, but can carry an intended meaning between speakers and they help express a certain meaning. Words function to help viewers visualize information as it is transmitted and described. With the emergence of visual images within various media, semantic meaning has shown its limitations of representation, though words remain the very way to get to know human thoughts.

Visual Meaning

In contrast with verbal meaning through linguistic messages, visual meaning is conveyed through visual messages in visual communication. Visual information cannot decode its own meaning without the help of literal expressions. In Information Science, Shatford (1986) restates the principles of subject access to pictorial works rely on understanding the meaning of images itself and "the relationship between this meaning and the words used to describe" (p.42). She believes that descriptive information functions to evaluate the validity of subject information, the analysis of images, and the expression of meaning.

Perception indicates a beginning, as meaning marks an ending in visual communication. Dondis (1973) distinguishes between an awareness of message as perception and meaning as the goal of visual thinking in the process how visual information is transmitted, conceptualized, and transformed into visual intelligence. Blake (1951) clarifies that the adequacy of individual perception relies on an ability to comprehend the meaning of sensory data one encounters. According to Kuhlthau (2004), individuals apply their previous experience to the construction of meaning. Images, as signs of meanings in thought, are more efficacious than words (Huey, 1998). It is predicted that "the arrival of the digital image may shift meaning in retrieval from intentionalism between artists and the art piece to reception between the viewer and the piece of art" (cited in Enser, 1995, p.139). This prediction implies that authors or artists create meaning in concept, and viewers base meaning on their various experiences. It further divides the difference of significance in the representations of visual meaning and verbal meaning.

Meaning is the goal of visual thinking. Variables such as sensory data, medium, visual qualities, an individual's previous experience, emotion, and domain knowledge, reading and decoding skills, and mental states have an impact on how we perceive meaning. Seels (1994) explains that visual thinking includes visualization through images that are mental representations, perceptions, and conceptions (p.106). The perception of visual qualities such as color, size, and shape provides the formation of concepts, which are "meanings and understandings to build the knowledge, belief, and attitudes of a child" (Russell, 1956, p.71).

Meaningful reading related to mental imagery and critical analysis through

comprehension has been widely advocated since the late 19th and early 20th centuries (Sadoski & Paivio, 2001). Huey felt that meaning in reading concerns the affective feeling states and attitudes in uttering sentences (cited in Sardoski & Paivio, 2001, pp.35-36). The consciousness of meaning is related to mental states (Huey, 1998,). Pinker (1985) states that, "Visual imagery is the interface between perception and cognition" (p.37). According to Pinker, visual imagery plays a role in connecting literal appearances and recognition. Visual meaning may take on its own understanding and interoperating; however, now it is not separate from verbal meaning. Jörgensen (2003) classifies various image features or attributes as perceptual and interpretive.

Children and Meaning-Making

Meaning is fundamental to the success of learning. Humans strive for meaning out of diverse experiences. Based on the generalization and discrimination of memory and previous experiences, children constantly develop concepts and abstract meanings to make their learning experiences effective (Russell, 1956). Russell (1956) uses the clarity and completeness of a child's concepts as the best measure of possible success in school because concepts develop meaning by learning. Binder (1955) considers the value of visual experience in an individual's grasp of meaning. This individual can describe familiar characteristics and relate his or her previous experience in tasks of recognition.

Perception plays a crucial role in creating meaning. Toch and MacLean (1970) express the purpose of perception as a means to help humans to "cope with the world by assigning meanings to the perceptual activity that guides the subsequent one"

(p.129). The meaning of perception exists in historical, socio-cultural, individual, situational, and structural contexts (Chandler, 1997). Vygotsky (1978) views visual perception as making sense and meaning through an individual's system of behavior. Visual elements such as color, shape, form, syntax, and composition help children find meaning from visual information (as cited in Hortin, 1994, p.21).

Cullingford (2001) points out that a child seeks meaning by making sense of the world from birth (p.10). Piaget and Inhelder (2000) have found that children as early as 1.5 to 2 years old develop their ability to represent an object, event, and conceptual scheme by means of a signifier that indicates meaning (p.51). Markman (1987) concludes that younger children prefer thematic relations of objects that are simpler, and they are more ready to construct categorical relations, which are the basics for understanding reality. She tries to convince her readers that children have the ability to organize objects taxonomically, and she argues that there is a causal relationship between category and meaning. She points out that children seem to define an ostensible and exclusive meaning to objects, which includes a thematic relationship as well as classifications of understanding objects.

Children create meaning from very early on in life by doing this they can understand reality in order to develop categorization abilities. Their perception and categorization change with age. They are interested in thematic relations as if they had put every aspect of an object into a complete picture. It is assumed that they are trying to figure out a reality of the world.

Interaction

Interaction is an aspect of visual information retrieval and involves representation issues. Picture books as documents are embedded with certain rules of representation, and project communication between the contents and viewers. Reading picture books for children is a processing of learning or seeking new information. Yoon and Nilan (1999) assert that interaction is one of the essential human functions of making sense through perception (p.879). In information retrieval involving texts and users, Marcia Bates discussed a berry-picking process in the course of encountering new information, and Nicholas Belkin remarks on users' knowledge changes as in an anomalous state of knowledge (ASK) for information seeking (cited in Vakkari, 1999, p.823). Vakkari (1999) then summarized an interactionist approach based on the interaction of users and a source, with an emphasis on the changing nature of information needs in the search process.

Interaction reveals affective and cognitive needs between a user and his or her information system (as cited in Kuhlthau, 1991). The interaction between children and picture books reflects two correlations: how children search for meaning, and how picture books address the visual communication between children and visual information. The characteristics of a learner, the learning activities undertaken, the nature of the materials, and the criteria used to evaluate the learning process all influence the interactions among the information research process, the library systems, and the individuals (cited in Moore & St. George, 1991). Reader response theory also supports an interaction between a reader and a literary text that plays a role in constructing meaning (Massey, Weeks & Druin, 2005).

Pragmatist philosophy suggests that meaning comes from the imagined consequences and the implication of acts (Sadoski & Paivio, 2001). Familiarity and previous experience through visual perception are the precursors to identifying and recognizing visual objects. Toch and MacLean (1970) agree that shared experience provides individuals with a similarity in meanings, which only requires small efforts in the process of communication. Illustrators draw on all aspects of visual imagery to express meaning so the meaning-conscious mindset can appreciate meanings (Nodelman, 1988).

Levels of Meaning

The levels of meaning, or the depths of meaning imply two ways of exchanging meaning, represented by an author of a document, and extracted by a reader or user of such document. According to semiotics research, meaning operates on a hierarchy or levels (Moriaty, 1995). O'Connor (1996) states that "level of specificity," the depth of representation in one document or a large collection helps to establish a reader or user's level of understanding (p.107). Subjective and elusive as it is, meaning exists in levels that are often understood differently in various disciplines. Erwin Panofsky's theory of meaning in art and Allan Paivio's dual coding theory in cognition are two long-established theories with broad applications. Computer science and information science with the innovations of computers also put forward their understanding of meaning, in particular with meaningful access to both textual and image information. Hastings (1995) investigated art historians' intellectual access to digitized image and found 4 distinct levels of queries. Individuals' interest determines "the potential relevance,

appropriateness, or usefulness of a certain image" (cited in Choi & Rasmussen, 2000, p.500), such as art historians use images for their research. Arnheim (1969) posited that beholders are able to interpret the level of abstractness of a picture, which underlines a statement of visual qualities (p.137).

Panofsky (1982) breaks down 3 levels of meaning in his analysis of works of art: pre-iconography, iconography, and iconology. Researchers in related disciplines have mapped these levels into language, classification theory, and studies of images (e.g., Enser, 1995; Shatford, 1986). Panofsky explained these 3 levels: the primary and natural meaning is the identification of facts and compositional basics; the secondary and conventional meaning is the interpretation from familiarity with a certain culture or custom; and the intrinsic meaning is the underlying principles that express the characteristics of a certain time, space, and iconology. Applying Panofsky's theory into the classification theory related to images, Shatford (1986) contributes by expanding "Of" (factual) and "About" (expressional) of the pre-iconographical level into the iconographic level (cited in Jörgensen, 2003, p.119). Shatford believes that a single image can have multiple meanings from the generic to the specific and conceptually it can be analyzed through a faceted classification system by answering *Who*, *What*, *When*, and *Where* (Jörgensen, 2003). Enser (1995) assumes a "visually-stimulated society" where information needs are pictorial and he practically addressed *Who, What*, *Where*, and *When* in an image collection (p.140). Enser mentioned that children prefer pre-iconography (Enser, 1995). In Figure 2.2 , Panofsky's theory was paraphrased in terms of Sara Shatford's interpretation.
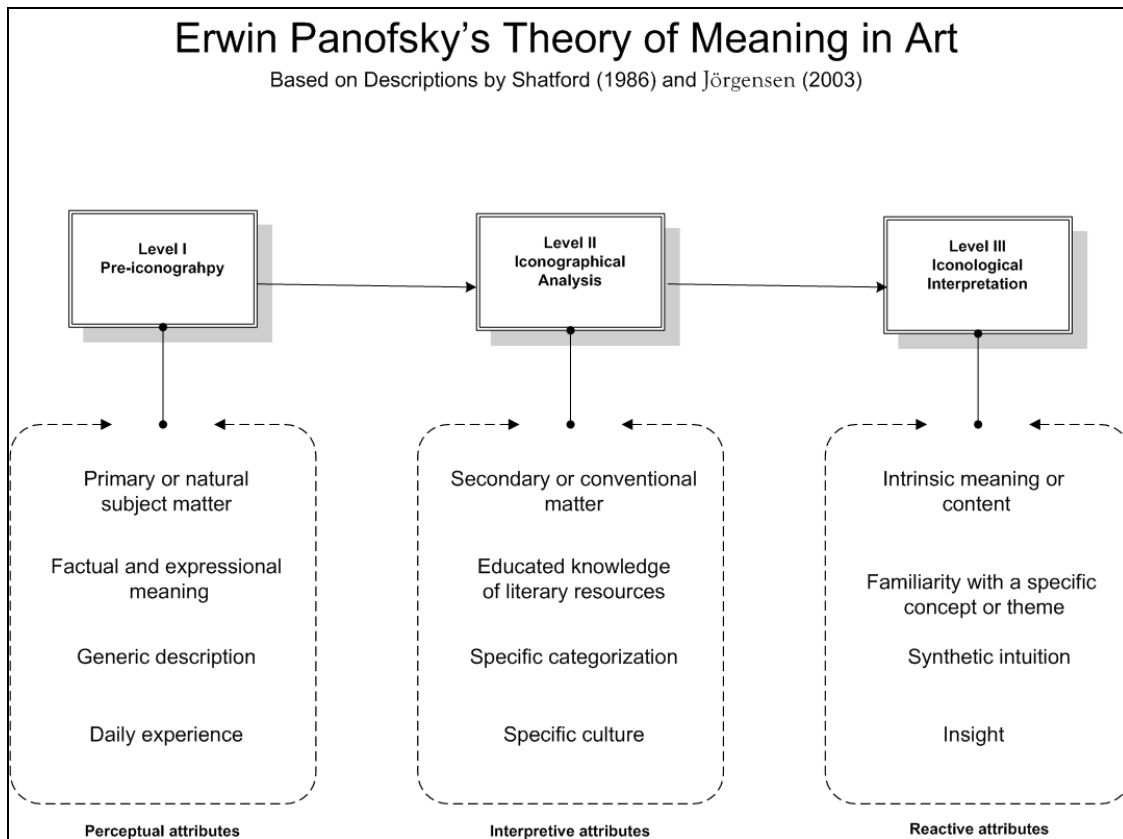
Figure 2.2. Panofsky's theory of meaning in art based on descriptions by Shatford (1986).

Modern research is devoted to psychological and linguistic accounts of meaning, which finds useful in literacy, such as the dual coding theory (DCT) (Ellis, 1930; Huey, 1998; Sadoski & Paivio, 2001). In DCT, Sadoski and Paivio (2001) expressed 3 levels of meaning that exist through the activation of mental representations involving verbal language and nonverbal objects and events. For example, a royal wedding can be represented in two systems: logogens (verbal system) and imagens (nonverbal system). The two systems establish a correspondence of meaning on 3 levels of mental representations. So in the verbal system, words show linguistic accounts of meaning (a) a royal wedding associates a king and a queen as a bride and a groom to be a husband and a wife (b) they marry in a cathedral (c) they live in a castle. In the nonverbal system,

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pictures in correspondence show concrete images of this royal wedding (Sadoski & Paivio, 2001, p.79).

In the DCT, 3 levels of meaning are representational connections, referential connections, and the associative structure. The representational level is the initial activation of the verbal and nonverbal systems; the referential level is the activation of connections between two systems; and the associative level is the activation of connections within one system. Mental representation or memory is activated in all 3 levels. The DCT principles are viewed highly efficient in designing and teaching beginning reading materials in which pictures play strengthening roles in helping to learn words.

On the studies of images, computer science prefers a content-based approach and library science prefers a description-based method, with a focus on studying image properties (Chu, 2002). The content-based approach currently makes use of the low-level features and divides image properties into 3 levels: primitive features such as color, shape, and texture; logical features, or the identity of objects, and abstract attributes, or the significance of scenes (Chu, 2002). The description-based method is based on users' direct involvement in supplying queries like captions and keywords (Chen, 2001). Greisdof and O'Connor (2002) consider image retrieval " a process of re-conceptualizations," which requires image viewers to evaluate an image's "topicality, meaning, and utility in regard to an information need" (p.7). Iyengar, Zachary, and Barhen (2001) assume 3 image levels with a focus on content-based visual features: image, vector, and number levels. Queries for image content, therefore, include 3 levels of complexity: primitive features, logical features, and abstract notions and attributes. A

content-based image retrieval (CBIR) system focuses on the Level 1 of query

underlying the recognition of shape as a fundamental activity. Jörgensen (2003) pointed

out that the CBIR method does not focus on an access of subject.

Regardless of the different approaches to the various levels of meanings,

previous experience and a familiarity with the environment and culture are keys to

interpreting and understanding images. The comparison shows that the 3 levels of

meaning based on the dual coding theory focus on the inner experience of an

interaction between an individual and a source, and Panofsky's levels of meaning

analyze the depth to which an individual understands and interprets meanings. Both

provide a conceptual framework to explore meaning in depth. Either in the process of

reading or in the appreciation of art, meaning does not reside on one level. There are

interactions involved from the internal mind and the external environment. The dual

coding theory focuses on an internal imagery or mental model which is a basis of

learning. In contrast, Panofsky's theory about levels of meaning more emphasize visual

meaning stimulated by the works of art, which serves to understand why children's

interest in thematic relations and viewing images of picture books.

Mental Model

Perception relies on an individual's prior knowledge or mental model. A mental

model differs from prior knowledge in that it is a high-level construction, whereas prior

knowledge is a low level of reception (Fayol, 2004). Piaget and Indelder (2000) view a

child's mental image as a symbolic representation in action and thought. In Piaget's

view, a mental image first appears as an internalized imitation such as the imitation of

an animal. With the acquisition of language, a child develops a more sophisticated

representation and can even detach it from its context. This demonstrates a child's

ability to generalize and extract meanings.

Piaget classifies mental images into reproductive images and anticipatory

images. Kuhlthau (2004) interprets familiar patterns as internal models or theories, or a

personal construct to predict or to act. Meaning derives from the meaningfulness of

mental states (Cummins, 1991). Stripling (1995) refers to mental models as a way of

building the domain of knowledge through learning, a continual incorporation of

knowledge. The recognition of mental models can explain how an individual applies

information strategies and retrieves information. The maturity of mental models divides

the novice and expert learners. For example, Stripling (1995) found that mental model

of school students can help media specialists to provide better information services at

school.

Mental models suggest that images come from stored information. Russell

classifies children's mental images into "after images" and "memory images," which

retain visual perception with a different length of time in though (Russell, 1956, p.102).

A model of the world of events enables perception to "interpolate, extrapolate, and

predict" (Bruner, 1966, p.2). Johnson-Laird (1980) first proposed that mental models

give "prototypical information for perception of objects" (p.100). Mental models, also

termed "situational models" or "semantic models," are the internal simulations of a real

or imagined situation (Sadoski & Paivio, 2001, pp.78-79). Mental models are processes

or steps that illustrate cognitive activities (Metallinos, 1994). The study of mental

models shows a vital relationship between psychological imagery and the perception of

objects (Johnson-Laird, 1980). The dual coding theory recognizes that mental models take different forms like mental language or mental images or both (Sadoski & Paivio, 2001). So mental models not only guide individuals in their decision making but also describe patterns for understanding individuals.

Image Attributes

Image attributes are features that serve as access points in cataloging and indexing images. More important, image attributes are categorically related to individuals' perceptions, consistent and analytical (Jörgensen, 2003). Jörgensen (2003) created a research framework of studying image attributes that undertake tasks of describing, sorting, and searching. Jörgensen classified image attributes into perceptual, interpretive, and reactive, and also found that different types of image attributes show layers of meaning. Image attributes are useful to interpreting visual elements of who, what, when, and where (pp.207-208).

Summary

Visual perception filters information by the means in which a child acquires language, develops concepts, and solves problems; image properties, concepts, and the story become instruments for children to make sense of their world. Research has found that picture books bring back memories to adults many years later. Reading picture books not only stores those visual elements or basic conceptual cues in the mind, but also provides ways of encoding memory through the interaction of words and images in picture books, and even from visualized information from parents and

teachers. Children have their own mental models of perception and learning that is separate from prior knowledge and experience.

Summary of the Chapter

Picture books that are rich in storytelling elements and visual elements are vital learning tools and visual resources. The implications from this literature review are the distinct features of images, and their relationship with texts in picture books as well as human interactions during reading creates objective, subjective, visual, and semantic meanings. The story types, concepts, words, reception (mental representation), familiarity (cultural rules and previous experience), and age groups are factors that influence children to construct meaning when they read picture books and view images. Being a daily and continuous learning experience, visual perception channels children's internal perceptual apparatus from the external environment. In theory, visual perception is a psychological concept that reflects the interaction between one's mental model with the outside environment, language development, and culture exposure. Visual perception guides a child's development in age, concepts, and information needs as well as with respect to their information-seeking strategies. An association among visual perception, children, and meaning establishes a hypothesis that children perceive distinct features and levels of meaning through picture books.

This chapter emphasizes the visual experience of reading picture books that has implications for children's visual perception and meaning making. Reading picture books underlies visual thinking, including mental representations, perception, and conception. Most of the previous studies in information retrieval concentrate on an

interaction between users and text-only sources or image-only sources. However, picture books provide users with a means of interaction with both sources. Meaning in picture books exists in an integration of image and text, based on such interactions. Panofsky's levels of meaning and Jörgensen's research framework of image attributes provide a unified basis to understand and analyze levels of meaning that exists in pictorial works such as picture books and individuals such as children.

CHAPTER III

METHODOLOGY

Introduction
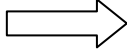
The methodology employed both qualitative and quantitative methods in order to elicit children's interpretation of meaning and understanding of images in picture books. A systematic literature review presented relationships among meaning, visual perception, children, and picture books. The characteristics of children's development in Jean Piaget's preoperational stage (2- to 7-year- olds) supported both qualitative and quantitative research methods in data collection and analysis. Qualitative methods such as observations, surveys of parents, and interviews of children were applied in the research design and data collection. Content analysis and case studies were used to analyze meaning from children's responses to interview questions. Each qualitative method was paired with a quantitative analysis method.

The study investigated whether 3- to 5-year-old children are able to perceive levels of meaning. Investigations included 3 phases and 5 steps: the literature review, instrument development, observations, data collection, and data analysis as detailed in an action plan (see Table 3.1). The first phase, based on the framework of the literature review, involved designing instruments, surveying parents, and generating scripts for interviewing children. Informal observations were started. I submitted consent forms and instruments to the Institutional Review Board (IRB) at the University of North Texas. The investigation moved to the second phase upon receiving the approval of IRB. The second stage started with an unobtrusive observation and participant observations of the children, which continued until the end of the investigation. At the same time, a pilot

study was carried out to test selected picture books and the instruments of an interview script with children and a survey with parents. The pilot study result helped to modify instruments and further determined the third stage consisting of one-on-one interviews and a survey of parents. On the third phase, picture books for the investigation were selected, observations were continued, and data collections were completed at 3 venues, the Child Development Laboratory (CDL) of the University of North Texas, public libraries, and homes of the participating children.

Table 3.1

Three Phases of Research Actions and Plans

ACTION ⟹	Phase I	Phase II	Phase III
1. Literature review	Reviewed previous literature and determined research questions	Study and composition of review	Revision and finalization
2. Instrument Development	Developed and submitted to IRB for review, and made revisions	Received IRB approval and conducted the pilot study	Surveyed and interviewed
3. Observation	Started informal observations	Kept a research diary and applied Public Library Association's storytime observation checklists	Analyzed and reported
4. Data collection	Designed research	Collected data upon receiving IRB	Transcribed
5. Data Analysis	Developed analysis methods	Matched with research questions	Answered research questions

Rationale of the Study

The literature review revealed that visual perception included not only physical acts such as hearing and seeing, but also interpretations of the environment from an individual's past experience. Current psychology studies show an internal template that guides an individual's behavior. In other words, the internal template is based on one's everyday experience or domain knowledge. It creates a mental model and determines how a person performs tasks or behaves. Children have less experience or domain knowledge than adults, which affects their perceptual ability, including visual perception.

Children 3 to 5 are perception-driven pre-readers developing literacy and other skills in order to enter formal schooling. Currently, typical school education emphasizes children to become efficient readers or knowledgeable consumers of visual information. The increasing volumes of visual information online and on the formats of representations underlined this motif in Education as well as in Information Science. Children belong to a special user group of information. This study examined the images (cover and illustrations) of picture books and investigated the connection among perception, levels of meaning, and children.

Against a backdrop of constructivism and visual literacy theories, the study focused on the cognitive process of children's visual perception and reading of picture books. Constructivism studies the reality perceived from an individual's background (Williamson, 2002). The reality of children's interactions with picture books assumes that each child perceives the world based on his or her family cultural background, past experience, and mental model. Each child in their process of reading picture books consciously or unconsciously engaged in information seeking activities for either

learning or recreation, either affectively, cognitively or both.

Methodology

It is evident that a review of the literature review provides a rationale of employing qualitative and quantitative methods of this study. Because of various child developmental factors involved in the interaction between children's visual perception and picture books, it was necessary to apply a triangulation of methods in both data collection and analysis. School media researchers suggested suitable qualitative methods for understanding children (e.g., Moore & St. George, 1991). Observations, surveys, and interviews were applied in data collection. The methodology contained 5 sections. In the first section, I discuss children as subjects, and explained issues related to selection of picture books, observations, thinking aloud and dialog reading methods in interviews, and the designs of instruments. In the second section, data collection methods are summarized. In the third section 3 research questions of this investigation are discussed in the way each of which should be answered corresponding to the data collection and analysis. The fourth section covers the procedures of how data were analyzed and checked for reliability and validity. The fifth section synthesizes a topology based on the previous literature review and its future prospects of results.

Research Design

Children as Research Subjects

The 3- to 5-year-old children belong to the Piaget's preoperational developmental stage (ages 2 to 7) according to the child development psychology. There are

perception-bound characteristics (i.e., children see things as they appear to them). At

age 3, memory and basic representation begin (Bruner, 1966; Gardner, 1994). Children

usually start their formal schooling at age 5 (Cooper, 2002a). At the developmental

stage, children have a tendency to be "individualistic, self-centered, and expect others

to have their own perspective" (cited in Cooper, 2002a, p.904). They are generally

called young children or very young children with emerging literacy. Thus there is a

rationale to associate visual perception with young children and picture books. The

characteristics of child development at the preoperational developmental stage also

determine the choice of data collection and analysis methods. Previous research

suggests that the method of studying children as subjects adopts a qualitative approach

to elicit meaning from a child's response and to provide for a quantitative method of

data collection. Moore and St. George (1991) reinforce the idea that an application of

qualitative methods on children can better enhance the validity and reliability of data.

Kuhlthau (1988) finds that children in early childhood, especially kindergartners, can

only sustain a short duration of concentration (p.52). McKechine (2000) contests the

idea that interviews and questionnaires are not suitable for young children whose oral

and written language skills are not yet well developed (p.61). Instead, McKechine

strongly suggests using an ethnographic approach by employing audio recording of

naturally occurring talk, participant observation, and key informant diaries. To account

for these disagreements on methodology, this study applied participant and unobtrusive

observations in order to discover the patterns of understanding picture books and

meaning as children and adults engage in reading picture books. Despite a

disadvantage of interviewing young children, the design of interviews for this study took

into consideration the short span of concentration and conducted only a relatively short interview with each child or small group of children. The integration of both the Dialogic method and instructions of thinking-aloud into the design of the interview script purported to make simple conversations with young children, rather than expect them to talk like adults in an interview. Audio recordings of interviews not only helped me to reflect but also avoided participants, being distracted in the interview.

Thinking-Aloud and Dialogic Reading

The interview process included thinking-aloud instructions and dialogic reading method. The purpose of applying these two methods was to elicit a child's response from viewing and interpreting images. Thinking-Aloud instructions are part of verbal reports with an expectation to encourage an individual to talk about his or her thinking process of performing a certain task. Verbal reports, namely protocol analysis procedures, instruct thinking-aloud or talking-aloud procedures for the purpose of describing an individual's cognitive process (Ericsson & Simon, 1996). Gall, Gall, and Borg (2003) define thinking-aloud as a method that allows subjects to say everything that comes to mind during the reading process (p.479). In either a group interview or one-on-one interview, each child was instructed to think aloud and talk aloud about the experience of viewing images on the book cover and the illustrations. Within the dialogic reading or the dialogic conversation method, "what" questions are used to engage conversations with a child when an adult shares a book with the child. Dialogic reading functions to expand a child's speaking and turn him or her into a storyteller. The interviews adopted questions in the format of who, what, when, where, why and invited

children to think and talk aloud about each image. Accordingly, the verbal data collected with this method should be valid and reflect the participants' thoughts.

Observation

Observations allowed me to become familiar with the subjects and understand the picture book reading as a special activity in early childhood programs or public libraries. This study took an ethnographic approach with participant and unobtrusive observations. Lidz (2003) points out that observation is "particularly relevant for use with young children" in data collection, because this method sees a child in a natural context and provides insights into a child's behavior (p.35). Observations of this study took place during the storytime in a preschool and public libraries. Participant and unobtrusive observations focused on patterns and interactions between teachers and students or librarians and children. Each observation session took approximately 20-30 minutes. I kept an observation journal for the preschool and used a checklist for observing storytime in public libraries settings provided by PLA (2007a, b) (see Appendix H). Though there are two similar observation checklists, one for 2- to 3-year olds and one for 5- to 7-year-olds, I combined both lists to record all observations in public libraries. Each checklist encompasses 6 items: print motivation, language and vocabulary, phonological sensitivity or awareness and letter knowledge, print awareness, narrative skills and comprehension, and parent/caregiver connection. Each item covers various areas such as, in the print motivation item, whether presenters conveyed that reading is fun to participants or in the language and vocabulary item, whether presenters called attention to pictures. These items of two observation

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checklists cover skills of emergent literacy (Ghoting, 2007). Print motivation demonstrates a child's interest or enjoyment in books such as a child pretends to read or write, asks to be read, or wants to go to the library. Language and vocabulary concern a knowledge of naming things, which is considered an extremely important skill. Phonological sensitivity and awareness is an ability to distinguish subtle differences of sounds by playing rhymes or other activities. The letter knowledge expresses an ability to recognize a letter and make its sound such as the letter A or B. Print awareness is to be aware of rules of language such as a grammatical flow of English. Narrative skills are abilities to describe and tell stories. Parent/caregiver connection shows how public libraries have responsibilities to communicate to parents or caregivers in those skills of emergent literacy.

Selection of Picture Books

The purpose of selecting picture books is to sample in line with the objectives of the whole study. Numerous picture books are published each year, and they are quite diverse in terms of styles and interest. The process of selecting proper picture books started with criteria existing in previous literature. Hurt (1991) suggests the general criteria for selecting picture books should focus on the reading level, appropriateness, needs assessment, population, and the presence of pictures. In addition, C. L. Anderson (1998) states that representation of a picture book, the relationship between words and illustrations, and the story should be convincing and authentic.

Nodelman (1988) finds that an association between word and graphic representations provides a high level of unity as well as reading pleasure (cited in

Dresang, 1997, p.652). A picture storybook should hold 4 characteristics: brief and straightforward contents, a limited number of concepts, direct and simple writing style, and illustrations that are complementary to the text (Owens & Nowell, 2001, p.35).

Based on these criteria, Caldecott Award winners had an appropriate range of selections. This award is given annually to children's picture books published in the US has a long standing history of awarding the most distinct illustration. Two Caldecott winners, *The Red Book* (2004) by Barbara Lehman and *Kitten's First Full Moon* (2004) by Kevin Henkes bear characteristics of age and interest appropriateness for this study. *The Red Book* has no words but contains vividly colored illustrations; *Kitten's First Full Moon* contains mostly black-and-white images and a small number of texts in a simple writing style. According to publisher notes, both are suitable for preschool children with a significant presence of pictures and simple texts that complement illustrations. Because both were recently published, I assumed that they had not yet been widely read.

Survey of Parents

Given language difficulty, young children usually cannot provide a complete picture of their demographic or socio-economic background. Fowler (1993) writes that the purpose of designing a question for a survey instrument is to design a measure that may increase question reliability in return (pp.69-70). A survey with parents regarding picture book reading (Appendix G) gathered demographic information based on factors that influence visual perception in picture books and the use of picture books in the household. The design of this survey was partly modified from the national survey for

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information needs, information seeking behavior, and participation, conducted by

Marcella and Baxter (2000). The modified survey consisted of 3 parts. The first part of

the survey asked for information about a family's culture including its ethnic background,

language spoken at home, and socio-economic status. The purpose of surveying

demographic and socioeconomic information was to investigate whether a family's

cultural background had an impact on the growth of a child. The second part focused on

reading picture books by concentrating on affective relationships between the child and

parents, which are forged through daily reading and discussions. The third part asked

parents about their selection criteria of reading picture books and attitude toward

reading activities such as the story service in a public library. Again, the survey was

meant to give a general picture of factors that influence children's perception and

reading of picture books from a social perspective.

Studies of Levels of Meaning and Interviews

This study combined a framework of meaning based on Erwin Panofsky's levels

of meaning, along with its expansion into information science, as summarized in table

3.2 (Enser, 1995; Jörgensen, 2003). Enser (1995) decomposes Panofsky's pre-

iconography, iconography, and iconology into a facet analysis of images by addressing

who, where, when, what; Jörgensen (2003) re-explains Panofsky's theory by focusing

on image attributes in terms of perceptual, interpretive, and reactive factors.

Jörgensen's findings in users' description of classes of attributes were recognized as

being useful in image indexing and searching (Choi & Rasmussen, 2003, p.501). The

group interviews and one-on-one interviews were semi-structured by asking who,

where, when, what, and why or how. Rommetveit (2003) mentions that Piaget's

approach to studying a child's early conception by asking "why" about physical events

provides a basis of understanding a child's reasoning and meaning (p.213). An

interview script asking about image attributes from "who, where, when, what, and why"

was tailored to the understanding and expression of young children (See Appendix F

and G). On a generic level, children were asked to identify and interpret image attributes

of a whole image such as objects or people (who), the setting of image (where), time

(when), events and activities (what), and reasoning (why).

In Table 3.2, a framework about analyzing levels of meaning, meaning facets

encompasses 5 types of questions, i.e, who, where, when, what, and why, and their

analysis. In theory analyses originated from Panofsky's 3 levels as interpreted pre-

iconography, iconography, and iconology. Jörgensen's image attributes analyze

Panofsky's levels of meaning from perceptual, interpretive, and reactive attributes.

Table 3.2

Framework of Analyzing Levels of Meaning

Panofsky's Theory	Jörgensen's Image Attributes	Meaning Facets	Expression
Pre-iconography	Perceptual attributes (physical) Memory/identification	Who	People or objects
Iconography	Interpretative (internal) attributes Cultural experience	Where	Place, setting, location
Iconology	Reactive attributes(response) Perceptual rules/abstract representation	When	Time
		What	Events and activities
		Why	Reasoning and logic (i.e., because)

Note. See details in Appendix E and F.

There are two types of interviews with young children, one-on-one and small group interviews. Interview instruments consist of scripts (Appendix F) and are accompanied by a survey of parents and informed consent forms by IRB (See Appendix G). In the preschool, all the instruments were subject to approval by the school administrator and teacher, and afterwards, the school sent consent forms together with the survey of parents to parents. In public libraries or at home, the survey of parents, together with informed consent forms to parents and a child were both presented to parents before interviews took place. Parents signed both informed consent forms before their child participated in an interview. The length of each interview takes 15-20 minutes with one or two picture books. The small group interview includes 2 to 5 participants.

In group interviews, subject groups were divided into 4 groups. Ideally 4 groups were compared. Group A and Group B were children who were from 3- to 4-years old. Group A started with the book cover and answered questions, and Group B simultaneously looked at both the book cover and all illustrations and then answered questions. Group C and Group D were children between 4.5 and 5 years old. Group C would follow the same actions in Group A. And Group D corresponded with Group B. All interviews data were collected from 3 public library branches in Denton, and the Child Development Lab (http://www.coe.unt.edu/cdl/) at the University of North Texas, which is a preschool with 50 children enrolled in classes of different schedules. Table 3.3 showed a research design of group interviews and comparison.

Table 3.3

Research Design of Interview Groups

Ages	Cover and Answer Questions	Cover and Illustrations and Answer Questions
3- to 4-yrs old	Group A	Group B
4.5- 5-yrs old	Group C	Group D

Note. See details in Appendix F.

Data Collection

Four data collection methods were used: (a) a research journal was kept during the unobtrusive observation at the preschool, (b) parents were asked to complete a survey regarding their demographic, socio-economic, and picture books reading at home with their children, (c) participating children with their parents' consent took part in group or individual interviews that contained short scripts, (d) two storytime observation checklists published by the Public Library Association were used in recording participant observations at the public libraries. In the Table 3.4, ten variables related to visual perception such as previous experience, domain of knowledge, family environment and visual differences were listed and provided with an interpretation. For example, in the variable of previous experience (Bruner, 1962; Gardner, 1994; Hurt, 1991; Kuhlthau, 1991; Lakeoff, 1987), visual perception is derived from previous experience.

Table 3.4

Visual Perception Variables from the Literature Review and Related Interpretation

Variables	Literature	Interpretation
Previous experience	Bruner, 1962; Gardner, 1973; Hurt, 1991; Kuhlthau, 1991; Lakeoff, 1987.	Visual perception comes from previous experience.
Domain Knowledge	Bilal & Wang, 2005; Stripling, 1995	A basis of learning.
Family environment	Gesell, 1949	Family, mother-child relationship, and parental expectations.
Cultural-accessibility and typification	Bruner & Anglin, 1973; Cooper, 2002b; Gesell, 1949; Kuhlthau, 1991; Messaris, 1994; Tochinsky, 2004	A child participates in a culture through schools, libraries or learning to count and read; different cultures give children to a different worldview.
Visual differences	Arnheim, 1974; Bruner, 1966; Piaget & Inhelder, 2000; Vandergrift, 2000; Vygotsky, 1978	Children live in a highly visual world; younger children differ from older children in their perceptual approach.
Information seeking strategies	Bruner, 1962; Kuhlthau, 2004; Sigeler, 1996; Marchionini, 1989	A child uses multiple strategies to manipulate knowledge representations in his or her mind such as through a continual reading (Sigeler, 1996).
Categorization abilities	Borgman, et al., 1989; Bruner & Anglin, 1973; Rosch, 1973	All perceptual experience is the end of product of a categorization process; children generally recognize a basic category.
Perceptual speed	Allen, 1992, 1994	Cognitive ability to compare and scan figures or symbols, and complete simple tasks related to visual perception.
Visual literacy	Hortin, 1994; Kuhlthau, 2004; Messaris, 1994; Nodelman, 1988; Bruner, 1966; Vygotsky, 1986	Ability to interpret visual message such as details of images.
Mental model	Bruner, 1966; Johnson-Laird, 1980; Sadoski& Paivio, 2001; Russell, 1956	Language and mental imagery

Discussion of Research Questions

The availability of visual information in multimedia gives significance to studying visual perception as well as the relevance of visual literacy in today's learning and daily communication environments. Visual literacy has become part of the required skills of understanding and interpreting images (C. L. Anderson, 1998; Bamford, 2003; Chesner, 2000).

Recognition, categorization, and applying previous knowledge weave a relationship between meaning and concept through perception. A constructivist's view is that perception and recognition are active processes based on visual features and past experience (Jörgensen, 2003, p.20). Jean Piaget long recognized that the structure of a child's mind formed a schema. Schemata are simply concepts or categories that continually change and are refined, not specific to children (Wadworth, 1996). The rationale of the study underlined that children identify, categorize and interpret based on various experiences. I assumed that picture books may help children with their literacy development with images; reading picture books is a sense-making process for children. Children who share the same community experience perceive things similarly; developmental factors strongly influence children's growth and cognition.

Research Question 1

What are the distinct levels of meaning perceived by children at ages of 3-5? The levels of meaning are based on theoretical interpretations of Panofsky's levels of meaning. Vygotsky (1986) summarizes that meaning is constructed from both sensory materials and words. He considered that the verbal responses are efficient in

expressing a depth of cues or attributes such as categorizing, naming, and finding

meaning of objects. Bruner's interpretative task (cited in Kuhlthau, 2004) underlined the

4 steps of encountering information, perceiving, selecting, recognizing patterns,

categorizing, predicting, and create. The coding and analysis of the verbal responses

which child participants provided through interviews were analyzed to answer this first

research question. In order to answer the first research question, I coded interview data

with children into categories and conducted content analyses. According to Weber

(1990), content analysis has an advantage of dividing words into units of meaning. The

levels of meaning for each child in an interview were identified as layers of meaning

based on categorization of image attributes into perceptual attributes, interpretive

attributes, and reactive attributes.

Research Question 2

What factors of visual perception contribute to children's interpretation of

meaning in picture book reading? This research question took two steps, the qualitative

analysis and the exploratory factor analysis. The literature review provided major

variables of this study (See Table 3.4), which were combined into 6 sets of factors in the

survey and interviews (See Table 3.5). This research question looked into how strong

factors in visual perception could be correlated with each child's interpretation of

images. The performance of each child's response during the interview was assessed

on a scale of 5 points (1 = *poor*, 2 = *fair*, 3 = *good*, 4 = *very good*, and 5 = *excellent*).

The survey of parents was analyzed in the statistical tool, SPSS™. The criteria

employed to assess the 5-point scale based on Lidz's (2003) model of objectives for

assessing storytelling These objectives include 5 areas: (a) a correct statement of 80% of story elements; (b) statement of elements in a correct order to match the story; (c) communication of the story with a beginning, middle, and end; (d) an oral statement of the story without visual support; and (e) relationship of storytelling, perception, and conception (Lidz, 2003, p.123, p.128). So *excellent* on the 5-point scale means covering a total of 5 objectives in the Lidz's model; *very good* corresponds to any 4 objectives; and *good* includes any of 3 objectives; *fair* expresses any of 1 or 2 objectives; *poor* means failing to mention any objectives or inadequately expresses one objective. This scoring on this scale is based on the content analysis results of interview transcripts. The results from the survey of parents about children's reading picture books and the children's demographic information including age and gender, and as individual or group in the interview, and the performance score in describing images.

The factors (see Table 3.5) were tested in the factor analysis. Factor analysis is usually used to summarize interrelationships among variables (Gorsuch, 1983). The sufficiency of a factor analysis needs a large sample size, which contradicts a relatively small size of this study. In order to find the strength and correlations of listed factors, I decided to run a factor analysis in SPSS™. The commonly applied technique of factor analysis is the exploratory factor analysis (EFA). The steps of conducting the EFA include determining a sample size, creating a correlation of matrix, extracting components of factors, and retaining factors for the analysis (Kieffer, 1999). The correlation of matrix indicates both a bivariate correlation and the importance of each variable. An Eigenvalue, which explains the variance of a factor, is a method of extracting and retaining factors when it is larger than 1.0. A scree plot was used to

illustrate a graph of Eigenvalues of retained factors. The other methods applied in the

factor analysis of this study had the principle component analysis and varimax rotation

for the unity of variables. A significance level that is smaller than .05 was considered

useful to run the analysis in the SPSS.

Research Question 3

Are there factors or groups of factors that influence degrees of visual perception

or meaning? Answering the third research question applies a quantitative analysis of

statistical data and a case study method. In the statistical tool SPSS 12™, all the

variables from surveys of parents and interviews with children were grouped under 6

factors (See Table 3.5) and analyzed. Thirty surveys and interviewees' performance

score, age, and gender were put into a factor analysis. Factor analysis addresses

patterns of relationships among factors.

A major characteristic of cases studies is its providing multiple information

sources or in-depth to explain specific instances, cases in a natural context (Gall, Gall &

Borg, 2003; Yin, 1989). Case study research is a qualitative method. Yin (1989) defines

a case study as "an empirical inquiry," which explores:

> A contemporary phenomenon within its real-life contents; when the boundaries
> between phenomenon and context are not clearly evident; and in which multiple
> sources of evidence are used. (p.23)

A case study functions to prove the facts (Yin, 1989, p.89) and tells a story in an

ethnographic research about behaviors (Gall, Gall & Borg, 2003, p.288). The case study

method focuses on not only specific cases but also the certain aspects of cases. In the

current study, case studies offset a disadvantage of a small sample size of the

quantitative analysis and better answer this research question. The cases were selected on aspects of studying age differences (ages 3 to 5), gender differences (between boy and girl), learning settings (home, preschool, and public libraries), and differences of individuals and groups.

Data Coding and Analysis Procedures

Data analysis consisted of 4 steps: (a) preparing data coding and analysis in statistical data, the software spreadsheet, and SPSS ™ for descriptive data and factor analysis; (b) transcribing and coding interviews, and selecting methods and establishing a coding scheme; (c) conducting content analysis of interviews and case studies; and (d) checking inter-coder reliability of content analysis and validity. Table 3.5 included variables that were surveyed with parents and derived from previous literature. These variables were included under such factors as demographic information, socio-economic status, picture book reading, parents' criteria in selecting picture books, parents' view of information sources/activities, and children's own information.

First, the coding and analyzing survey results involved using a software spreadsheet and analyzing in the statistical tool SPSS™. I conducted a basic descriptive data analysis and factor analysis. Observational data were put in the spreadsheet and summarized for an analysis. The observation data include my field notes at schools and evaluations of reading picture books at public libraries. The observational data results were useful to help me identify what teachers and librarians try to convey in their practice.

The factors were sets of variables grouped in the survey of parents and basic

descriptive information of participating children such as their age, gender, and performance of viewing images. In the Table 3.5, 6 labeled factors are labeled, demographic information, family social economic status, picture book reading at home, parents' criteria of selecting picture books, relevant information service/activities of reading picture books, and children related. The first 5 factors had been designed into the survey, and the sixth factor came from coding of interviews. These 6 factors were considered influences in a child's visual perception that affect how a child read picture books and perceive levels of meaning. All these factors were supported by previous literature as shown in chapter II.

Table 3.5

Factors and Variables in the Survey and Interviews

Factors	Variables
1 Demographic information	• Ethnic group(White, Black/African American, American Indian, Asian, Hispanic/Latino, and Native Hawaiian) • Language spoken at home(e.g. English or not) • Education of parents (GED/High school, bachelor, master, and doctorate)
2 Family's social economic status	• Employment of parents(self employed, retired, running a home, student, in paid employment, and seeking jobs) • Description of family's financial Situation (poor, well off, and better off)
3 Picture book reading at home	• Parent reads to the child (yes or no) • The frequency of a parent reading to the child per week (once, twice, three times, more than three) • Parent discusses with the child(yes or no) • The amount of picture books per family(none,10-20,20-30, more than 30)
4 Parents' criteria in selecting picture books	• Appealing of graphics and illustrations • Model of narrative language • Story/meaning related to illustrations • Total effect of words and pictures • Childlike qualities, simplicity and exuberance(reading level and interest) • Communication of information, feeling, and meaning of visual message) • Convincing representation of symbols • Book cover or jacket

Table 3.5 *(continued)*.

Factors	Variables
5 Relevant Information source/activities of reading picture books	• Parents and teacher to work together • Teacher's attitude toward subjects and learning • Affectionate relations between parents and child interaction • Story services provided by public libraries
6 Children related	• Age • Gender • Performance (identification of image attributes and interpretation of stories)

The second step with group interviews and individual interviews included transcribing the audio-taped interviews and coding based on Corinne Jörgensen's (2003) research framework of image attributes. At the beginning, I manually transcribed and coded all the interview scripts from the audio recorder and notes. Then, the method of content analysis was decided for an analysis of meaning and recording units were defined. A coding scheme was established from Jorgensen's research framework to include content categories useful to answer the research questions of this investigation. The coding scheme (See Appendix J) was tested in a small sample of text, assessed for accuracy and reliability and revised. Regarding the content analysis, I followed procedures instructed by Weber (1990) and defined recoding units, categories, and tested coding on the sample text, assessed reliability, and revised categories.

The coding scheme consists of 3 types of attributes: perceptual attributes, interpretive attributes, and reactive attributes. These 3 types of attributes represent baseline categories in tasks of describing, sorting, and searching images. After sampling a few texts, I added nonverbal gestures (e.g., nodding) and the cognitive state (e.g., the desire to read, Chiu 2005; Kwaśnik, 1991).

In the third step, I performed content analysis of image attributes and the narratives given by the children. Krippendorff (2004) defines the method of content analysis as "a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use" (p.19). Weber (1990) points out that the main issue involving using content analysis is content categories of words based on their precise and similar connotations (p.12).

In the fourth step, the reliability and validity of results were tested. Two independent coders were invited to observe and code transcribed interview data. Weber (1990) concludes that the means of achieving reliable and valid inferences from texts requires coding consistencies and generates valid variables. Those two coders were instructed with the use of the coding scheme before their coding started. After two coders completed all the coding, the results were entered into a spreadsheet and compared data in the statistical tool SPSS™ program. Intercoder reliability was calculated in SPSS™.

Reliability

The reliability of this research was checked through triangulation and establishing intercoder reliability. According to Krippendorff (2004), reliability includes 3 types: stability, intercoder reliability, and accuracy. Intercoder reliability, also called reproducibility, is defined as "the extent to which content classification produces the same results when the same text is coded by more than one coder" (Weber, 1990, p.17). High intercoder reliability is a minimum standard of content analysis as well as a common assessment of reliability because it plays a role in measuring the shared

understandings between coders (Weber, 1990, p.17). Cronbach's coefficient α (alpha) is a widely used value that gives the computing test score reliability (Gall, Gall, & Borg, 2003, p.198) as well as the most common measure of the intercoder reliability. The intercoder reliability expresses an internal consistency of a test based on the extent to which 2 or 3 coders code the same item similarly. According to Rudner and Schafer (2001), the report of reliability coefficients in a large scale test needs to be over .80 or .90 but also depends on the consequences and a familiarity of the test. Furthermore, they consider the reliability coefficients at .50 or .60 adequate to a small-scale test. The exploratory nature of this study determines triangulation of methods such as observations, surveys, and interviews. Williamson (2002) points out that triangulation could be a useful way to make research results reliable.

Validity

Validity concerns the quality of what instruments measure and the accuracy of measured results (Suter, 2006, pp.248-249). Validity as it relates to content analysis refers to the validity of the coding rule or the extent of validity of variables (Weber, 1990, p.18). Validity reflects correspondence between concepts and variables or generalibility across results, references, and theories (cited in Weber, 1990, p.18). Regarding content analysis, generability expresses validity between the classification scheme and variables or validity between interpretation of variables and their causes (Weber, 1990, p.18). Weber (1990) lists 4 types of validity that measures strong validity in the content of analytic data: construct validity, hypothesis validity, predictive validity, and semantic validity. The instruments of this study were pre-tested and revised in the pilot study. In

an attempt to achieve the construct or content validity, the design of interview scripts

and the survey instrument was based on a review of previous literature. Findings from

the previous literature served as part of validity for the results of this study.

<center>Proposed Topology</center>

According to a systematic review of literature, the studies of visual perception,

children, and levels of meaning show a need of bringing together cognition, child

development psychology, art education, and information science. Visual perception is

part of visual communication, visual literacy, visual intelligence, visual learning and

visual meaning; children's behavior is influenced by their age and culture (family and

school environment); and picture books contain lower-level features of information and

explain children's issues and concerns about the world. The proposed topology is a

prototype of relationships among visual perception, children, and picture books that

center on meaning as a high-level concept. The relationships were interactive, and the

results showed the possibly correlated relations among variables (see Figure 3.1).

Figure 3.1 indicates a 2-way relationship in 3 parts of literature review: picture books,

visual perception, and children. Visual experience provided by picture books for children

underlines frames of reference and roles of visual perception. Altogether the 3 parts

explained the levels of meaning perceived by children.

Figure 3.1 shows a process of how a child perceives images through

identification, concept, and story. The tools or strategies applied to complete 3 tasks are

identification of attributes, conceptualization, and narration. They linked a child's

familiar experience, background, and cognitive ability. This is a typology based on

review of literature.
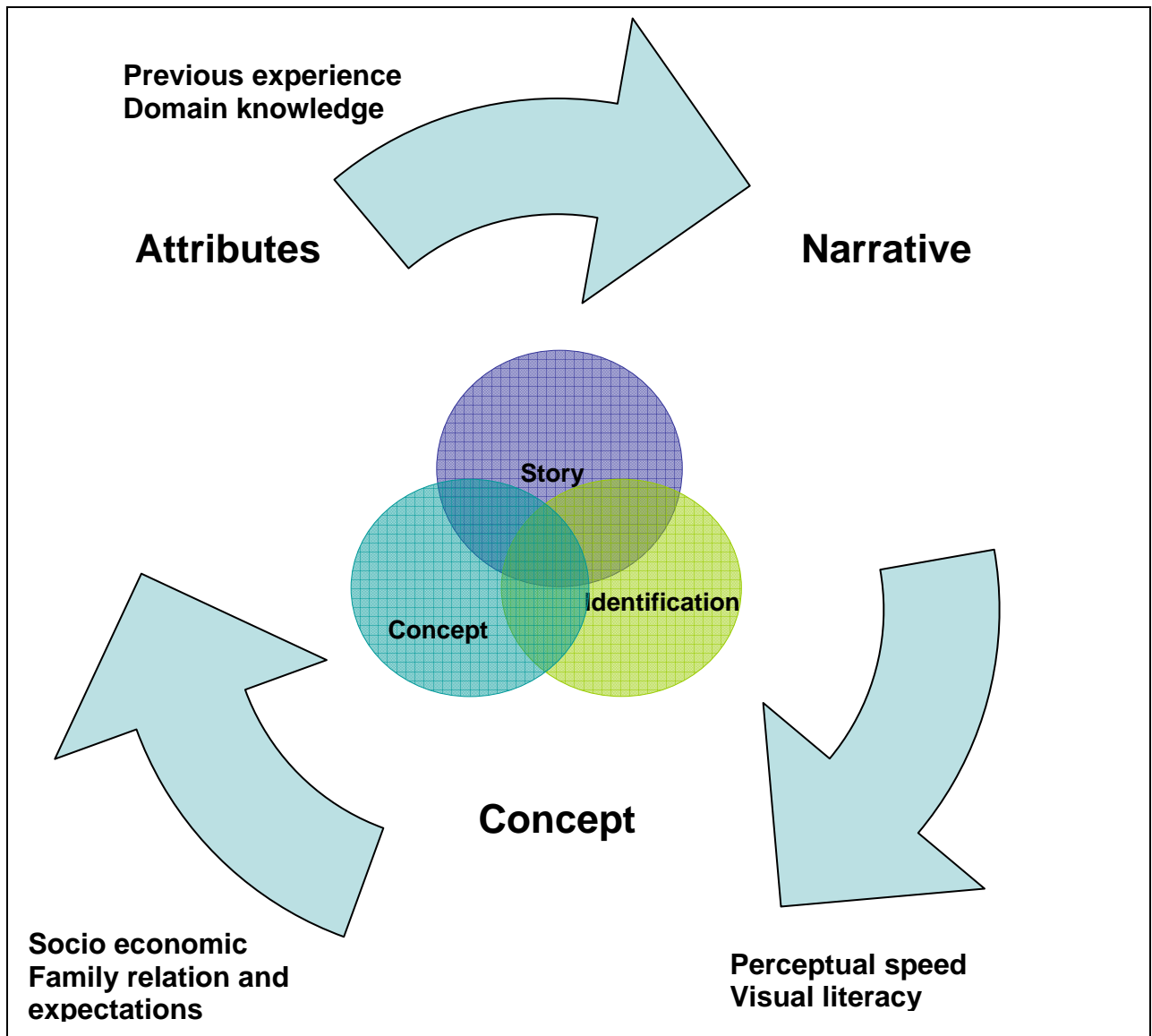
Figure 3.1. Proposed topology for levels of meaning possibly correlated with visual perception factors.

Summary of the Chapter

This chapter laid out a general research plan and the rationale of the whole

investigation about 3- to 5-year-old children's perception of images in picture books.

Four areas of methodology were outlined: the research design, analysis of research questions and methods of answering, data collection, and data analysis and coding. The research design explained children as research subjects, interview scripts with thinking-aloud and dialogic reading methods, observations, and the survey instrument. The analysis of research questions revisited each question and provided with appropriate methods. In data collection and data analysis I explained each method and its application to the study. Based on the literature review, I identified factors that play a major role in influencing children's visual perception and levels of meaning on the perspectives of environment, home and school. The major methods were used qualitative, using observation, interviews, and a parent survey, and quantitative, for data analysis.

CHAPTER IV

DATA COLLECTION AND ANALYSIS

Introduction

This chapter presents the results of data collection and analysis through 3

qualitative methods: observations of reading picture books, surveys of parents, and

interviews with children in 3 settings, a public preschool attached to the university, the

storytime programs at two branches of public library, and home settings. Data results

show the potentials of being interpreted in several ways, either qualitative or quantitative

interpretations, or both. I made a decision to focus on a qualitative analysis of image

attributes through the content analysis and case studies of children's interviews. The

content analysis of interviews of children about understanding images of picture books

displayed categories of image attributes and an assessment of levels of meaning

perceived by participating children. The case studies served as further analyses of the

content analysis results. This chapter followed 4 steps of data analysis presented in

chapter 3, and respectively reported analysis results of the pilot study, observations,

answering research questions, content analysis of image attributes, and case studies.

Pilot Study Results

On May 23, 2005, the University of North Texas Human Subject Review Board

issued the IRB approval (Appendix A) for informed consent forms(Appendix B, C, D)

and research instruments to conduct surveys and interviews (Appendix E, F, G). Early

observations were unobtrusive and were conducted through UNT's Child Development

Lab (CDL). At the CDL there are two scheduled classes per age range (3- to 4-year-

olds and 4.5- to 5-year-olds) and involved a specific picture book reading time, lasting approximately 20 to 30 minutes. The two classes shared a theme each week in which two teachers took a slightly different instructional approach with each age group; at each reading time the younger class focused on one picture book with a simple plot and songs, and the older class usually two pictures books, accompanied by children's verbal presentation and word counting. All the interview scripts and the survey instrument were reviewed by the preschool administrator and further adapted to the requirements of the preschool.

In summer 2005, two individual home interviews were conducted with two boys who were nearly 4 years old. The boys' mothers completed surveys and gave their consents to interviews. The interviews were videotaped. Both mothers were immigrants and home-schooled their children. Both boys were presented with four 8x11 scanned images of *Three Pigs* (Wiesner, 2001). *Three Pigs* told a traditional story of 3 pigs together against a wolf. Each boy was asked to retell the story. After viewing the scanned images, each participant was asked to retell the story. Then, I read the accompanying text while pointing my finger at each image. The results were that both children made up their own stories related to the presented images. They also thought that the wolf in images looked like a fox. From this observation, the accompanying texts seemed to have little on how they understood the story. Both participants' mothers later recalled that both children actually listened to this story on tape. These two interviews showed that single images can not help to tell a story or meaning of a picture book as a whole, and videotaping because the camcorder cannot be hidden distracts the two children's concentration on the interview.

From October 10-16, 2005, individual interviews were conducted with a boy who had just turned 3 years old in August of the same year. He attended a church-run day care center. His frequent use of "the end" revealed that he was often read to at the day care center. Interestingly, he liked to refer to houses in images as the word "church" or "chapel." His mother later said that it was required for him to attend the chapel every day. I shared 4 books with him and asked him simple questions based on a dialogic reading method. All the books selected contained people and animals that were familiar to children. In the test with this 3-year-old boy, each book took about approximately 5-10 minutes to read. He was interested in counting objects such as animals from 1-10 and recognized the letters A to C. He also enjoyed looking at the cover and frequently used words such as "Look!" and "The end." He recognized animals like monkey and elephant, as well as water and cloud, and could define the function of a faucet by turning it up or down. From the book cover of *Elephants Aloft* (1993)*,* he clearly described two elephants that went up into the sky on a balloon even though he could not read. During the reading process, he tried to imitate as a reader or wanted to tell a story himself. In comparison with first two individual interviews, this interview was more successful because of time and script preparation. As for the relationship between myself and the child, the child became more interested in book reading and imitated me by asking "what." And more important, the presentation of the whole picture book during tests proved more effective.

The pilot study revealed a few aspects that needed to change for the actual study. For a child to understand the context of the story, a picture book should be read as a whole to allow for better storytelling. By conducting the pilot study, I became more

conscious of what methods and what variables needed to be studied in order to correlate more effectively with the next stage of research. The survey instruments and interview scripts were revised. The dialogic method would be an effective in eliciting responses to interviewing questions such as using "what." Upon the conclusion of the pilot study, selection of picture books would correspond better with research purposes as to what levels of meaning and age appropriateness.

Observation Results

As mentioned in the previous chapter, this study employed unobtrusive and participant observations. The objective of using two types of observation attempted to identify differences between two settings that involved reading picture books and giving instructions about pictures, counting, vocabulary, and social and verbal skills. From two types of observations, the size of each class at the preschool had an average of 12 to15 children; in each storytime of public libraries, the attendance in public libraries varied from a few to more, including parents and children from toddlers to teenagers. There were different instructions in each setting.

Unobtrusive Observations

In the preschool, I was only allowed to stay in a specially designated observation area. In this area, I could observe both classes of the school. A teacher in the older children's class would read two books and in younger children's class the teacher read only one book. Two classes had both similarities and differences observed during these sessions. During the reading of picture books time, younger children sat around the

teacher but some of them lost concentration easily; older children would stand up to narrate a paragraph of a story and count how many words the paragraph contained. The teacher of the younger class taught simple concepts of daily life and tried to convey that reading was fun. The teacher in the older class used the reading time to teach vocabulary and basic counting. In both classes there was also a special reading area for picture books.

For example, in one class, the teacher was reading in the older class (4.5- to 5-year-olds). The process of reading picture books here was identical to that in the public libraries. The teacher started with the cover and introduction of authors and themes. But in the older class, however, the teacher more focused on vocabulary and narration. For example, in one observation, the teacher wanted to teach the two words "rough" and "smooth." She gave a plastic ball to each child in the class and asked "Let me see the object in your hand, how does it feel?" Though most children expressed the sensation differently, the teacher guided them to use either of two words. The teacher then wrote down each child's name on a card and asked them to put under the selected word. The results were that 6 children put under "rough," and two of them put under "smooth." One child did not select. The purpose of this activity was to teach vocabulary and count the number of selections. The children in this older class had a good concentration. Such activity helped all children to express and count. The class size was small with around 12 children. The older class looked just like any school's class in which many children actively participated.

In the younger class (3- to 4-year-old children) at the preschool, the teacher read a book entitled *Sylvia's Shoes*. She asked simple questions such as what kind of shoes

they have. She called each child's name by addressing them as "my friend." Most of the children answered that they have sandals. Teacher showed her shoes as "flip-flop" and explained that was strange and backless. She started reading the book, "My friend Sylvia has shoes…."; "What color, what kind of shoes, are they tennis shoes…."; "Is she happy (Are you happy)?" When she saw some children start to lose their concentration, she would ask all the children to sing a song with her. After singing, she continued with her storytelling. Once finished, she tried to ask children if they could remember any details of the book just read. A couple of children raised their hands and mentioned simple facts of the book. From the observations, the teacher of the younger class chose picture books about growing up and simple concepts that were related to the daily life.

Participant Observations

The observation results from Denton Public Library branches were obtained through participant observations. I attended the storytime program altogether 18 times, from March to June, 2006, on average about once or twice a week. The average length of storytime was around 30 minutes. In each session, there were two librarians who read the picture books and played the guitar. Both librarians worked together to read 3 picture books and sing rhyme songs with parents and children. To record results the observed used the Public Library Association observation checklist, which encompass 6 aspects: print motivation (See Table 4.1), language and vocabulary (See Table 4.2), phonological Awareness and Letter Knowledge (See Table 4.3), print awareness (See Table 4.4), and narrative skills (See Table 4.5), and parent and caregiver connection (See Table 4.6).

The results in the Table 4.1 showed 100% agreement with "Yes" from 18 times observations because the librarians obviously carried out a purpose that reading was a fun activity to both parents and children. The agreement was reached in 4 fun-related areas of reading: the idea about reading, the presenter, children, and parents, with 100% of 18 times. "No" was found 0% of 18 times. When the reading program started, two presenters collaborated to dramatize a story or song with toys and then invited all participating parents and children to sing along. Most participants and presenters were enthusiastic at the start of the picture book presentation. Throughout each presentation, children and parents visibly followed librarians' guidance by waving their hands and imitating gestures. The number of observations from 4 items was added up to 72 (100%) against the number of items not observed.

Table 4.1

Print Motivation Observed at Public Libraries Storytime (Yes or No; n = *18)*

Items	Frequency	% of Total Observations	No. of Item Not Obsv'd	% of Not Obsv'd
Reading is Fun	18	100%	0	0%
Presenter	18	100%	0	0%
Children	18	100%	0	0%
Adult	18	100%	0	0%
Total	72	100%	0	0%

In the Table 4.2, there are 6 areas observed about teaching language and vocabulary of picture books from the PLA observations checklists. These 6 areas were assessed "Yes" or "No" if a presenter performed 6 areas of teaching language and vocabulary. These 6 areas are making concept connections, explaining unfamiliar vocabulary, calling attention to pictures, encouraging children to repeat phrases,

respond through movement and music, and ask questions about the story and pictures. Of 4 (22%) of the observations, presenters occasionally introduced simple concepts to participating children. From the observations, 15 (83%) of 18 times, presenters played music or rhymes with participants and invited participants to respond through the movement or music. With 3 (17%) of 18 observations, presenters did not encourage children to respond to music due to various reasons, such as a small number of participants. Presenters called participants' attention to pictures in 15 (83%) of all observations as they held picture books to their shoulders or pointed to each page of the book. In 10 (56%) of observations, presenters encouraged participants to repeat phrases after them. When children found words that interest or identified with their own experience, such as a child, they would talk aloud or talk to parents about it. Of 8 (44%) observations, presenters raised simple questions to participants such as if they were afraid of dark at night when a book talked about sleep. The number of observations from 4 items was added up to 54 (50%) against the number of items not observed 54 (50%).

Table 4.2

Language and Vocabulary Observed (Observation n=18)

Items	Freq	% of Total Observations	No. of Item Not Obsv'd	% of Not Obsv'd
Connecting concept	4	22 %	14	78%
Explaining unfamiliar language	2	11%	16	89%
Calling attention to pictures	15	83%	3	17%
Encouraging repetition of phrases	10	56%	8	44%
Responding through movement/ music	15	83%	3	17%
Asking questions	8	44%	10	56%
Total	54	50%	54	50%

In the Table 4.3, results showed observations of 4 areas in which presenters guide participants about phonological awareness/ letter knowledge. In a total of 18 times of observations, presenters invited children to chime in rhymes or music (78%), highlighted sound awareness (61%), played rhyming game (78%), used nametags (11%), and talked about letter sound (11%). Some presenters pointed to the text but seldom talked about letters. Partly because the books selected by presenters had limited vocabulary, presenters did not usually engage in teaching words to children. This showed a departure from preschools where teachers teach children to understand differences of words. The number of observations from 4 items was added up to 43(31%) against the number of items not observed 65 (69%).

Table 4.3

Phonological Awareness and Letter Knowledge Observed

Items	Freq	% of Total Observations	No. of Item Not Obsv'd	% of Not Obsv'd
Chime in Rhymes/Music	14	78%	4	22%
Sound Awareness	11	61%	7	39%
Rhyming Game	14	78%	4	22%
Nametag	2	11%	16	89%
Pointing out Letters	0	0%	18	100%
Letter Sounds	2	11%	16	89%
Total	43	31%	65	69%

In the Table 4.4, there are 4 items in relation to the print awareness: cover, the print, rhyme text, and comments. Through observations, 16 of 18 times (89%), presenters mostly started programs by introducing in an order with the book cover, title, theme, and author and illustrator. Presenters generally held the book in front of them

and pointed to the print. Their presentations slightly differed from each other and a few of them ran their fingers along the text or illustrations. Nametags were not used. Presenters would welcome all the participants at the door and offered handouts that list book titles and songs and rhymes for each session of the storytime. Such practice takes 13 (72%) of observations. In all public library branches, presenters never used nametags. The number of observations from 4 items was added up to 43 (80%) against the number of items not observed 11 (20%).

Table 4.4

Print Awareness Observed

Items	Freq	% of Total Observations	No. Of Item Not Obsv'd	% of Not Obsv'd
Cover	16	89%	2	11%
Print	14	78%	4	22%
Text of rhymes/songs	13	72%	5	18%
Comments	0	0%	0	0%
Total	43	80%	11	20%

In the Table 4.5, 4 items are encompassed in teaching narrative skills and comprehension of the story during reading picture books. With 16 of 18 times (89%), presenters used puppets to tell a story of picture books and invited a number of children to perform together. Dialogic reading such as asking simple questions with "What" was 10 (56%) of total observations. Many children would raise their hands to join the puppet show and even after the program, they lined up to touch and feel puppets.

Table 4.5

Teaching Narrative Skills and Comprehension Observed

Items	Freq	% of Total Observations	No. of Not Obsv'd	% of Not Obsv'd
Puppets	16	89%	2	11%
Events	5	29%	13	71%
Dialogic Reading	10	56%	8	44%
Comments	9	50%	9	50%
Total	40	56%	32	44%

In the Table 4.6 it included 4 items in which presenters asked for parents' support of early literacy. At the beginning of each session, the presenters gave handouts that feature each storytime's book titles, songs, and rhymes. There were 3 book titles under one theme, such as animals or people. From observations, among 9 observations of 18 times (50%), the presenters gave brief explanations to parents about the storytime and occasionally handed out brochures about early literacy. Usually at the entrance of the door, there was a display of picture books. The 4 items observed were totally accounted for 32 (39%) of 82 observed and not observed. The number of observations from 4 items was added up to 32 (39%) against the number of items not observed 50 (61%).

Table 4.6

Parent and Caregiver Connection Observed

Items	Freq	% of Total Observations	No. of Not Obsv'd	% of Not Obsv'd
Explaining to Parents	9	50%	9	50%
Role of Parents	2	11%	16	89%
Suggestions	3	17%	15	83%
Literacy Handouts	18	100%	0	0%
Total	32	39%	50	61%

Note. n =18.
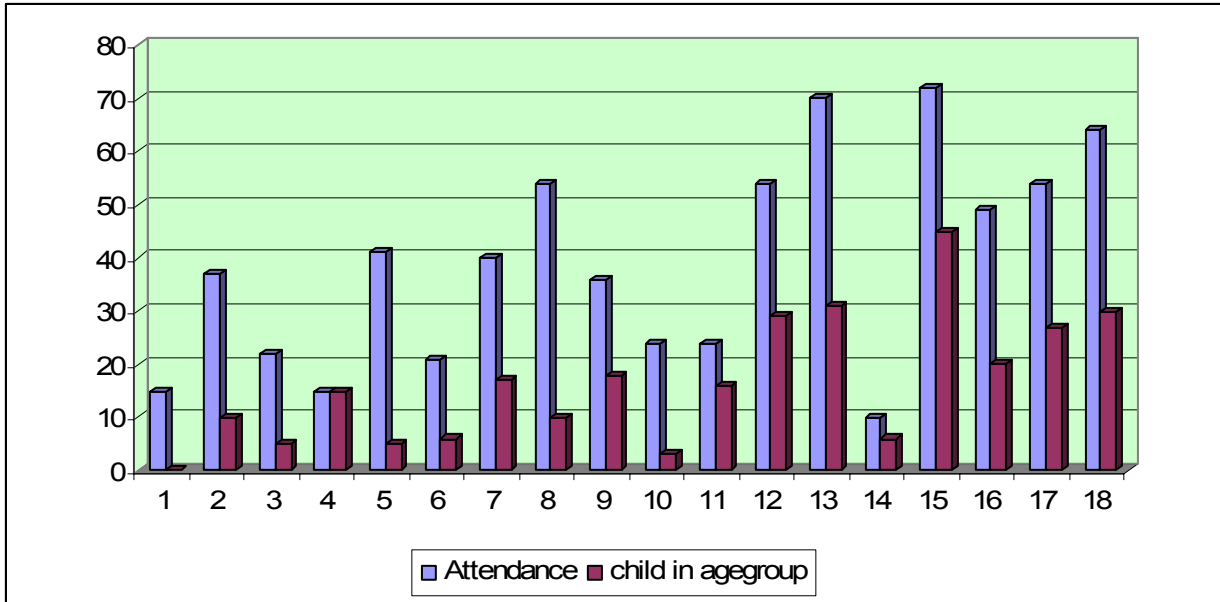
Figure 4.1. Library observation (*n* = 18), attendance counts, and children (ages 3 to 5) as targeted audience.

Figure 4.1 summarizes observations of general attendances and children who fell into the age group between 3 and 5 years old in 3 public library branches in Denton. Attendance went up and down from fewer than 10 to more than 70 in number. The low attendance was often due to bad weather, convenience of locations, or schedules. The highest attendance occurred during summer. Particularly, during bad weather, more toddlers attended the storytime program, but they were not included in research group of 3- to 5- years-olds. During the summertime, participating increased with siblings older than 5. Occasionally, young school visitors were invited by librarians to the session when they visited the library as a group.

The observations from the preschool and public libraries provided explanations about the common practice of presenting picture books in relation to participants' age, mental concentration, language development, and reading interests. Both school teachers and librarians tried to introduce a concept of the print and the way of reading

picture books to children. From observations, children learned concepts, counting, and reading through picture books. Teachers and librarians made use of music and puppets to engage children's attention to reading and helped children with their narrative skills. Storytime in public libraries provided chances engage children and parents socially in reading picture books. The puppet show was a unique aspect of storytime, which attracted young children's interest.

<p style="text-align: center;">Revisit Panofsky's Levels of Meaning and
Answer Research Questions</p>

The foremost tasks of data analyses were to answer research questions of this investigation. In the previous chapter, meaning as a construct had been broadly defined. So with a focus on the levels of meaning, it was necessary to revisit Panofsky's interpretation in the data analysis and proceed to answer those research questions. Panofsky's levels of meaning introduced the methods of the preiconographical description, iconographical analysis, and iconological interpretation.

Panofsky (1955) pronounced that all human beings are able to identify animals, plants, and human expressions on the first level, preiconography, but the difficulty is how to achieve "correctness" of 3 levels. Both the second level of meaning (iconography) and the third level (iconology) are based on a principle of familiarity respectively with literary resources and with synthetic intuition. In other words, these levels of meaning are closely associated with one another in relation to subject. In order to achieve a sense of correctness, an iconographical analysis requires a correct identification of motifs answering "what" and "where" and the iconological interpretation

needs a correct analysis of images, stories and allegories underlying reasoning. In comparisons with thinking and language expressions of adults and children differ.

Research Question 1

What are the distinct levels of meaning perceived by children ages 3 to 5? Based on the results of coding qualitative data, children at this age group definitely see things that appear. The results of this study showed that regardless of age or gender, all child participants were able to identify shape, objects, and events on a pre-iconographical level. On the 3 levels designated by Panofsky, some children tried to move from a pre-iconographical level to the iconographical level or the iconological level. But experimental results show a change of levels is usually conditioned with means of being familiar with the literary source or a respondent's attitude. For children who already knew the literary source they formed mental imagery of texts and images. For children who did not know the literary source if they carried with an active attitude to accomplish the task they were able to respond well. This reinforced Panfosky's view in which to move from pre-iconographical level to iconographical level relies on subject equipment such as being familiar with literary sources. So the first level of meaning was more distinct and the second level was distinct with some participants, especially older children. The third level, which is more abstract, was conditioned or hard to achieve.

Table 4.7 showed results of patterns among participants who were interviewed with *The Red Book*. In the Table 4.7, most participants were between 4 and 5 years old, and each image was indexed as topics, such as title page, ending, people, and spatial distance. The responses were added on the basis of describing image attributes of each

image. For the title page, there were 11 responses, which identified the scene of the image as from "snow" to "a city has a lot of houses or buildings." Most participants identified perceptual attributes such as objects and people, and a few of older children expressed deeper or symbolic aspect of the book such as friendship, heaven, and the magical power of the story.

Table 4.7

Summaries of Interview Results with the Red Book

Age (in yrs)	Index to Images	Descriptions of Attributes	No. of Resp.	Levels of Meaning
3 - 5	Title page	Snow, snowing, tanks of water, a lot of buildings, a lot of towers, city	11	City has a lot of houses, buildings.
4 - 5	Ending	She/he got the book. That's him. No one except him.	7	Now he is looking at the book, saw her, then he got might fall down, he saw her, and he likes her very much.
3 - 5	People	People, he, she	8	Boy doesn't have hair; girl has hair or have hair out
4 - 5	Plot	The book is falling. He is going for a ride. He left the city, floating.	5	Oh, oh, I need go down. I must go get it.
4 - 5	Cover	The Red Book	5	It is the red, red book.
4 - 5	Activity	Walking/going	4	A little child walking on the sidewalk wearing some hat, and some coat with some glove, with scarf on his neck.
4 - 5	Literary Reference	*Curious George*	4	The book says George in the city.
5	Relationship	Twins,cousins, or brother and sister	3	So they like each other. They become friends.
4 - 5	Personal Reaction	It is a magical book.	2	
4.5 - 5	Heaven		2	I know where she is now. She is in heaven. Because she flew up there.
4 - 5	Book	He had the same book I have.	3	
4 - 5	Theme	No words/ There is no page on it	2	
5	Spatial Distance	Map/ about states	5	Map of Philippines

Research Question 2

What factors of visual perception contribute to children's interpretation of meaning in picture book reading? Prominently, 3- to 5-year-old children identify, describe, and interpret images in two picture books from perceptual features. Among 3 age groups, some develop associations of concepts and mental images from personal experience. Some older children have confidence of reading and understanding the material. They are able to answer "what" and "why" questions well. Behind narrative skills or discrepancies of interpretation, the reasons can be attributed to the family and school environment.

Research Question 3

What factors or groups of factors influence degrees of visual perception or meaning? The statistical analysis of results showed no significance of the family background to each child's performance in interviews. There are differences of performance as a result of peers or siblings in groups. Peers and siblings influence each other's responses. They relate to each other and check on each other. Behaviorally, if they have a good attitude, they perform better. If they get bored, they become distracted. Language development is a key factor that influences presentations of describing images and interpreting details.

Descriptive Survey Results

Survey results with parents provided each a child participant's family demographics such as spoken language at home and races, socio-economic

background, such as a family's social economic background, parents' employment and financial description, and interaction of parents and their child at home such as reading frequency, amount of picture books, and discussion. In preschool, I sent out 30 surveys with 15 consents, and 13 surveys returned. The return of surveys in the preschool was administrated by the school director and teacher to one morning class, which has about 15 children. In public libraries and home school settings, I presented consents and surveys in person to parents who allowed their children to participate in interviews.

According to the 2005 American Community Survey, the race percentage of Denton city, there were 79.5% White, 10.3% Black or African American, 3.1 % Asian, 16.37% Hispanic or Latino, and 1.1% American Indian and Alaskan Native. And there was no Native Hawaiian and other Pacific Islander reported. In this study, the results of demographical data basically matched with this survey data. From the preschool, 13 mothers who completed surveys presented their demographic information: at ages of 30-39 take 46.15% and at the ages of 40-49 take 30.8%, and at the ages of 20-29 are 23.1%. For ethnic groups, 69.23% of mothers are white, 7.7% are Black or African American, and 23.1% are Asian. For spoken language at home, 76.92% mothers indicate using English, 7.7% mothers indicate using English and another language, and 15.4% do not use English but another language at home. 61.5% mothers hold a bachelor degree, 15.4% mothers has a GED or high school diploma, 7.7% have a master's degree, and 15.4% hold a doctorate degree. Demographic distribution told a general picture of Denton demographics as surrounded by two universities and with a majority white population. Parents tend to hold higher educational degrees because children's parents may be university students or employees. From a socioeconomic

perspective, employment 61.5% mothers have paid jobs, 30.8% are self-employed, and 7.7% run their home. Financially, 61.5% mothers show that their families are well off, 30.8% are better off, and 7.7% families are poor.

All the mothers read and discussed picture books with their children. Meanwhile they all owned more than 20-29 picture books or less than 20-30. In a couple of surveys, mothers also indicated concrete times of reading and book quantities. Rating the importance of parents' selecting picture books, shown in order: Total effect of work and illustration, and childlike qualities that include simplicity were highest in the degree of "Very Important." Communication of visual message was second in Very Important. Story and meaning and narration are the third in Very Important. Appealing quality was judged very important or important by a lot of mothers. Parents viewed "affectionate relations" between parents and child the highest among the choice of Very Important. Teacher and parents working together, and teacher's attitude toward subjects and learning were second in very important. The story services were considered least important among parents from the CDL.

Among ethnic groups, in Table 4.8, In the overall results of survey (n=30), the parents who participate in surveys are 21.2 % aged 20-29, 54.5% aged 30-39 and 18.2 % aged 40-49, and 6.1% aged over 50 years old are legal guardians like grandparents or parents. The frequency count of 29 mothers and 1 legal guardian (grandmother) reinforced the idea that mothers were often the ones who brought young children to the picture book reading programs. Parents or legal guardians in relation to a child, 66.7% are White, 17% are Black or American African, 13% Asians, and only 3% Hispanic. Survey participants indicate their families on spoken language, of them 75.8% speaking

only English, 15.2% speaking English and another language , and 9.1% speaking no

English, but another language at home.

Table 4.8

Participation of Parents in the Survey

Relationship to children		Age		Race	
mother	29 (96.7%)	20-29	7 (23.3%)	white	20 (67%)
legal guardian	1 (3.3%)	30-39	17(56.7%)	Black	5 (17%)
		40-49	6 (20%)	Asian	4 (13%)
				Hispanic	1 (3%)

Note. n = 30.

In the Table 4.9, parents' education, employment, and the family's financial

situation were summarized. Of thirty parents or legal guardian, 9 (30%) received a high

school/GED diploma, 16 (53%) had a bachelor's degree and 3 (10%) held a master's

degree, and 2 (7%) had a doctorate degree. About employment, 5 (17) % parents are

self-employed, 1 (3%) retired, 13 (43) % running a home, and 11 (37%) in paid

employment. Financially, 7 (2) % families are poor, 18 (60%) families are well off, and

10 (33%) families are better off.

Table 4.9

Summaries of Education, Employment, and Family Finance

Parents or Legal Guardian Education		Employment		Finance	
GED or High School	9 (30%)	Self employed	5 (17%)	Poor	2 (7%)
Bachelor	16 (53%)	Retired	1 (3%)	Well off	18 (60%)
Master	3 (10%)	Running a home	13 (43%)	Better Off	10 (33%)
Doctorate	2 (7%)	In paid employment	11 (37%)		

Note. n = 30.

For the rest of survey information, all parents indicated that they read to their children. Among parents, 84.8% read once a week to their children, and 15.2% read twice. Families do not own a picture book (12%), families have 10-29 (3%), families have 20-30 books (9%), and families have more than 30 books (76%). Some respondents clearly identify a concrete number. About selection criteria and activities relevant to picture books, from "Very Important" to "Not Important," 45.5% parents consider appealing "Very Important," 42.4% for representation, and 27.3 % think about cover "Very Important." Among the contents of picture books, given "Very Important," words and childlike qualities both take 66.7%; narration and communication each take 60.7%. The related activities to picture books are working together by parents and teachers, teachers' attitude, affective relationships during reading between children and their parents, and participation of storytelling at public libraries. The affective relation between children and parents are valued very important with a high percentage of 90.9%. Following the affective relation, teacher's attitude is considered very important with a percentage of 81.8%, working together with 78.8%, and only 42.4% parents think of story services very important.

Interview Results and Factor Analysis

The interviews with children did not fully realize the grouping and possible comparisons as planned in methodology. Most group interviews took place in the Child Development Lab (CDL) and interviews in the public library settings were one-on-one. All CDL children who attended the same class daily were ages 4 to 5 when they were interviewed. Thirty-one children participated in viewing images in one or two selected

picture books, and answered interviewing questions. Among the CDL participants, there were 5 7-year-olds, two 5-year-olds, and three 4.5-year-olds. Of all subjects, except for the 2-boy group, all groups have been tested with two books. Among 13 participants, there are 3 Asians, 8 whites, and 2 blacks. Four small group interviews and one individual interview were conducted. The first 2 tests were conducted on the same day. Each group consists of 2 to 4 participants assigned by their classroom teacher. The composition of age and gender in these groups differs. Group 1 has 1 boy and 2 girls, and Group 2 has 2 boys and 1 girl. Group 3 has only 2 boys. Group 4 has 3 boys and 1 girl. One individual interview is with one Asian girl, who missed out because of her absence from the class for a while. In the library settings most interviews with children were individual except three 2-person group interviews. Of 3 group interviews, 2 groups consisted of siblings, including 1 pair of twins. Thirteen children interviewed in the library settings encompass 4 boys and 9 girls. Except for the pair of twins, all child participants in the library settings viewed one picture book. Of these 13 participants, 8 are the White, 2 are Asians, and 1 is Hispanic.

In the Table 4.10, interviewed groups assigned by the class teacher were analyzed and compared in terms of age, gender, attitudes, tasks, and performance.

These 4 groups were not even in numbers. Group 1 and Group 2 consisted of 3 members. Group 1 consisted of 2 boys and 1 girl, and Group 2 included 2 girls and 1 boy. During the interview, Group 1 performed the task of viewing images from the illustration to the cover. The remaining groups had a different task from viewing the cover to the illustration. All the groups either finished two selected books, just one, or none.

Table 4.10

Groups Comparison at UNT's Child Development Laboratory

Group no.	Age in yrs	Gender	Attitude	Task	Performance
1	4 - 5	Two boys and one girl	Warm, enthusiastic, and collaborative	Illustration to cover	*The Red Book* and *Kitten's First Full Moon*
2	4 - 5	Two girls and one boy	Tired and bored	Cover to illustration	*The Red Book* and *Kitten's First Full Moon*
3	5	Two boys	Bored and rude		*The Red Book*
4	4 - 5	3 boys and one girl	Collaborative and assertive	Cover to illustration	*The Red Book* and *Kitten's First Full Moon*

In Table 4.11, interviews with 31 children happened in 3 locations: CDL, public libraries, and home settings. Child participant's gender was 54.8% girls and 45.8% boys. The degree of participants' performance was 38.7% very good, 32.3% good, and 3.2% poor.

Table 4.11

Comparisons of the Location of Interviews, Children's Gender, and Performance of Interview

Location		Gender		Performance	
Child Dev Lab	13 (40.6%)	Girl	17 (54.8%)	Poor	1(3.2%)
Denton Public Lib	14 (46.9%)	Boy	14 (45.2%)	Fair	4 (12.9%)
Home	4 (12.5%)			Good	10 (32.3%)
				Very good	12 (38.7%)
				Excellent	4 (12.9%)

In factor analysis, two indicators as Eigenvalue and Bartlett's test of sphericity significance were applied. Despite a small sample of the population in this study, Bartlett's test of sphericity which is proven less than 0.05 allows loading of factors. The results of factor analysis showed strong correlations of variables in 8 components (Eigenvalue > 1). The first component including story, words, childlike qualities, communication, representation, and a teacher's attitude, affective relation between parents and children, and story services provided by public libraries is most pivotal. These 8 components have a high percentage of explained variance with their Eigenvalues larger than 1.0 (See Appendix N).

<div align="center">Content Analysis of Image Attributes</div>

Interview transcripts were transcribed, analyzed, and categorized into 3 types of image attributes, perceptual, interpretive, and reactive, which are based on Jörgensen's research framework. The perceptual attributes category includes 6 categories, and the interpretive attributes category has 6 categories. The amount of attributes identified from interview transcripts varies from one group to the other, from age to age, from one child to another. The two selected books also show different potentialities in image attributes identified. The attributes according to the coding rule established from Jorgensen's framework were analyzed in narratives of a child or a group of children.

For example, one 5-year-old child narrated 3 or 4 images of *Kitten's First Full Moon*.

> I tell you that cat thinks that's bowl of milk. She is looking at bugs. She really got bugs. Stretched and turned. Stretched, then she fell down. And then she is looking at her own. She leaned to catch the moon, but she could not catch the moon.

There were different perceptual attributes in his narrative, cat (object), bowl of milk (quantity of object), bugs (object), and motions are "looking at, stretched, turned, fell down, leaned, catch." In this table shows that "object," people," and "motion" are perceptual attributes widely identified by children. Story, theme, and relationship are interpretive attributes identified by children.

In the Table 4.12, perceptual attributes were summarized in 13 classes. All the perceptual attributes were added up to a total of 342. Of all perceptual attributes, object was ranked the first with 132 (39%) of 342. Motion took the second place with 63 (18%), and description was the third with 29 (8%). The order of listing the class of attributes followed the grouping of Jörgensen's research framework (See Appendix J). Text, object, body part, and clothing are under the class of Objects.

Table 4.12

Summaries of Analysis of Perceptual Attributes from All the Interviews

Class of Variables	No. of Variable in Class	% of Total
Text	9	3%
Object	132	39%
Body Part	3	1%
Clothing	7	2%
Color	17	5%
People	31	9%
Number	11	3%
Description	29	8%
Location-Specific	18	5%
Location-General	3	1%
Focal point	2	1%
Shape	17	5%
Motion	63	18%
Total	342	100%

In the Table 4.13, the analysis of interpretive attributes from the interviews was summarized in 12 classes. Altogether there were 173 variables of in all classes. Of all the classes, story was counted with 95 (55%) of 173. The organization of classes is based on Jörgensen's research framework (See Appendix J).

Table 4.13

Summaries Analysis of Interpretive Attributes

Classes	No. of Variable in Classes	% of Total
Relationship	15	9%
Emotion	10	6%
Social Status	5	3%
Symbolic Aspect	2	1%
Theme	19	10%
Reference	6	3%
Event	2	1%
Format	3	2%
Activity	8	5%
Story	95	55%
Setting	8	5%
Total	173	100%

Figure 4.2 shows 6 pictures from *The Red Book* that were commonly noticed during the interview process. These 6 images showed results in the Table 4.14 and Table 4.15. From the left to the right in the first row of images, the first image on the left hand was the title image, which shows the setting and time of the story, in a city and winter, snowing. In the second image was a girl dressed in a red scarf and purple boots walking to see a red thing. The third image of this row presented a map, beach, an island, and a walking person. In the second row, a boy was reading about a city, a girl reading about a boy, and the girl was floating on a bunch of balloons.
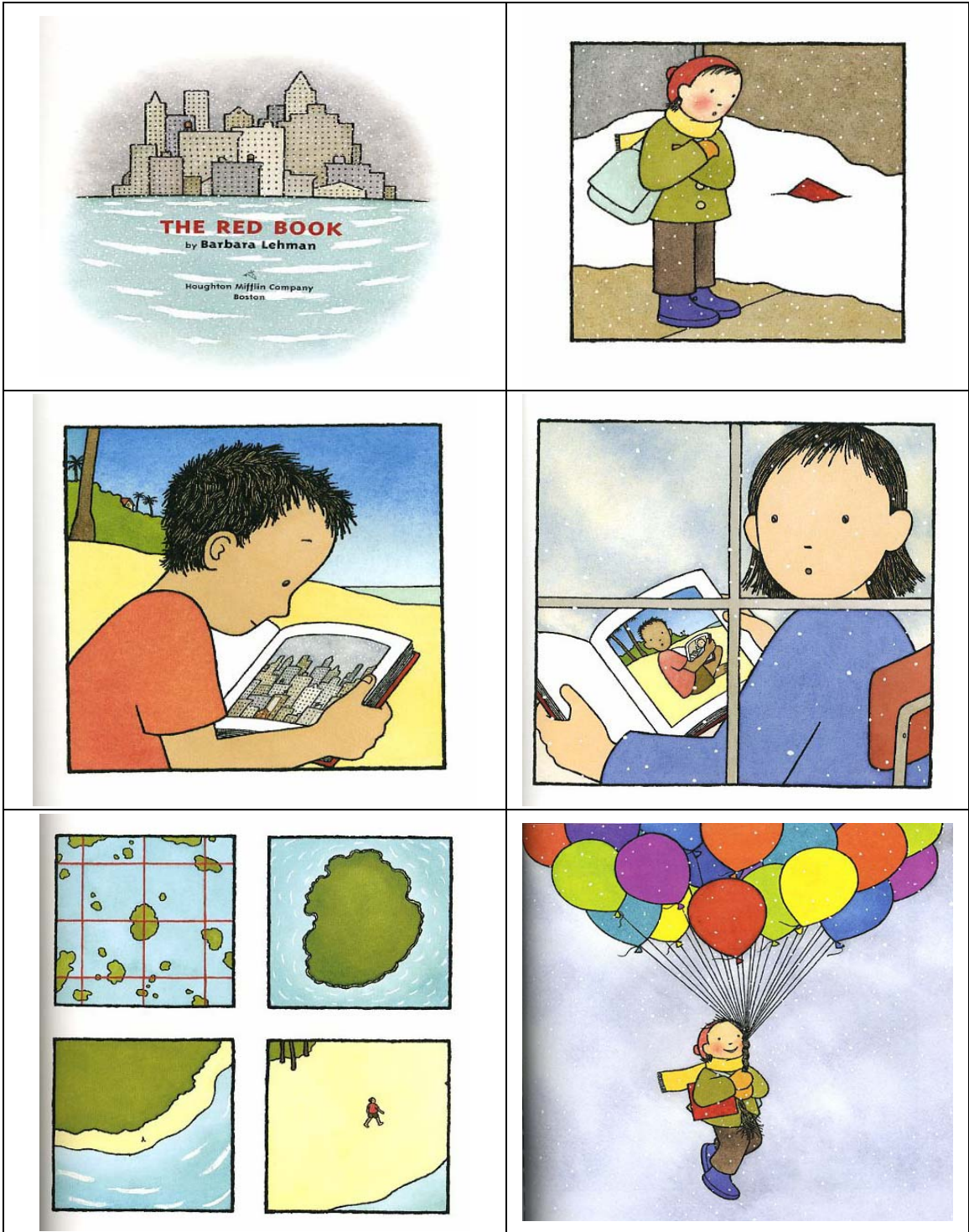
Figure 4.2. Images selected from *The Red Book.* Reproduced with permission from Houghton Mifflin.

Table 4.14

Analysis of Image Attributes in Relation to Questions and Classes

Attributes	Questions	Classes
Snow	What	Object
There aren't any words (wordless picture book)	What	Personal reaction
Girl/boy	What	People
Map	What	Object
It tells where to go(map)	Why	Abstract/Description
On the beach	Where	Location Specific
He had the same book as I have.	What	Personal Reaction
They are brothers	Who	Relationship
The red book, balloon	What is the book about?	Theme

Table 4.15

Analysis of Image Attributes in Relation to Questions and Classes by a Group

Attributes	Questions	Classes
The Red Book	What	Text
Water	What	Object
City	What	Setting
Buildings		Object
City,town		Setting
Snow		Object
He walked/saw		People/Activity
Rectangular, a triangle a flag.		Shape
Floating(balloons)		Motion
She left the city.		People/Activity
Yellow lights		Color/Object
Stop sign		Object
Green light		Color/Object
Map		Object
He had the same book I have!		Personal Reaction
Except him	Who got the book?	Description

In the Figure 4.3, the word "cat" is mentioned 3 times and other words are kitty (2), kitty cat (1), flower (3), coin (1), bush (1), grapes (2), licking/motion (1), moon (1), and cereal (1). The attributes that indicate the shape are cereal, grapes, and coin. The attributes of color are white and black, and gold. Participants did not have knowledge about growing of grapes on a vine, but recognized the bunch of grapes from its shape. Though the title of the book is called *The Kitten's First Full Moon*, most of the participants used generic names like cat or treated the cat from a perceptual perspective. The cat in the picture looked smaller in size so it was identified as kitty or a kitty cat. The perceptual attributes, size, color, and shape were crucial to these participants in this task.
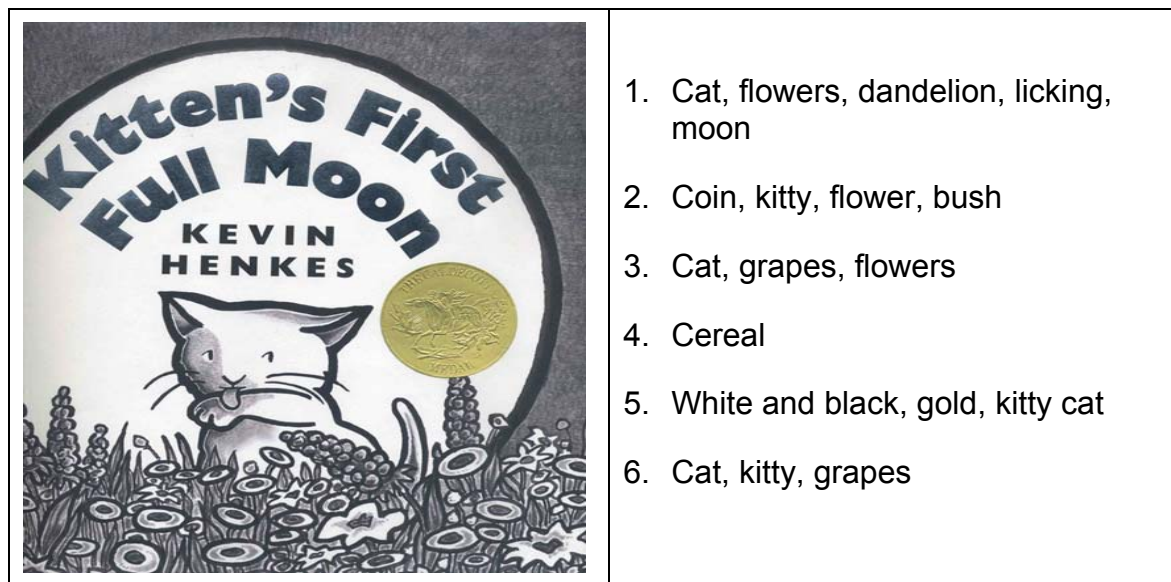
Figure 4.3. Perceptual attributes identified by participants from *Kitten's First Full Moon* book jacket. Reproduced with permission of Harper Collins Publishers.

In the Figure 4.4, 6 children, 3 girls and 3 boys, described this page mainly with a phrase "fell down." They noticed how hard the cat was making its effort to reach but fell down on the steps. Of 6 children, 3 were around 3 years old; 1 child was 4.5 years old;

2 were 5 years old. One used the word "tumble" as in original text. All participants

focused on one action, "fell down," which simply became a visual focus. No participants

concern the objects in the picture such as flowers, steps, or color.

1. Stretched, then she fell down.

2. He jumped. He tried to reach, but he kept falling down.

3. Tumble

4. She tried to jump but fell back.

5. But she fell.

6. She stretched really high. She fell down.

Figure 4.4. Description of attributes in relation to activity and motion identified by participants, from *Kitten's First Full Moon.* Reproduced with permission of Harper Collins Publishers.

In the Figure 4.5, two scanned images came from the book jacket. For two

images, children who have not read or heard this story before recognized the moon as

circles, spots, dots, and eggs. No one associated each circle or dot with moon without a

context of the story about moon. Each image in a picture book should be read together

or in context.
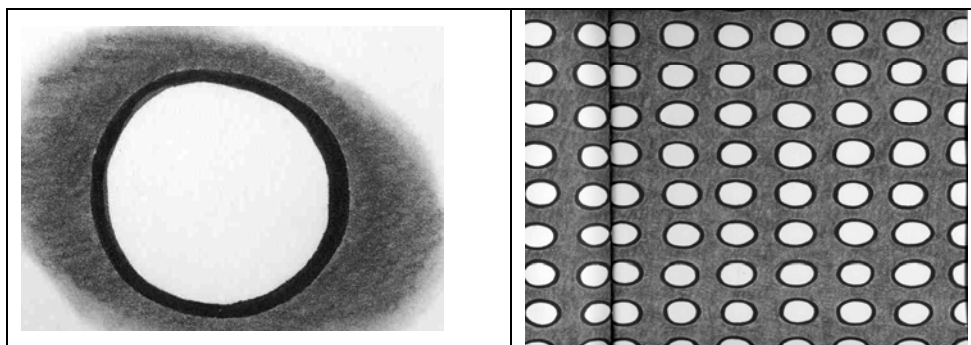
Figure 4.5. "Moon" images in *Kitten's First Full Moon.* Reproduced with permission from Harper Collins.

Case Studies Results

The results of the case studies present several aspects of visual perception and levels of meaning. In an attempt to understand the distinct levels of meaning, case studies of individual interviews and group interviews were analyzed and compared. There were 4 cases analyzed, an individual interview, a group interview, dialogic reading, and concept formation.

Case A: Individual Interview.

Case A is about a 5-year-old child who presented the whole story of the book and added her imagination to the story telling. She was individually interviewed with both books. She indicated that she never read *The Red Book* but was read twice *The Kitten's First Full Moon* at school. In particular with her case, she recalled the story details both through looking at pictures and from her memory. In her case she recalled the story from her memory and occasionally relied on illustrations. When she identified snow, I asked if she saw snow. She answered "Well, no, I have never felt snow, real snow, but I see snow at my friend's house." She distinguished how she felt about snow from how she saw snow in person. She answered one "what" question by describing images with the heroine and maps. Her response implied her geographical concept or experience, "Look at pictures where people live in California, any place in India, California, Texas, Denton." She then talked about where she lived. She said that she was born in California but her parents were from India. Now they live in Denton. Her geographic experience interpreted the story of *The Red Book* in relation to different geographic locations. In her narrative, she described details, so her responses

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produced more analytical image attributes. In one image of *The Red Book*, she

described "A little child walking on the sidewalk wearing some hat, and some coat with

some glove, with scarf on his neck." In her recurrence of using "some," there were

perceptual attributes, activities, location-specific, and clothes. When she narrated about

seeing a book in the image, "Found something in the snow. Maybe a note, like a piece

of paper with envelope." Though she was sure about if what it was, she guessed and

drew conclusions. The appearances of those words were counted, as So (6), And (2),

But (4), Still (4), Then (1), Poor kitten (4), and Lucky kitten (1). The 4 sentences offered

the themes of the book across 4 or 5 images. She frequently used conjunctions "so" and

"then" as well as in a past tense exactly like in the book, for example, while reading

images of *Kitten's First Full Moon*.

> This cat looked behind, looked at moon, thought moon was milk. **So** he tried to get that milk. Moon **so** he can drink it. It's very tasty. The she licked a bug. She did not like it. **So** she saw the moon. She thought it was milk. She tried to touch it. She thought river was milk. **So** he went, ran to, he jumped into woods. He did not know water. He got wet, went into tree and jumped in there, came back, stretched herself, **then** went to his house, found some…milk. She's going to get it and lick it all. Even **then** she fell asleep.

> There are 4 "so" and 2 "then." In some places of her narratives, she mixed "he"

and "she." From her response, it showed that she noticed details and brought her

experience into her interpretation. Her grammatical use of conjunctions told how she

organized her thoughts from her mental image.

In the Figure 4.4, a comparison of the original text and the participant's narrative

showed that the participant added personal feelings for the poor cat, such words as

"tasty" and "like." The image seemed more animated through the narrative.

Original Text	Child's Narrative
It was Kitten's first full moon. When she saw it, she thought, There is a little bowl of milk in the sky. And she wanted it.	Well, this cat looked behind, then he thought moon is milk. He tried to get the milk, so he can drink it. It is very tasty. So he licked. Then he licked a bug. Then he licked the bug. He thought only. He did not. Then He did not like it. So he saw the moon he thought it was milk. So he tried to catch.

Figure 4.6. Comparison of the original text from *Kitten's First Full Moon* and a child's narrative about the same picture. Image and text reproduced with permission of Harper Collins.

Case B: Dialogic Reading.

Familiarity enabled a child to summarize the story quickly. One example of dialogic reading is shown here. In this dialogic reading model, the interviewer tried to engage in a conversation, such as in the discussion about butterflies. In a group with 2 boys and 1 girl, when interviewed, each child held *Kitten's First Full Moon*. During the process, Girl and Boy 1 first looked at the cover and Boy 2 already started turning on the first page. The interviewees were asked if they knew about the book. In the data

coding, "Yes" was coded as a child's cognitive state, a desire or certainty. In this conversation, all the participants knew the story, identified attributes, and drew an inference that the book is about "poor kitten."

Yu: Have you read this book? Somebody has read it for you?

Girl: Yes.

Yu: Do you want to tell the story?

Girl: Yes, the kitten wants to drink milk. He saw milk (moon). There are flies.

Boy 1:   Butterflies.

Yu: Light bugs.

Girl: Why?! It is flies. The kitten wants milk. He saw milk. He climbed and climbed. He did not get it. The kitten went into the grasses, trees.

Boy 2:   The kitten fell off into water.

Yu: Do you think this is in the evening?

Girl: It is night. You did not see!

Yu: What makes you think so?

Girl: It's dark.

Boy 2:   Poor kitten in the water.

Girl: The poor kitten! The poor kitten went home and had milk.

 In Figure 4.5, one child was asked to answer questions as where and what. This child focused on a depiction of motion and characters of the image. Though two characters in the image do not know each other, their facial expression and gesture implied friendship.

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| | *Where is the book going?*
A: There, She dropped it.

Where is she now?
A: She said "Oh, oh, I need go down. I must go get it."

What do you think?
A: Hey, there she is, that's the girl. She didn't know what to do.
When she go[es] up there, there is a boy. There she is. That's the girl.
When she go[es] there, she do know what to do. Wait, no they don't know each other. There she is, there she is. Now he brings her book.

Do they know each other?
A: They don't know each other. No, she gave him a big hug and smiled. |

Figure 4.7. Dialogic reading of an image from *The Red Book*. Reproduced with permission from Houghton Mifflin.

Case C: Group Dynamics

In Figure 4.6 shows that Group 1 at the Child Development Laboratory (CDL) together explored the major theme of *Kitten's First Full Moon*, in which a small cat went through adventures of finding milk. The group dynamics was found in collaboration. Four group interviews were conducted in the CDL. Their age is between 4 and 5 years old. All groups were mixed with boys and girls except for the Group 2 with 2 boys. Group 1 and Group 2 identified the theme of *Kitten's First Full Moon*. Group 3 and Group 4 identified 3 words of *The Red Book* and recognized the red book as a book. One girl claimed that she read *The Red Book* before and identified it with *Curious George*. *The Curious George* is treated as a referential attribute in this study. This girl

identified the theme and characters of the story with that of *The Curious George.* In a similar manner, both *The Red Book* and *Curious George* shared scenes related to balloons and travels in a city. I asked about George, and one boy answered that it was about monkey and an elephant movie. *Curious George* by H. A. Rey (1941) describes a monkey named George traveling in a city. George carried a whole bunch of balloon floating in the sky above the city. In the Group 4, participants moved from identification of physical attributes such as text and object to literary references to the classic, *Curious George*. There was a difference indicating from pre-iconography to iconology.
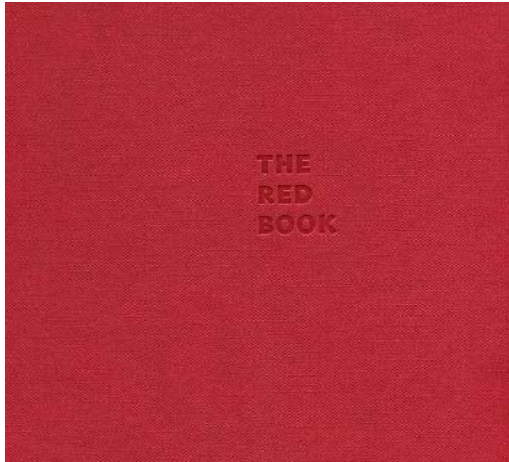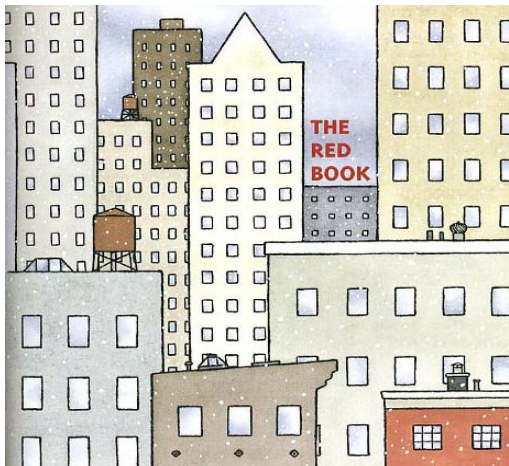
	Girl 1: A book. Aha!
	Boy 1: That's red. It says "The Red Book."
	Girl 1: It don't [sic] have a page on it.
	Girl 1: It is George. It is George in the city.
	Girl 1: It is about George.
	Girl 1: The red book says George. Can you read George?
	Boy 2: Hurricane.
	Boy 3: Something in the building.
	Boy 1: They are just tanks, water.
	Boy 3: I see tanks, maybe tanks of water.
	Girl 1: Tanks.
	Girl 1: It says George.
	Boy 2: It is snowing.
	Girl 1: It says it is snowing, George.
	Boy 3: It's George.
	Girl 1: George in the city.
	Boy 3: Monkey.
	Boy 2: Curious George.
	Boy 3: I have that movie, *Curious George*. One elephant movie

Figure 4.8. Group viewing of *The Red Book*. Images reproduced with permission from Houghton Mifflin.

Most participants of these 4 groups read one or both books before. Group 1 and Group 4 showed that there was a smooth communication in their groups and members relayed information through telling a story together. Group 2 did not have a good concentration toward the interview. They identified similar attributes like Group 1 but they only generalized the theme of the story about cat, milk, and moon. Group 3 did not finish their task though they made a good start of description. The group dynamics showed either an attitude of collaboration or boredom. The group together described the kitten's activities and emotion from being poor to lucky.

Case D: Concepts and Previous Experience.

An analysis of concepts from attributes showed how individual child identified attributes and reasoned. As shown in the Table 4.19, most conceptual explanations tend to be functional. In one child's rationale, "map" functions to tell the direction; though heaven is a religious or literary concept, two children treated it closely to the meaning of sky; a few children identify the city with buildings; the moon has a function to light up. The description of a book is categorized by its shape, pokey, triangle or like an envelope or a note.

Children defined each concept for its function and based on what they saw. Two children state their concept of heaven. They simply consider heaven equally to be the sky or going up. One is 5 years old and one is 4.5 years old. Their concept of heaven is still developing partly due to their religious background. They do not yet have a full grasp of what heaven means in a cultural or religious sense. One answered as "I know

where she is now. She is in heaven. Because she flew up there" The other explained "God there up to the sky. She is going to heaven."

Several children's previous experience played a role in their interpretation of images and reasoning. For example, *the Red Book* strikes a similar chord with *Curious George* in setting the character in a city and flying with balloons. So this girl immediately thought that in *The Red Book* covers a story for George. The other reaction raised by a boy is snow as a reference to hurricane. He said he was tired of hurricane when he saw snow in one illustration. He also related maps to the different states. One girl mentioned that she was born in California by Indian parents. So she has more experience about different places. *The Red Book* gave her an impression with traveling to these different places like California or Texas.

Reliability and Validity

Reliability

The reliability was calculated on the data rated by two observers. Each observer followed the coding rule (See Appendix J) I provided and rated all the transcripts. In SPSS, I ran rated data of reading each book separately. The reliability statistics of *The Red Book* showed a highly consistent Cronbach's alpha =0.92. This was calculated between 23 image attributes coded by two coders. The reliability statistics of *Kitten's First Full Moon* has a good Cronbach's Alpha=0.65. This was calculated between 27 image attributes coded by two coders. Alpha=0.65 still indicated a good correlation of two raters because this study is exploratory in nature.

Validity

For observations' validity, I talked to librarians about the book selection and informing parents about picture books reading. Librarians answered by providing sources and explaining the ways of selecting books. Previous research supported the results of this study in comparing two groups. Previous research supports validity of methods of this study. Mabel Rudisill (1952) (cited in Dale, 1954) found:

In looking at a picture, a child apparently seeks first to recognize its content, any picture (assuming a certain content) proves satisfying to the child in proportion to its success in making that content appear real or life-like, whether color or uncolored. A perfect visual representation of realism includes color, and color in pictures proves satisfying to the child in proportion to its success in increasing the impression of realism or lifelikeness. (pp.374-375)

Summary of the Chapter

In this chapter, research reported the results of survey of parents and analyses of interviews, and answered 3 research questions. Visual perception as a concept is seen when child participants identify image attributes from different levels and functions as a key source of information to young children as they categorize objects, events, and people from perceptual features. Reliability for the content analysis of image attributes was analyzed, and validity was supported through results of observations, case studies, and findings of previous literature. Young children often categorize based on shape, size, and color, and their rationales differ from those of adults. Content analysis of image attributes reflected how

each child categorizes and interprets information available to them. Though age played a

role in a child's response, individual differences determined a different cognitive style.

CHAPTER V

CONCLUSIONS AND DISCUSSIONS

Introduction

This study applied qualitative and quantitative methods to examinine the distinct levels of meaning perceived by 3- to 5-year-old children. The findings reveal the perceived levels of meaning through analyzing children's responses into classes of image attributes. This chapter provides conclusions and discussions about research questions and the levels of meaning, and factors that underlie influences on visual perception. In addition, this chapter looks back to the topology proposed in chapter III and revises it.

Research Questions and Levels of Meaning

Whether the children of this study perceive distinct levels of meaning in images of picture books is the first and foremost question of this study. Findings of this study demonstrate more perceptual attributes identified than interpretive attributes by child participants. Most participants are able to express the first level of meaning, the primary or factual meaning by identifying people or objects. In question of the second level of meaning, the iconographical analysis, an analysis of case studies show that some children impart their personal and cultural experience into their interpretation of images. Iconological interpretation requires abilities not just a familiarity with specific themes or concepts through literary resources. Panofsky (1955) describes means to achieve "correctness" of the different level or stratum of meaning, which consists of the object, act, and equipment. For example, the first level, primary or natural object matter

corresponds with pre-iconography in the act of interpretation and practical experience as equipment of interpretation. For those who already know the book or have a better attitude toward reading such as immediate correction of perception, to move into the second level of meaning becomes easier and even into the third level of meaning, intrinsic meaning. Two books selected in this study are Caldecott award-winning picture books, *The Red Book* for the ages 4 to 8, and *Kitten's First Full Moon* for ages zero to 8. Most of the children have not read *The Red Book*, partly because it is a wordless book. A few children indicated that they read it before and were able to identify it with the classic *Curious George*. Some mothers claim that they will never buy or borrow wordless picture books for their children. All child participants at the Child Development Laboratory (CDL) had experience with *Kitten's First Full Moon* and could easily connect with the simple theme of the book through viewing and narrative description. The theme of *Kitten's First Full Moon* is about a kitten who struggled in her mistake between milk and moon. *The Red Book* posed some challenge to most of the participants. The theme of this book was to highlight friendship across time and space. In the interviewing process, I took a dialogic model of reading with Enser's (1995) specific questions "what, when, where, how" to derive levels of meaning. An obvious difference of age lay in the span of concentration, group dynamics, attitude, or language development. Three-year-old children still try to imitate and have a short period of concentration; 4-year-olds can express better; and 5-year-olds can connect and move to the third level of meaning. Individual differences and different prior experiences may determine the depth of understand and interpretation. For example, some participants summarized *The Red Book* as "a magical book," or described the underlying theme of the book about states

or different places. Most children who read *Kitten's First Full Moon* before are obviously well versed with the content of the story. Children tended to focus a description of the cat's size and action or express sympathies toward the cat. Panofsky's second level of meaning, knowledge beyond literary resources, becomes more evident in a child with prior experience or empathy.

A child is able to perceive the 3 levels of meaning. But this child needs preparation with subject equipment as Panofsky described in his approaches. The development of visual perception is powerful but remains elusive. Piaget thinks that training perception will not help a child's logic development. Maybe to help a child understand and interpret objects or events, and turn meaning into a better learning experience, children need input of instruction and analysis of literary resources. There were little culture experience to trace among young children but they start developing. Language and age are still very relevant variables that influence how a young child conveys meaning and expresses feelings. Boyer (1991) finds that a child younger than 5 years old goes through a process of forming grammatical rules, but at 5 years old, he or she is almost at an adult's competence of conveying meaning and expressing. As shown in the analysis of interviews, a few 5-year-old participants excelled in their narratives which already form an English grammatical structure.

Children's responses presented the children's perception of objects, events, and themes of two picture books. Older children show interest in words. For example, they can read 3 words "The Red Book." For most participants, texts are signs or symbols for preliterate children rather than language. Jörgensen (2003) assumes that viewing an image is both as "an interpretive task and social mediation in interpreting both images

and texts" (pp.203-204). Jörgensen notes that one's social or cultural background help

to establish the descriptive model of image attributes (p.204) and the image story

provides a strong basis for the descriptive task of attributes, including setting, time,

people or color. O'Connor, O'Connor, and Abbas (1999) suggest a strong relationship

between children and documents (cited in Jörgensen, 2003, p.691). Most child

participants find joy in identifying objects, explaining their concepts, and retelling stories.

Attributes such as shape, color, and size prove relevant in this study. Some child

participants depend on similarities of 3 types of attributes to determine objects and

events. Roundness is a similarity among the moon, dots, coin, circle, and type of cereal.

Red and purple are colors for girls. By physical size, a cat is bigger than a kitten.

Meanwhile, merely relying on basic levels of attributes concludes that these children are

still developing their visual perceptual abilities. Markman (1989) writes about different

ways of categorization between young and older children. Young children tend to create

"idiosyncratic" categories and older children categorize information based on the

common taxonomy (Markman, 1989, p.80). In many ways, children of the current study

prove that they group things together "not because they are similar but they achieve

function."

Attributes are closely related to how information is identified and categorized.

Early childhood researchers widely shared Jean Piaget's view in which preschoolers or

very young children tend to attribute perceived objects as alive or psychological beings

such as computers (Turkle, 1984) and plants and animals(Opfer & Siegler, 2004).

Rosch and her associates (1976) pronounce that humans categorize basic objects

through perception of environment, which even children can sort and name. Mandler

and Bauer (1988) implied that children may form global categories rather basic level categorization.

In categorization, categories encompass the basic, superordinate, and subordinate levels. The children's categorization of information related to language acquisition were widely studied (e.g., Markman, 1989; Rosch, Mervis, Gray, Johnson & Boyes-Braem, 1976). Markman's (1989) study of naming and categorization supported that children usually acquire a basic level of categories, which prompts the speed of perception. The example of the failure to distinguish the moon and circle without a context showed what children of this age group perceive an overall shape of roundness to be true. Children who have been read to before already established a mental image of the round shaped object as the moon, but for those who have never been read that book had a different experience. Most of the child participants focused on features that account for part of an object. For example, a girl is one with hair out or she wears purple boots; a book is similar to a piece of paper or envelope, triangle or poked corner; a moon shares roundness with an egg or polka dots. Markman (1989) argued that basic levels of categories are so natural which can establish a "correlational" structure of attributes (pp.69-70).

Waygood (2005) shows that different types of images have a different function and result in a different comprehension. There are age differences in categorizing attributes. Three year olds can basically identify objects and people and children who are older than 4 years old can identify and narrate more information. The 5-year-olds make striking differences in both categorizing and narrating, and even in correcting their

mistakes. These two picture books provide different image attributes, so interpretations differ.

Piaget saw little importance of training perception as a means to help children to have a logical thinking in the process of knowledge acquisition (Lavetelli, 1970). Though as it is, perception provides direct interpretations of information from the environment and encodes the cognitive process of a child in his or her response. Gibson (1971) discusses that two conflicting theories of defining a picture clash in viewing whether a child can directly perceive or need learn to "perceive." Recognizing common information of features in either pictorially mediated perception or direct perception, Gibson thought that there should be a combination of two conflicting theories. Gibson's theory explained that similarities of perception between adults and children, or between younger and older children, are due to cultural references or prior knowledge.

In the reader-response theory, Louise Rosenblatt (2001) describes that reading is a 2-way transaction between children and texts, and has its relevance with the attitude of a reader, who always bears a purpose of seeking information such as a story and visualization. A child's expressiveness has a reference to an event external to the child as well as to his or her attitudes and reactions (cited in Rosenblatt, p.270). For younger children, before 5 years old, language is a tool to enhance their experience.

A few children participants make use of their fingers to point out as if they were telling the exact words in the book, though they cannot read the words. Despite this, finger-pointing offers a certain confidence in storytelling and narrative. Jörgensen (2003) already mentions, "The interpretation of both images and texts is to some extent socially mediated" (pp.203-204). Rhian (2003) draws a conclusion about reading picture books,

"The reading of text by sighted children is dependent not only on linguistic knowledge, but also on visual perception" (p.103).

In this study locations are a public preschool attached to the university and public libraries that surround two universities and offer storytime to 1- to 5-year-old children and their parents at least twice a week. Preschool children's parents are likely working or studying at the university, and public library children attendants are younger between toddler age and 4 years old. Many public library children go to private schools or stay at home with their mothers, some of whom do not trust storytime because of personal values or religious views. Boyer (1991) places high values of parent-child relationship and preschool education in early childhood education. Such as the library storytime connects parents, children, and librarians' altogether in order to help a child to read and nurture social skills. The preschool offers children an environment of learning and playing as well as a relatively close peer relationship. A child's relationship with adults such as parents, teachers, or librarians and with their peers helped a child to develop respect and morals (cited in Boyer, 1991, pp.48-49). So quality early childhood education in libraries' storytime or preschool, or even in a family setting has to reflect values of parent-child relationship and peer relationship.

Preschool, private schools, and library storytime offer reading time of picture books every day with two or three books, but they have slightly different emphases. At schools, in older classes, a teacher will read the book and discuss it with students. The teacher also asks students to recount an event and count words picture book by asking simple questions. At storytime in the public libraries, participants together. In younger classes, a teacher sings songs with students and reads the rarely know each other, and

librarians may not have a lot of interactions with them. The library storytime makes use of rhymes and puppet show. The counting game in public libraries usually counts to 10. Storytime is an essential part of early childhood education by which a child learns the basic notation system and read. Gesell (1949) notes that schools are the devices and teachers are agents that help a child to understand cultural heritages of a certain society. Tochinsky (2004) emphasizes the process of a child's early reading as "a building block of further learning."

I had the chance to talk to mothers who instruct their children at home and librarians who conduct story telling. One mother said that she did not think highly of the story programs at libraries but often borrowed picture books from public libraries. The picture books this mother borrowed have relatively long texts and she considers reading words helpful to their children's narrative in the long run. She also bought old picture books from garage sales like *The Tale of Peter the Rabbit*, which her children really liked. One mother still tried to bring her son to the storytime but found that her son was already too old to be in the library storytime. I asked one librarian about selecting books for each storytime. The librarian presented a reference book and explained that the books she felt comfortable with are her choice each time. The results show a significant presence of library story hour in a community. The library story hour provides interpersonal communication of children, parents, and teachers.

Gender differences show in context, behavior, and language development. In many children's responses, especially older children, gender differences start surfacing. For example, there is a cultural stereotype of colors. A girl is supposed to have long hair and dress in purple and wear red shoes. A cat is "she." A boy wears a hat, as on the

cover of *The Red Book*, the girl is not recognized because she wears a hat. Four- or 5-year-old participants consciously distinguish two genders. Color may take on gender differences as well as a cultural definition. A girl has long hair, purple shoes, and red boots.

In the group interviews, when boys get bored, their behavior radically changes. Two boys in one group start the interview but quickly get bored, and reverse their behavior to rudeness. Two girls also get bored but they do not reverse their behavior. All of them excuse going to potty or do not want to continue interviewing. These findings prove in Gurian's (2001) comparing boys with girls that boys become more easily bored and have a behavior reversal. Guiran also shows that boys and girls have no difference in their interest of pictures but boys who are concentrated, focuses on answering questions and initiates learning and leadership in the group. In group interviews, some boys introduce everybody in the group and their age, which may be a sign of leadership. Gender differences in younger children strongly show in language (Ladegarrd & Blesses, 2003) such as in vocabulary, grammar and pronunciation, and learning from parents and conception (Opfer & Siegler, 2004).

Gardner (1995) underlines that 5-year-old or 6-year-old children may have already become competent with "serviceable" schematic images (p.110). Reading is one of ways to help a child acquire and improve language (Boyer, 1991, p.35). Both preschool and public libraries use picture books to provide children's interest in reading, counting, and social skills. Sandlian (1997) points out that reading integrates video and audio senses with text. Though age is a major factor that affects performance of interpretation and storytelling, a child's understanding of subject marks his or her

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difference of literacy. Reading is not only a simple skill but a complete understanding of subjects (Sandlian, 1997, p.583). In some previous studies, Ziegler, Mitchell, and Currie (2005) found about narrative that 3- to 4-year-old children can not recall the story details or either report a different story or remain silent. Tochinsky (2004) reviews studies that focus on children as precocious and constructive learners. Children do not naturally become literate but through circumstances such as a literacy event like storytime in the preschool or public libraries.

Observation results show that either storytime at libraries or reading time in public preschools made efforts to instill reading habits among young children. It is difficult to quantify how much f reading may affect a child's school learning in the future. Bruner (1966) viewed observations of young children as coping with environment. As for young children who participate in a metalinguistic play, Bruner saw "pleasure in practicing and developing a new skill" and preparation to "get into a subject they like" (p. 118).

Individual and group interviews were employed for understanding a child's perceived levels of meaning. Pitts (1995) considered working in groups "valuable" because it can benefit children to "verbalize their thoughts and understandings for others in the group" (p.179). The grouping in public libraries is challenging because children do not know each other well. Most of the children who go to public libraries come for story telling programs and find picture books. They do not necessarily commit to the storytelling programs each time or meet others at the same time. The grouping based on siblings varies in efficiency. Sibling help each other and some tend overshadow each other when they voice their opinion. When one sibling is more

talkative, the other tends to keep quiet. I consider the group interview with children of the same learning level useful.

This study with interviews concluded the following views. Dale (1954) writes that pictures are so real they are carriers of "universal" messages (p.243). Dale also observed that both moving and still images contain "cues," which must be interpreted by the viewer. If one is familiar with picture cues, he or she can accept this quick shift without thinking about it. The ways to interpret the picture cues derive from one's personal status, personal feelings, or personal associations (p.243). A picture cue is always subject to cultural, group, and individual interpretation (p.245). Any picture can be read on these 3 levels: enumeration, description, and interpretation (p.246).

In Figure 5.1, a revised topology showed 8 components found in the factor analysis test (See Appendix N). These 8 components consist of different variables from factors analyzed. The first two components encompass attributes of picture books. The third and fourth components make up of reading picture books at home, and the remaining 4 components establish concepts behind reading picture books. The first component plays an essential role in the revised topology. Story, childlike qualities, representation, communication, affection relationship between a child and parents, and teacher's attitude in instruction of picture books are highly influential variables for a child's reading picture books.

1. Picture books-
Story
Childlike qualities
Communication
Representation
Teacher's attitude
Affective relation

2. Frequency of Reading
Cover
Education of Parents
Amount of Books at home

3. Parent's Education
Employment
Financial

**Attributes of Picture
Books**

**Reading Picture
Books at Home**

Story

Identification

Concept

4. Ethnic groups
Language Spoken at
home

Concept

8. Child's age
Child Performance

5. Appealing of Graphics
Location of Storytime

7. Narration
Language spoken

6. Frequency of
Reading at Home
Child Group

Figure 5.1. Revised topology proposed in chapter III.

Limitations

This study is exploratory in nature. There are limitations in methods and findings,

because visual perception and meaning are subjective and complex concepts that lack

proper measurements. The qualitative methods of data collection such as observations, the survey of parents, and short interviews of children only capture part of a child's background. There were many external factors beyond my control during the interview. For example, a child's attitude is often influenced by his or her personality or authorities of parents or teachers. In some cases of this study, children only cooperated or made their efforts because their teachers or parents want to them to do, if they heard, "give your attention," or completing a project or an assignment. Denzin and Lincoln (1994) cite issues related to validity and reliability such as "observer and setting bias, observer effects, and absence of member check" (p.37). All the instruments applied in this study have their bias and limitations in measuring all aspects of this study, though findings provide implications for the future studies.

In this study, I take both quantitative and qualitative approaches. The quantitative methods offer a basic framework of family background's relationship with a child's age, gender, and performance in interviews. But all quantitative information is not adequate to expose the depth of a child's development as a result of daily family education or school education. Two picture books selected for this study cannot represent a large number of picture books. This selection is subjective.

In other aspects, there are limitations in the sample population. The sample size is too small to carry out a formal factor analysis. In the preschool, the interview participants were grouped and assigned by teachers. In public library settings, I randomly picked up the interview participants. Sometimes mothers, due to not speaking English, cannot grant consents to their children for participation. Or when parents completed the survey, children withdrew from interviews.

Methodological Challenges

In this study, undoubtedly there are many challenges of research methods in interviews, observations, and surveys. First, with reference to methods, young children have a short span of concentration and a different level of development such as language and individual differences. Second, the choice of selecting two picture books for this study instead of many books has to take children's interest, reading level, and balance of illustrations and words into account. During the short interviews, I made a decision in using the whole print picture book rather than the digital one because of copyright issues and a constraint of time on each child participant. Third, there are challenges to find a less complicated method to interpret theories and concepts of images, young children at the Preoperational Stage, and visual perception. For example, as a definition, an image, especially to young children, could be construed as either a mental image or a symbolic representation of objects.

Final Conclusions

Children who participate in interviews provide many aspects of their experience. Though the interview is not the most optimal research approach to young children, it can provoke children's thinking processes such as many young children love to answer questions like "what" and "why." Different picture books contain different image attributes, so the results of interpretation differ. Visual perception as seen in this study guided actions of child participants in their identifying image attributes, interpreting the story, and reasoning. The information seeking and retrieval activities in processing information of picture books reflect a child's learning experience and interest. As a 4-

year-old girl enthusiastically concluded the ending of the *Red Book*, she expressed a description, story ending, and meaning, "They are in the book. He is going to hug her. It is a magic book. Look like someone is going to get that book."

CHAPTER VI

REFLECTION AND FUTURE RESEARCH

Reflection

The literature review reinforced the view that picture books are information sources useful to young children's learning and play. Picture books function to have a multi-faceted value of information demonstrated in exchanges of between the text and images, between meanings and concepts, between a reader and a document (e.g., a book), or between a reader and a listener of a story. The results of interviews and observations support that a picture book is more than "some ancillary decoration or visual relief for a literary effort" (Marantz, 1977, p.149). Marantz suggests that images of a picture book play together to tell a story, which cannot be read separately. The characteristics of a picture book provide implications for studies of both still image and moving image like a film. Relevant to Information Science, a picture book is an information source that carries out a design of purposeful information especially for young children. Currently, many picture books have been collected and used in developing children's digital libraries.

Children can develop or sharpen their visual perception through various visual exercises or daily experience. Reading picture books is one of the channels or ways of visual exercises in helping children to do so. With the growth of children, they become independent readers of books or appraisers of other visual media. The role of a child's caregiver such as parents, teachers, or librarians, should not be diminished. The rationale to distinguish levels of meaning perceived by young children contributes to understanding their evolving information needs, interests, and accessing information.

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The storytime for reading picture books at a public library or a preschool is not simply a static phenomenon or cultural tradition, but also an exercise of visual communication. Through such communication, librarians or teachers can find means of communicating with young children and become sensitive to individual differences and learning needs.

A qualitative research approach to studying the response of young children proves rich to answer research questions and build a baseline for the future research. The sample size and the age range of the study are limited to one geographic area and a small group of the population. In the near future, I plan to enlarge the sample size for small group interviews and survey of parents and formally conduct a factor analysis of social factors that influence children's reading of picture books. The survey of parents regarding children's reading of picture books provides a simple description of each child's family background and picture book reading involvement. In addition, the results of this study need to be further validated by experts and practitioners for children's studies. The research results show potentials in enlarging the sample size and conducting in-depth interviews with older children such as 4-year-olds or 5-year-olds. In relation to the current investigation, future studies can be explored in areas related to the significance of understanding levels of meaning, a comparison of text-based and visual-based representations, and visual perception and learning, understanding individual differences of children's learning, and evaluation of digital libraries and information systems for young children.

Future Research

Understanding the Levels of Meaning

The goal of the study was to explore meaning as a construct and its level resided

on children from 3 to 5 years old. Information Science researchers recognized the significance of meaning in users' information seeking and retrieval(Yoon & Nilan, 1999) as well as in providing the subject access to images related to cataloging and indexing (Alexander & Meehleib, 2001; Shatford, 1986). Generally, a single image consists of various meanings. For images of a picture book, particularly a story picture book, meaning is embodied in a single image or more than one image because a story has been told like a film. To compare, retrieving information in an image is subject-oriented and children are interested in thematic relations of information. Shatford Layne points out it useful to locate art images by means of the subject access, which has an impact on a user access system. A subject access to an image includes depictions of various subjects like persons, objects, or activities, and representations of symbolic meanings and relationships. Though illustrations in picture books differ greatly from images presented in museums or online art collections, they are also creative works of art that are easier for young children to understand. Rising digital technology provides a different experience to readers. Future studies include expanding the current studies into different user groups and examining their levels of interpretation and visual literacy, or applying subject analysis to digitized art collection projects.

A Comparison of Texts and Images

A comparison of texts and images gives perspectives of distinct communication between visual and verbal meanings. Texts and images are complementary to each other in story telling and construction of meaning. Picture books provide both types of communications to their readers. In this study I used only one picture book that includes

text and illustrations, *Kitten's First Full Moon*. The dual coding theory is one of theories that have been applied in designing of teaching words with visual supports to children. In semiotic analysis, texts and images are treated as signs. In the future study, using the dual coding theory or the semiotic analysis, I will further explore the differences of two types of communication on picture books and other multimedia.

Visual Perception and Learning

The results of the study concluded a relevance of visual literacy for children. Participating children presented different levels of language skills as well as noticed details of images. Chandler (1997) articulates the roles of visual perception in which images are constructed; humans try to make meanings, and categorization is a top-down strategy to understand images. Viewing images and interpretation help to train children's cognitive skills as well as creative experience such as using imagination. A study of visual literacy is not only limited to children as visual learners but also others. Stripling (1995) compares learning to understanding, "a change in the mind of learner." Miller and Burton (1995) summarize that visual information is helpful to learning by associating facts and relationships (p.78). This study did not explore much of children's perceptual speed. Perceptual speed is an important concept in relation to visual perception. It is defined as speed through visual perception to compare and scan figures or symbols and carry out simple tasks. Allen (1992) emphasizes that learning is closely associated with a perceptual speed.

School Media Specialists and the Cognitive Style of Learners

This study investigated young children in 3 locations. All participating children also presented their individual differences and learning styles. The implications to young children's education are two-fold, to instructors including teachers and librarians, and learning styles or cognition. A school specialist plays a role as both a teacher and a librarian. The observations in different locations showed that all instructors including librarians, teachers, and parents want their children to read better and become an active participant of culture. Young children learn better and faster if they understand meaning. In literature review, Smith (2003) already finds that a teacher's instruction is one of the ways to help children to grasp a deeper level of meaning. Jörgensen (1999) considers users' cognitive processes one important research agenda about images because different groups of users may also complicate needs and levels of cataloging and indexing images. Previous school media studies suggest importance of school media specialists to understand cognition and learning of children they serve. A future research can focus on studying learning styles of groups of children. Humans desire to make meaning, let alone without children and meaning connects concepts and perception. When children are younger, they have difficulty in associating concepts, which influences how they understand and interpret objects, events, and environment. Both teachers and librarians can orient children to learn and interpret meaning.

Evaluation of Children's Digital Library and Information Retrieval System

Picture books serve as major sources of current children's digital library projects and information retrieval systems. Picture books contain communicative sign systems or a

multimedia way of conveying both visual and verbal meanings (Trifonas, 2002). The requirements of designing appropriate digital library or information retrieval systems include considerations of children's information needs and their visual literacy skills. Digital technology enables the images and stories of picture books to become more interactive and animated with children. The application of digital technology sees as a complement to children's reading and learning, especially with its multimedia features such as spoken words and moving images. Multimedia help to create an interactive environment for young children's learning (cited in Cooper, 2005, p.293). Cooper (2005) emphasizes that the digital design for children should comply with their developmental, physical, social, and emotional needs. She analyzes why children who are in the pre-operational stage have difficulty in managing electronic information. Because young children do not have much experience with digital technology and their domain of knowledge is limited. She recommends a digital design of using an interface that mimics real life and includes graphic representations (p.289). A child who learns to read graphics can be active in learning and make inferences of information. Cooper (2005) also reiterates criteria of examining children as alternative learning tools or experience applicable to the evaluation of children's digital environments (p.287). In order to carry out an evaluation of a children's digital project or information retrieval system, I can apply the criteria of examining picture books and levels of meaning perceived by children.

APPENDIX A

UNT HUMAN SUBJECT REVIEW INSTITUTIONAL REVIEW BOARD (IRB)

APPROVAL LETTER

Xinyu Yu
School of Library and Information Science
University of North Texas

Re: Human Subjects Application No. 05-114 Dear Ms. Yu:

As permitted by federal law and regulations governing the use of human subjects in research projects (45 CFR 46), the UNT Institutional Review Board has reviewed your proposed project titled "Exploring Children's Visual Perception and Picture Books in Relations to Levels of Meaning: A Pilot Study." The risks inherent in this research are minimal, and the potential benefits to the subject outweigh those risks. The submitted protocol and informed consent form are hereby approved for the use of human subjects in this study. **Federal policy** 45 **CFR** 46.109(e) stipulates **that IRB approval** is for one **year** only.

Enclosed is the consent document with stamped IRB approval. Please copy and use this form only for your study subjects.

It is your responsibility according to U.S. Department of Health and Human Services regulations to submit annual and terminal progress reports to the IRB for this project. Please mark your calendar accordingly. The IRB must also review this project prior to any modifications.

Please contact Shelia Bourns, Research Compliance Administrator, or Boyd Herndon, Director of Research Compliance, at extension 3940, if you wish to make changes or need additional information.

Sincerely,

Scott Simpkins, Ph.D. Chair

APPENDIX B

EXTENSION OF INSTITUTION REVIEW BOARD

May 17, 2006

Xinyu Yu
School of Library and Information Science
University of North Texas

RE: Human Subjects Application No. 05-114

Dear Ms. Yu:

The UNT Institutional Review Board has reviewed and approved the extension you requested to your project titled "Exploring Children's Visual Perception and Picture Books in Relations to Levels of Meaning: A Pilot Study." Your extension period is for one year, **May 23, 2006 through May 22, 2007. Federal policy 45 CFR 46.109(e) stipulates that IRB approval is for one year only.**

Enclosed is the consent document with stamped IRB approval. Please copy and **use this form only** for your study subjects.

The UNT IRB must re-review this project prior to any modifications you make in the approved project. It is your responsibility according to U.S. Department of Health and Human Services regulations to submit annual and terminal progress reports to the IRB for this project. Please mark your calendar accordingly.

Please contact Shelia Bourns, Research Compliance Administrator, ext. 3940 or Boyd Herndon, Director of Research Compliance, ext. 3941 if you need additional information.

Sincerely,

Shelia Bourns

For: Scott Simpkins, Ph.D.
Chair
Institutional Review Board

SS/sb

APPENDIX C

INFORMED CONSENT FORMS

Informed Consent Form-Teacher

You are being asked to participate in a pilot study conducted by Xinyu Yu, a doctoral student in the School of Library and Information Sciences at the University of North Texas (UNT).

This pilot study explores how images from picture books may influence 3-5 year old children's literacy as they understand and interpret meaning based on visual perception. The purpose of this study is to investigate how some visual perception factors affect children's meaning-making process of information in picture books. Children at ages 3-5 are potential users of picture books and largely rely on visual information. This study may help you become more aware of visual meaning in picture books produced by image, text, and stories, and make better use of picture books as learning tools. Your students may earlier acquire and construct knowledge for future formal school success.

This research study involves no foreseeable risks. We hope to understand information seeking behavior of children at ages of 3-5 and relationships between learning and perception through children's interpretation of meaning from picture books.

If you decide to participate in this study, please understand your participation is voluntary and you have the right to discontinue participation at any time without penalty or loss of any of your benefits or rights. The study personnel may discontinue your participation at any time.

Also, the confidentiality of your individual information will be maintained in publications or presentations regarding this study. I will be an observer in your classroom beginning in the summer session of 2005. Note taking and videotaping are the formats that will possibly be used in participant and unobtrusive observation of children in your

classroom. One-on-one and small group interviews with 4-5 participating children in your

class will be methods for data collection in this pilot study.

If you have concerns regarding this study, please contact Xinyu Yu at ▮▮▮▮▮▮▮▮

or Dr. Samantha Kelly Hastings, the faculty advisor, School of Library and Information

Sciences, UNT, at 940-565-4358.

This study has been approved by the UNT Institutional Review Board (IRB). If you

have any questions regarding your rights as a research participant, you may contact the

UNT IRB at (940)565-3940 or sbourns@unt.edu . A copy of this consent form will be

provided to you.

Signature of Principal Investigator_____   Date_____

If you choose to participate in this study, please sign and date this form.

I understand the purpose of this study and my rights as a research participant. I

voluntarily consent to participate in this study.

Signature of

Participant_____   Date_____

Informed Consent Form-Parents

You are being asked to participate in a pilot study conducted by Xinyu Yu, a doctoral student in the School of Library Information Science at the University of North Texas(UNT).

This pilot study explores how images from picture books may influence 3-5 year old children's literacy as they understand and interpret meaning based on visual perception. The purpose is to investigate how some visual perception factors affect children's meaning-making process of information in picture books. Children at ages 3-5 are potential users of picture books and largely rely on visual information. This study may raise your awareness of the benefits of reading picture books with your child. Your participation may be 10-15 minutes to complete a survey that provides a family background.

This research study involves no foreseeable risks. You are under no obligation to answer questions that may make you feel uncomfortable. We hope this project will help us better understand information seeking behavior of children at ages of 3-5 and relationships between learning and perception through children's interpretation of meaning from picture books.

If you decide to participate in this study, please understand your participation is voluntary and you have the right to discontinue participation at any time without penalty or loss of any of your benefits or rights. The study personnel may discontinue your participation at any time.

Also, the confidentiality of your individual information will be maintained in publications or presentations regarding this study. No personal information will be labeled or identified in data collection. A survey related to various aspects of parents'

interaction with children on picture book reading will be presented to parents in person. This survey may take a parent 10 to 15 minutes to complete.

If you have concerns regarding this study, please contact Xinyu Yu at ███████ or Dr. Samantha Kelly Hastings, the faculty advisor, School of Library and Information Sciences, UNT, at 940-565-4358.

This study has been approved by the UNT Institutional Review Board (IRB). If you have any questions regarding your rights as a research participant, you may contact the UNT IRB at (940)565-3940 or sbourns@unt.edu . A copy of this consent form will be provided to you.

If you choose to participate in this study, please sign and date this consent form.

I understand the purpose of this study and my rights as a research participant. I voluntarily consent to participate in this study.

Signature of

Participant_____

_____ Date_____

Informed Consent Form-Parents for Minor Children

You are being asked to participate in a pilot study conducted by Xinyu Yu, a doctoral student in the School of Library and Information Sciences at the University of North Texas (UNT).

This pilot study explores how images from picture books may influence 3- to 5-year- old children's literacy as they understand and interpret meaning based on visual perception. The purpose is to investigate how some visual perception factors affect how children's meaning-making process of information in picture books. Children between the ages of 3 to 5 are potential users of picture books and largely rely on visual information. Reading picture books can help your child earlier acquire and construct knowledge for future school success. Each child may participate in an interview of 15-20 minutes on an individual or a small group basis.

There are no foreseeable risks. You reserve all the rights to guard the welfare of your children during the study. We hope this project will benefit you by helping you to understand information seeking behavior of children at ages of 3-5 and relationships between learning and perception through children's interpretation of meaning from picture books.

If you decide to allow your child to participate in this research study, please understand his/her participation is voluntary and you have the right to discontinue his/her participation at any time without penalty or loss of any of your benefits or rights. The study personnel may discontinue your child's participation at any time.

Also, the confidentiality of your child's individual information will be maintained in publications or presentations regarding this study. Your child's identity will not be labeled

during data collection. One-on-one interview and small group interview are the major methods in the process of data collection. All interviews involve 15 to 20 minutes. The principal investigator will conduct all the interviews in person.

If you have concerns regarding this study, please contact Yu, Xinyu at ████████ ████ or Dr. Samantha Kelly Hastings, the faculty advisor, School of Library and Information Sciences, UNT, at 940-565-4358.

If you choose to allow your child to participate in this study, please sign and date this consent form.

I understand the purpose of this study and my child's rights as a research participant. I voluntarily consent to participate in this study.

Signature of parent or guardian: _____

Date:_____

This research study has been approved by the UNT Institutional Review Board (IRB). If you have any questions regarding your rights as a research participant, you may contact the UNT IRB at (940)565-3940 or sbourns@unt.edu .

A copy of this consent form will be provided to you.

APPENDIX D

INTERVIEW SCRIPTS

Individual Interview Script

Your name_____

Are you a boy___ or a girl___?

How old are you? _____

I am going to show you the cover of a book and let you guess the story of this book. Please look at the picture and tell me

Questions related to cover

What do you see in it? Where do you think happened? What are they doing? What time is it? What made you think this?

Now, please tell me

What is this book about?

What do these words say?

What is a title?

We are going to read the book together and see what is happening.

Illustrations

(Did you ever do this? Have you ever seen this?)

What do you see?

Where do you think happened?

When did this happen?

What are they doing?

What made you think this?

Group Interview Script

The rationale for group interviews with children is based on observations of picture book reading time, and it has a purpose to explore how children in a group share reading and interpret meaning.

In the group interview, divide A, B, C, D groups. Each group consists of 4-5 children. Group A and B will conduct at the same time; Group C and D will conduct at the same time. Each group will take 15-20 minutes to read a book and answer questions provided. The following table shows how exactly all groups are divided by cover, illustrations, and answer questions.

Group A (3-4 years old) Cover and answer questions	Group B (3-4 years old) Cover and illustrations and answer questions
Group C (4 1/2 -5 years old) Cover and answer questions	Group D (4 1/2-5 years old) Cover and illustrations and answer questions

Group A and Group C

I am going to show you the cover of a book and let you guess the story of this book. Please look at the picture and tell me

Questions related to cover

What do you see in it? Where do you think happened? What are they doing? What time is it? What made you think this?

Now, please tell me

What is this book about?

What do these words say?

What is a title?

Group B and D

I am going to show the illustrations of a book and ask you to tell me about the story of the book.

Questions related to cover

What do you see in it? Where do you think happened? What are they doing? What time is it? What made you think this?

Now, please tell me

Illustrations

(Did you ever do this? Have you ever seen this?)

What do you see?

Where do you think this happened?

What time is it? When did this happen?

What are they doing?

What made you think this?

APPENDIX E

SURVEY REGARDING PARENTS' GUIDANCE OF

CHILDREN'S PICTURE BOOKS READING

This survey is to explore factors that influence a child's picture book reading. Each child's family background may have strong influences on a child's reading and learning. Appreciate for taking an interest in this survey, and please provide the appropriate answer to each question.

<u>Demographic information</u>

1. You are related to this child as

Mother	Father	Legal Guardian
◔	◔	◔

2. Age group. To which of the following age groups do you belong?

20-29	30-39	40-49	50 or over
◔	◔	◔	◔

3. Ethnic group. To which one of the following ethnic group do you belong?

White	Black / American African	American Indian and Alaska Indian	Asian	Hispanic /Latino	Native Hawaiian and other Pacific Islander
◔	◔	◔	◔	◔	◔

4. Language. What is your child's primary spoken language at home?

English	English and other language	Not English, other language
◔	◔	◔

5. Education attainment. What was the highest level of education you completed?

GED/High School	Bachelor	Master	Doctorate
◔	◔	◔	◔

<u>Socio-economic status</u>

6. Employment. What is your profession?
Self   Retired Running a   Student In paid   Seeking

employed   home   employmentwork

7. What financial situation best describes your family?

Poor   Well off   Better off

Picture books reading

8. Do you read to your child?

Yes   No

If yes, how often do you read to your child in a week?

Once   Twice   Three times   More

9. Do you discuss with your child?

Yes   No

10. How many picture books approximately do you have for your child at home?

None   10-19   20-30   More

11. The criteria you may apply in selecting picture books for your child

	Very Important	Important	Somewhat Important	Not Important
Appealing of graphics/illustrations (color, shape, effect)	○	○	○	○
Model of narrative language	○	○	○	○
Story/meaning related to illustrations	○	○	○	○
Total effect of words and picture	○	○	○	○
Childlike qualities, simplicity and exuberance(reading level and interest)	○	○	○	○
Communication of information, feeling, and meaning of visual message	○	○	○	○
Convincing representation of symbols	○	○	○	○

Book cover/jackets/titles	○	○	○	○

12. What information source or activities maybe you consider relevant to helping your children read picture books

	Very Important	Important	Somewhat Important	Not Important
Parents and teacher working together	○	○	○	○
Teacher's attitude toward subjects and learning	○	○	○	○
Affectionate relations between parents and child interaction	○	○	○	○
Story services provided by public libraries	○	○	○	○

APPENDIX F

OBSERVATION CHECKLISTS

(a) Talkers: Ages 2 to 3

Storytime Early Literacy Observation Checklist Talkers: Ages 2 - 3	Library: Date/Time:
Targeted audience age: _____ Approx. # not in age group: _____ Approx. # in age group: _____ # adults attending: _____	

<table>
<tr>
<td>

Directions: Check off items that you observe during the storytime. Use back of page to add items observed that support the area addressed. Use right column for comments.

I. Print Motivation
  Y N   Presenter conveyed the idea that reading is fun.
  Y N   Presenter seemed to have fun.
  Y N   Children seemed to have fun.
  Y N   Adults in attendance seemed to have fun.

II. Language & Vocabulary
  _____ Presenter makes connections to concepts and vocabulary when reading.
  _____ Presenter exposes children to vocabulary/explains vocab. they may not be familiar with.
  _____ Presenter calls attention to the pictures in the story.
  _____ Presenter encourages children to join in repeated phrase(s).
  _____ Presenter encourages the children to respond through movement/music.
  _____ Presenter gives children opportunity to respond orally by asking simple questions
          about the story and/or pictures.

III. Phonological Awareness/Letter Knowledge
  _____ Presenter invites children to chime in rhymes/fingerplays/songs/ppoems and/or music.
  _____ Presenter uses books that highlight sound awareness (for ex. rhyming text, alliteration)
  _____ Presenter plays rhyming game with children.
  _____ Presenter uses nametags to help children understand letters.
  _____ Presenter points out/talks about letter(s).
  _____ Presenter talks about/points out letter sound(s).

IV. Print Awareness
  _____ Presenter calls attention to the cover of the book; points to and reads the title/author.
  _____ Presenter points to the print and occasionally runs finger along text while reading.
  _____ Presenter has rhymes/songs written out so adults can follow and children notice text.
  _____ Presenter comments on names on nametags.

V. Narrative Skills & Comprehension
  _____ Presenter uses puppets/props/flannel board to have children participate in telling
          the story; may have children retell story.
  _____ Presenter talks about the events of the story/theme; encourages children's comments.
  _____ Presenter helps children link the events and characters to what they know/experiences.
  _____ Presenter demonstrates/models dialogic reading.

VI. Parent/Caregiver Connection
In what ways did presenter call the parents' attention to ways that early literacy is supported
during the storytime?
  _____ Presenter explains to parents during storytime ways in which activities/techniques
          support early literacy.
  _____ Presenter notes the important role parents/caregivers play in early literacy development.
  _____ Presenter makes suggestions for parents/caregivers to do at home.
  _____ Presenter calls attention to early literacy handouts/displays for parents/caregivers.

</td>
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</table>

(b) Prereaders: Ages 4 to 5

Storytime Early Literacy Observation Checklist Pre-Readers: Ages 4 – 5	Library: Date/Time:	
Targeted audience age: _____ Approx. # not in age group: _____ Approx. # in age group: _____ # adults attending: _____		
Directions: Check off items each time you observe them during the storytime. Use back of page to add items observed that support the area addressed. Use right column for comments. **I. Print Motivation** Y N Presenter conveyed the idea that reading is fun. Y N Presenter seemed to have fun. Y N Children seemed to have fun. Y N NA Adults in attendance seemed to have fun. **II. Language & Vocabulary** _____ Presenter makes connections to concepts and vocabulary. _____ Presenter exposes children to vocabulary/explains vocab. they may not be familiar with. _____ Presenter calls attention to the pictures in the story. _____ Presenter encourages children to join in repeated phrase(s). _____ Presenter encourages the children to respond through movement/music. _____ Presenter gives children opportunity to respond orally by asking simple questions about the story and/or pictures. **III. Phonological Awareness** _____ Presenter invites children to chime in rhymes/fingerplays/songs/poems and/or music. _____ Presenter uses books that highlight sound awareness (for ex. rhyming text, alliteration) _____ Presenter plays rhyming game with children. _____ Presenter uses nametags to help children understand letter sounds. **IV. Letter Knowledge** _____ Presenter uses and enjoyable alphabet book/activity/song. _____ Presenter makes connections between letters in children's names and in alphabet book or book title. _____ Presenter talks about/points out letters and/or letter sounds. _____ Presenter uses nametags to help children understand letters. _____ Presenter provides opportunity for children to play with magnetic or foam letters. **V. Print Awareness** _____ Presenter calls attention to the cover of the book; points to and reads the title/author. _____ Presenter points to the print and occasionally runs finger along text while reading. _____ Presenter has rhymes/songs written out so adults can follow and children notice text. _____ Presenter comments on names on nametags. _____ Presenter provides opportunity for children to draw picture/"write" about story. **VI. Narrative Skills & Comprehension** _____ Presenter allows children to participate in retelling of story; may use puppets/props/ creative dramatics/flannel board. _____ Presenter talks about the events of the story/theme; encourages children's comments. _____ Presenter reads book without much interruption so children exposed to story structure. _____ Presenter helps children link the events and characters to what they know about. _____ Presenter encourages children to make predictions before/during reading of story. _____ Presenter demonstrates/models dialogic reading. **VII. Parent/Caregiver Connection** In what ways did presenter call the parents' attention to ways that early literacy is supported during the storytime? _____ Presenter explains to parents ways in which activities/techniques support early literacy. _____ Presenter notes the important role parents/caregivers play in early literacy development. _____ Presenter makes suggestions for parents/caregivers to do at home. _____ Presenter calls attention to early literacy handouts/displays for parents/caregivers.		

APPENDIX G

IMAGE ATTRIBUTES: THE RESEARCH FRAMEWORK

(Jorgensen, 2003, p.235)

Perceptual Attributes	Interpretive Attributes	Reactive Attributes

1.   OBJECTS
   Object
   Text
   Body part
   Clothing
2.   PEOPLE
People
3.   COLOR
Color
        Color value
4.   VISUAL
ELMENTS
Composition
        Focal Point
        Motion
        Orientation
        Perspective
        Shape
        Texture
        Visual Component
5.   SPATIAL
LOCATION
Location-General
Location-Specific
6.   DESCRIPTION
Description
    Number
	7. PEOPLE RELATED
	Relationship
	        Social Status
	        Emotion
	8. ART HISTORICAL
	INFORMATION
	Artist
	        Format
	8. ART HISTORICAL
	INFORMATION(continued)
	Medium
	        Representation
	        Style
	        Technique
	        Time Reference
	        Type
	9. ABSTRACT
	    Abstract
	    Atmosphere
	    State
	    Symbolic Aspect
	    Theme
	10. STORY
	    Activity
	    Category
	    Event
	    Setting
	    Time Aspect
	11. External Relation
	    Comparison
	    Similarity
	    Reference
		12. VIEWER
		RESPONSE (small
		attributes)
		Personal Reaction
		Conjecture
		Drawing
		Uncertainty

APPENDIX H

CODING SCHEME

Based on Jorgensen's (2003) definitions of attributes and class:

Category	Factors	Definition and Examples
Perceptual Attributes	**1.OBJECTS**	
	1.1 Object	Mention of a specific object or category of objects. Includes living things such as animals or plants ("flower," "dog").
	1.2 Text	Mention of specific text in picture, or the title of the book.
	1.3 Body Part (BoPt)	Any part of human or animal anatomy, either specific ("head," "hand," "knee") or more general ("torso"). Includes hairstyle (" beard," "bun")
	1.4 Clothing (Clot)	Specific items of clothing mentioned ("Shirt," "dress).
	2. PEOPLE (Peop)	Any mention of a human, either singular or plural, of any age or sex. Refers to specific persons depicted in picture and includes pronoun references ("he," "she," "his," "her).
	3. COLOR	
	3.1 Color (Colr)	Mention of a specific color("red," "blue," "reddish-orange")
	3.2 Color Value (ColV)	Description of a group of colors related by a similar color value, or other color qualities such as hue, tint. Includes general color modifiers such as "warm" or "dark" or "light."
	4. VISUAL ELEMENTS	
	4.1 Shape (Shap)	Specific shapes mentioned ("round," "triangular," "flat")
	4.2 Perspective (Pers)	Comments on quality or type of perspective. Also includes point of view or scale("very flat," "no depth," "top-down view")
	4.3 Motion (Motn)	Motion or perceived motion of inanimate objects or depiction of motion("swoops," "rushing", "splashes) or mention of sensation of motion as a result of some artistic device.
	4.4 Orientation (Ornt)	Direction of visual element ("diagnol," "left to right.")

(continues)

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Category	Factors		Definition and Examples
Perceptual Attributes *(continued)*	4. VISUAL ELEMENTS *(continued)*	4.5 Focal Point (FocP)	Area upon which attention is focused("the man with the straw hat") by the use of another visual element such as composition or color)
		4.6 Perspective (Pers)	Comments on quality or type of perspective. Also includes point of view and scale("very flat," "no depth," "top-down view")
		4.7 Composition (Comp)	Mention of method by which perceptual attention is focused on one area, or general compositional or spatial relationships ("warm-colored object comes to foreground").
		4.8 Textual (Texr)	Mention of textual quality of depicted object or of picture ("shiny," "quilted," "metallic").
		4.9 Visual component (VisC)	Mention of types of visual components or qualities such as line, lighting, contrast, or other qualities ("stripes," "reflection," "shadow").
		4.10 Location-General (LocG)	A generalized location within the two dimensional framework of the image indicated by such term as "foreground" or "background." Can also refer to a general section of the picture ("sky").
		4.11 Location-Specific (LocS)	Locations of objects or specific picture elements specified by prepositions ("on," "under," "above," "around) or specific locational words ("left," "right," "center").
	5. DESCRIPTION	5.1 Description (Desc)	Adjectives referring to objects or people depicted. Includes materials of which objects are composed("elderly" or "wooden")
		5.2 Number (Numb)	Number, quantity, size ("three," "lots," "large").

(continues)

Category	Factors	Definition and Examples
	6.1 Relationship (Reln)	Describes relationship experienced by humans in the picture or which seems to be portrayed ("intimate," "mother and child").
6. PEOPLE RELATED	6.2 Social Status (Socs)	Status of humans specifically commented upon, in addition to or in place of terms coded People; includes occupation, race, nationality ("upper class," "Japanese," "cab driver").
	6.3 Emotion	Refers to specific affective states or mental activity or states of being experienced or seeming to be experienced by the humans or animals in the picture ("sad," "confused," "concentrating," "afraid).
	7.1 Symbolic Aspect	Statement that visual item is symbolic of specific meaning ("man is so precise").
	7.2 Theme	Subject or topic of picture, ("transportation") Also specific discipline of study mentioned("psychology)
7. ABSTRACT	7.3 Atmosphere	Refers to general mood or atmosphere portrayed but not necessarily seeming to be personally experienced by humans in the picture("dreamlike" "funny" "lonely," "warm," "sad")
	7. 4 Abstract	Abstract terms used to describe the image as a whole ("unique," "strange," "exotic," "interesting).
8. STORY	8.1 Activity	Any physical action in which a human or animate being participates, either individually or as a group ("sitting," "running"). Includes positional information about the human body ("slouched") or conversational actions ("arguing).

(continues)

Interpretative Attributes

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Category	Factors		Definition and Examples
Interpretative Attributes *(continued)*	8. STORY *(continued)*	8.2 Event (Evnt)	Group Activity, performance, social gathering (picnic, circus, protest)
		8.3 Setting (Sett)	General external setting of a scene or activity
		8.4 Time Aspect (TimA)	Duration of activity or reference to time component ("during," "while"). Also time of day, seasons ("sunset," "summer").
	9. EXTERNAL RELATION	9.1 Reference (Refn)	Reference to external literary or entertainment figure or social event or work by way of comparison ("Curious George," "Dracula"). Also references to external proper noun objects, institutions, or locations ("Coca-Cola").
Reactive Attributes	10. VIEWER RESPONSE	10.1 Personal Reaction	Comments about the book or the picture such as "this is a good book"
		10.2 Nonverbal*	Nonverbal gestures that express contents of pictures.
		10.3 Cognitive State*	Verbal expression of cognitive state such as "don't know, the desire to know, not sure."

*Kwaśnik(1991) and Chiu(2005)

APPENDIX I

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February 20, 2006
Xinyu Yu

████████████████

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New York, NY 10022
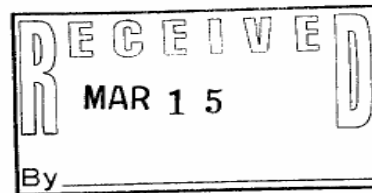
Dear Permissions Department,

I, Xinyu Yu, a doctoral candidate at the School of Library and Information Sciences, am writing to ask permission to use a few illustrations in *Kitten's First Full Moon* by Kevin Henkes, which was published by Greenwillow Books, 2004. I would like to scan these illustrations and if possible include them in my dissertation. I am currently completing my dissertation *An Exploratory Study of Visual Perception in Relation to Levels of Meaning for Children*, in which I used your book to collect data on how young children engage with reading picture books. My research suggests that picture books help young children acquire early literacy and help them later succeed in formal schooling.

My use of the illustrations is only for educational purposes and the five images I seek permission to use are hardcover page, title page, story page 2 ("it was kitten's first full moon …"), page 8("But kitten only tumbled"), page 19 ("Then in the pond kitten saw another bowl of milk"), and last page("Lucky kitten")

I am looking forward to hearing from you soon.

Sincerely,

Xinyu Yu

Xinyu Yu

PERMISSION GRANTED FREE OF CHARGE
provided ...
and ...
as ...

Jeanne McLellan
9/14/06
for use in a dissertation ...

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February 8, 2007

Xinyu Yu

████████████████████

Dear Xinyu Yu:

This is in reply to your e-mailed request of today.
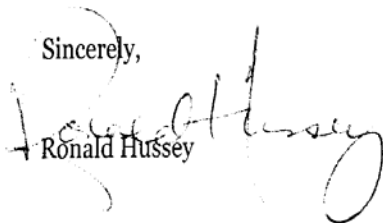
We are pleased to grant you permission for use of material, from the book, THE RED BOOK by Barbara Lehman for use in your dissertation on the subject of children reading picture books and their interpretation of its meaning. Our requirement is that you cite the source as a footnote or in your bibliography.

The permission applies to all copies of your dissertation made to meet degree requirements of the University of North Texas and to University Microfilms editions, which produces copies on demand.

Please re-apply to this department if your dissertation is later accepted for publication and you wish to retain our material.

Best wishes for the successful completion of your work.

Sincerely,

Ronald Hussey

APPENDIX J

DESCRIPTIVE DATA RESULTS OF SURVEY

Relationship

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	mother	29	93.5	93.5	96.8
	legal guardian	1	3.2	3.2	100.0
	Total	31	100.0	100.0	

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	20-29	7	22.6	22.6	25.8
	30-39	17	54.8	54.8	80.6
	40-49	6	19.4	19.4	100.0
	Total	31	100.0	100.0	

Ethnic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	white	20	64.5	64.5	67.7
	black	4	12.9	12.9	80.6
	Asian	5	16.1	16.1	96.8
	Hispanic	1	3.2	3.2	100.0
	Total	31	100.0	100.0	

Language

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	English	23	74.2	74.2	77.4
	English and other language	5	16.1	16.1	93.5
	Not English, other language	2	6.5	6.5	100.0
	Total	31	100.0	100.0	

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	GED/High School	9	29.0	29.0	32.3
	Bachelor	16	51.6	51.6	83.9
	Master	3	9.7	9.7	93.5
	Doctorate	2	6.5	6.5	100.0
	Total	31	100.0	100.0	

Employment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	self employed	5	16.1	16.1	19.4
	retired	1	3.2	3.2	22.6
	running a home	13	41.9	41.9	64.5
	in paid employment	11	35.5	35.5	100.0
	Total	31	100.0	100.0	

Financial

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	poor	2	6.5	6.5	9.7
	well off	18	58.1	58.1	67.7
	better off	10	32.3	32.3	100.0
	Total	31	100.0	100.0	

Reading

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	yes	30	96.8	96.8	100.0
	Total	31	100.0	100.0	

Discussion

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	yes	30	96.8	96.8	100.0
	Total	31	100.0	100.0	

Appealing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	very important	15	48.4	48.4	51.6
	important	12	38.7	38.7	90.3
	not important	3	9.7	9.7	100.0
	Total	31	100.0	100.0	

Narration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	very important	20	64.5	64.5	67.7
	important	6	19.4	19.4	87.1
	somehow important	1	3.2	3.2	90.3
	not important	3	9.7	9.7	100.0
	Total	31	100.0	100.0	

Story

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	very important	21	67.7	67.7	71.0
	important	8	25.8	25.8	96.8
	somehow important	1	3.2	3.2	100.0
	Total	31	100.0	100.0	

Words

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	very important	21	67.7	67.7	71.0
	important	6	19.4	19.4	90.3
	not important	3	9.7	9.7	100.0
	Total	31	100.0	100.0	

Childlike

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	very important	21	67.7	67.7	71.0
	important	7	22.6	22.6	93.5
	somehow important	1	3.2	3.2	96.8
	not important	1	3.2	3.2	100.0
	Total	31	100.0	100.0	

Communication

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	very important	19	61.3	61.3	64.5
	important	10	32.3	32.3	96.8
	somehow important	1	3.2	3.2	100.0
	Total	31	100.0	100.0	

Representation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	very important	13	41.9	41.9	45.2
	important	9	29.0	29.0	74.2
	somehow important	6	19.4	19.4	93.5
	not important	2	6.5	6.5	100.0
	Total	31	100.0	100.0	

Cover

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	very important	8	25.8	25.8	29.0
	important	9	29.0	29.0	58.1
	somehow important	10	32.3	32.3	90.3
	not important	3	9.7	9.7	100.0
	Total	31	100.0	100.0	

Work together

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	very important	25	80.6	80.6	83.9
	important	5	16.1	16.1	100.0
	Total	31	100.0	100.0	

Teacher attitude

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	very important	26	83.9	83.9	87.1
	important	4	12.9	12.9	100.0
	Total	31	100.0	100.0	

Affective relation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	very important	28	90.3	90.3	93.5
	important	2	6.5	6.5	100.0
	Total	31	100.0	100.0	

Story services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	3.2	3.2	3.2
	very important	12	38.7	38.7	41.9
	important	10	32.3	32.3	74.2
	somehow important	7	22.6	22.6	96.8
	not important	1	3.2	3.2	100.0
	Total	31	100.0	100.0	

Child age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3.0	4	12.9	12.9	12.9
	3.5	2	6.5	6.5	19.4
	4.0	4	12.9	12.9	32.3
	4.5	10	32.3	32.3	64.5
	5.0	11	35.5	35.5	100.0
	Total	31	100.0	100.0	

Child   group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	10	32.3	32.3	32.3
	1	21	67.7	67.7	100.0
	Total	31	100.0	100.0	

Child performance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	poor	1	3.2	3.2	3.2
	fair	4	12.9	12.9	16.1
	good	10	32.3	32.3	48.4
	very good	12	38.7	38.7	87.1
	excellent	4	12.9	12.9	100.0
	Total	31	100.0	100.0	

Location

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	CDL	13	41.9	41.9	41.9
	public library	14	45.2	45.2	87.1
	home	4	12.9	12.9	100.0
	Total	31	100.0	100.0	

APPENDIX K

FACTOR ANALYSIS PROCEDURES AND RESULTS

```
FACTOR
 /VARIABLES Relationship Age Ethnic Language Education Employment Financial
 Frequency Amount Appealing Narration story words childlike communication
 representation cover worktogether teacherattitude affectiverelation
 storyservices childage childgender childgroup childperformance location
/MISSING LISTWISE /ANALYSIS Relationship Age Ethnic Language Education
 Employment Financial Frequency Amount Appealing Narration story words
 childlike communication representation cover worktogether teacherattitude
 affectiverelation storyservices childage childgender childgroup
 childperformance location
 /PRINT INITIAL CORRELATION KMO EXTRACTION ROTATION
 /FORMAT BLANK(.5)
 /CRITERIA MINEIGEN(1) ITERATE(25)
 /EXTRACTION PC
 /CRITERIA ITERATE(25)
 /ROTATION VARIMAX
 /METHOD=CORRELATION .
```

Correlation Matrix

Correlation	Frequency	Appealing	Narration	Story
Frequency	1	0.280505746	-0.005051729	0.376123333
Appealing	0.280505746	1	-0.257941222	-0.048069813
Narration	-0.005051729	-0.257941222	1	0.247765237
story	0.376123333	-0.048069813	0.247765237	1
words	-0.065459382	-0.110724714	0.166399728	0.409041036
childlike	0.059966694	-0.097417231	0.014305288	0.210597583
communication	0.459006987	-0.063249931	0.182891088	0.727123547
representation	0.205566086	-0.166910688	0.486558484	0.590172746
cover	0.314900207	-0.062721215	0.38087899	0.230553705
worktogether	0.088235294	-0.12966775	0.386457295	0.376123333
teacherattitude	0.120601501	0.005711023	0.207143688	0.304396442
affectiverelation	0.215896395	0.039569369	0.1579423	0.307931431
storyservices	0.220704596	-0.179202497	0.486562485	0.451758185
Relationship	0.16687026	0.030583887	0.533421156	0.098794868
Age	0.458299695	-0.144018765	0.248884647	0.293824787
Ethnic	0.069861439	0.04888863	0.197488754	-0.235476743
Language	0.243222928	0.435878822	0.205454153	-0.11878321
Education	0.309839189	-0.175192389	0.267308621	0.266437951
Employment	-0.001624139	0.018996836	0.235023889	0.024782147
Financial	0.135887723	0.405398355	0.233399119	0.101334599
Amount	0.282268208	-0.449042574	0.375911531	0.39235874
childage	0.293511288	-0.311947452	0.089010711	0.19060636
childgender	0.029828974	-0.210232441	0.382119404	0.328719129
childgroup	0.375771848	0.328571429	-0.129538764	-0.011536755
childperformance	0.093558521	-0.142192423	-0.108577697	0.053281464
location	-0.432170453	0.344727066	-0.210523644	-0.195270372

Correlation Matrix (continued)

Childlike quality	Communication	Representation	Cover	Relationship
0.059966694	0.459006987	0.205566086	0.314900207	0.16687026
-0.097417231	-0.063249931	-0.166910688	-0.062721215	0.030583887
0.014305288	0.182891088	0.486558484	0.38087899	0.533421156
0.210597583	0.727123547	0.590172746	0.230553705	0.098794868
0.737012426	0.515389025	0.631589444	0.24181927	0.046767582
1	0.515235199	0.430196398	0.163368914	0.070005426
0.515235199	1	0.752507321	0.412322198	0.086894125
0.430196398	0.752507321	1	0.602373021	0.339775003
0.163368914	0.412322198	0.602373021	1	0.298021611
0.369794616	0.459006987	0.438708111	0.240381837	0.16687026
0.55001821	0.682709241	0.543728009	0.274951155	0.186733072
0.371348782	0.460936094	0.333959835	0.284283367	0.252038555
0.367367805	0.74926932	0.75361482	0.646733597	0.189468243
0.070005426	0.086894125	0.339775003	0.298021611	1
0.24047378	0.371925154	0.334620941	0.494374065	0.44965402
-0.027476509	-0.034105174	-0.139768166	0.042823224	0.018350235
0.151298982	0.187799624	0.120647843	0.174344811	0.096353304
0.420181457	0.459603074	0.426421457	0.387977811	0.011946314
0.261232961	0.076496779	0.177886409	0.00929184	-0.066550575
0.180249121	0.14580414	0.092963613	-0.007306631	0.210401461
0.242111652	0.434245235	0.511690692	0.587609456	0.307314475
0.070648064	0.247600372	0.085997148	0.179914696	0.07709548
0.264668003	0.328518744	0.411031709	-0.044695141	0.250721974
-0.134885396	0.063249931	-0.182699537	-0.138419233	-0.116774842
0.223404929	0.222196328	-0.024785404	-0.022732902	-0.037194075
0.203624406	-0.222112296	-0.213586467	-0.425932303	0.034341141

Correlation Matrix (continued)

Work together	Teacher attitude	Affective relation	Story services	Age
0.088235294	0.120601501	0.215896395	0.220704596	0.458299695
-0.12966775	0.005711023	0.039569369	-0.179202497	-0.144018765
0.386457295	0.207143688	0.1579423	0.486562485	0.248884647
0.376123333	0.304396442	0.307931431	0.451758185	0.293824787
0.259219155	0.582032383	0.281183307	0.492402403	0.202500101
0.369794616	0.55001821	0.371348782	0.367367805	0.24047378
0.459006987	0.682709241	0.460936094	0.74926932	0.371925154
0.438708111	0.543728009	0.333959835	0.75361482	0.334620941
0.240381837	0.274951155	0.284283367	0.646733597	0.494374065
1	0.51414324	0.215896395	0.471015906	0.14490358
0.51414324	1	0.509074883	0.673803934	0.258176697
0.215896395	0.509074883	1	0.35855365	0.155747155
0.471015906	0.673803934	0.35855365	1	0.263665445
0.16687026	0.186733072	0.252038555	0.189468243	0.44965402
0.14490358	0.258176697	0.155747155	0.263665445	1
-0.110613945	0.121453784	0.269070288	0.180250928	0.142299893
-0.003987261	0.296873752	0.460706299	0.29920233	0.054820817
0.397958592	0.322067707	0.135241021	0.49814419	0.586235253
0.401162252	0.338242713	0.187660375	0.190986503	0.022330268
0.468455044	0.409025629	0.121525434	0.049086755	0.354407013
0.409084359	0.399493288	0.311409207	0.549373145	0.659706639
-0.047695584	0.176174426	0.022442844	0.222431938	0.427719268
0.492178066	0.439894919	0.114885847	0.300266885	0.119617833
0.21170245	0.171330696	0.071944308	-0.046011452	-0.09095922
-0.063215217	0.223739937	0.1649884	0.152722141	0.330275268
-0.094423796	-0.137158961	-0.10860788	-0.383854411	-0.314155479

(*continued*)

Correlation Matrix (continued)

Ethnic	Language	Education	Employment	Financial	Amount
0.069861439	0.243222928	0.309839189	-0.001624139	0.135887723	0.282268208
0.04888863	0.435878822	-0.175192389	0.018996836	0.405398355	-0.449042574
0.197488754	0.205454153	0.267308621	0.235023889	0.233399119	0.375911531
-0.235476743	-0.11878321	0.266437951	0.024782147	0.101334599	0.39235874
-0.158940167	-0.033721672	0.34542464	0.300021254	0.211704008	0.326857266
-0.027476509	0.151298982	0.420181457	0.261232961	0.180249121	0.242111652
-0.034105174	0.187799624	0.459603074	0.076496779	0.14580414	0.434245235
-0.139768166	0.120647843	0.426421457	0.177886409	0.092963613	0.511690692
0.042823224	0.174344811	0.387977811	0.00929184	-0.007306631	0.587609456
-0.110613945	-0.003987261	0.397958592	0.401162252	0.468455044	0.409084359
0.121453784	0.296873752	0.322067707	0.338242713	0.409025629	0.399493288
0.269070288	0.460706299	0.135241021	0.187660375	0.121525434	0.311409207
0.180250928	0.29920233	0.49814419	0.190986503	0.049086755	0.549373145
0.018350235	0.096353304	0.011946314	-0.066550575	0.210401461	0.307314475
0.142299893	0.054820817	0.586235253	0.022330268	0.354407013	0.659706639
1	0.706371078	0.402300977	0.188067681	0.136848033	0.177469029
0.706371078	1	0.360308954	0.236692865	0.334502454	-0.004159372
0.402300977	0.360308954	1	0.536046645	0.416459178	0.629623722
0.188067681	0.236692865	0.536046645	1	0.503545627	0.278420896
0.136848033	0.334502454	0.416459178	0.503545627	1	0.141753332
0.177469029	-0.004159372	0.629623722	0.278420896	0.141753332	1
0.138587562	-0.103206373	0.325334155	-0.057740655	-0.008921551	0.286406564
-0.250935692	-0.064027163	0.134534559	0.271784247	0.308271075	0.191885359
0.059364765	0.175786521	-0.023017978	0.071603459	0.292787701	-0.064411845
0.208547784	0.179967682	0.333582335	0.138235264	0.156793243	0.206624249
-0.022763847	0.024616806	-0.335197097	-0.176478908	0.119219533	-0.489972421

(*continued*)

Correlation Matrix (continued)

Child age	Child gender	Child group	Child performance	Location
0.293511288	0.029828974	0.375771848	0.093558521	-0.432170453
-0.311947452	-0.210232441	0.328571429	-0.142192423	0.344727066
0.089010711	0.382119404	-0.129538764	-0.108577697	-0.210523644
0.19060636	0.328719129	-0.011536755	0.053281464	-0.195270372
0.153512411	0.38947586	-0.254431257	0.128312006	0.053346124
0.070648064	0.264668003	-0.134885396	0.223404929	0.203624406
0.247600372	0.328518744	0.063249931	0.222196328	-0.222112296
0.085997148	0.411031709	-0.182699537	-0.024785404	-0.213586467
0.179914696	-0.044695141	-0.138419233	-0.022732902	-0.425932303
-0.047695584	0.492178066	0.21170245	-0.063215217	-0.094423796
0.176174426	0.439894919	0.171330696	0.223739937	-0.137158961
0.022442844	0.114885847	0.071944308	0.1649884	-0.10860788
0.222431938	0.300266885	-0.046011452	0.152722141	-0.383854411
0.07709548	0.250721974	-0.116774842	-0.037194075	0.034341141
0.427719268	0.119617833	-0.09095922	0.330275268	-0.314155479
0.138587562	-0.250935692	0.059364765	0.208547784	-0.022763847
-0.103206373	-0.064027163	0.175786521	0.179967682	0.024616806
0.325334155	0.134534559	-0.023017978	0.333582335	-0.335197097
-0.057740655	0.271784247	0.071603459	0.138235264	-0.176478908
-0.008921551	0.308271075	0.292787701	0.156793243	0.119219533
0.286406564	0.191885359	-0.064411845	0.206624249	-0.489972421
1	0.195349072	0.209615484	0.319367262	-0.513050433
0.195349072	1	0.07156849	0.111127348	-0.184160015
0.209615484	0.07156849	1	-0.175181066	-0.294079961
0.319367262	0.111127348	-0.175181066	1	-0.093667711
-0.513050433	-0.184160015	-0.294079961	-0.093667711	1

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.264
Bartlett's Test of Sphericity	Approx. Chi-Square	662.898
	df	325
	Sig.	.000

Communalities

|	Initial	Extraction
Appealing	1.000	.869
Narration	1.000	.820
story	1.000	.635
words	1.000	.777
childlike	1.000	.741
communication	1.000	.894
representation	1.000	.864
cover	1.000	.778
worktogether	1.000	.731
teacherattitude	1.000	.783
affectiverelation	1.000	.616
storyservices	1.000	.853
childage	1.000	.734
childgender	1.000	.785
childgroup	1.000	.823
childperformance	1.000	.678
location	1.000	.849
Relationship	1.000	.877
Age	1.000	.911
Ethnic	1.000	.842
Language	1.000	.901
Education	1.000	.909
Employment	1.000	.756
Frequency	1.000	.800
Amount	1.000	.777
Financial	1.000	.897

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings(a)
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	7.444	28.632	28.632	7.444	28.632	28.632	6.147
2	2.739	10.533	39.165	2.739	10.533	39.165	4.263
3	2.576	9.910	49.074	2.576	9.910	49.074	3.535
4	1.946	7.483	56.557	1.946	7.483	56.557	2.322
5	1.833	7.049	63.607	1.833	7.049	63.607	2.570
6	1.791	6.889	70.496	1.791	6.889	70.496	2.394
7	1.417	5.448	75.944	1.417	5.448	75.944	2.964
8	1.156	4.445	80.389	1.156	4.445	80.389	1.932
9	.816	3.139	83.528				
10	.783	3.011	86.539				
11	.681	2.618	89.157				
12	.624	2.399	91.555				
13	.508	1.955	93.510				
14	.348	1.337	94.847				
15	.309	1.190	96.038				
16	.222	.854	96.892				
17	.217	.834	97.726				
18	.206	.793	98.519				
19	.124	.477	98.996				
20	.096	.369	99.365				
21	.063	.244	99.609				
22	.057	.219	99.828				
23	.021	.082	99.910				
24	.018	.068	99.978				
25	.004	.015	99.993				
26	.002	.007	100.000				

Extraction Method: Principal Component Analysis.
a When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Scree Plot
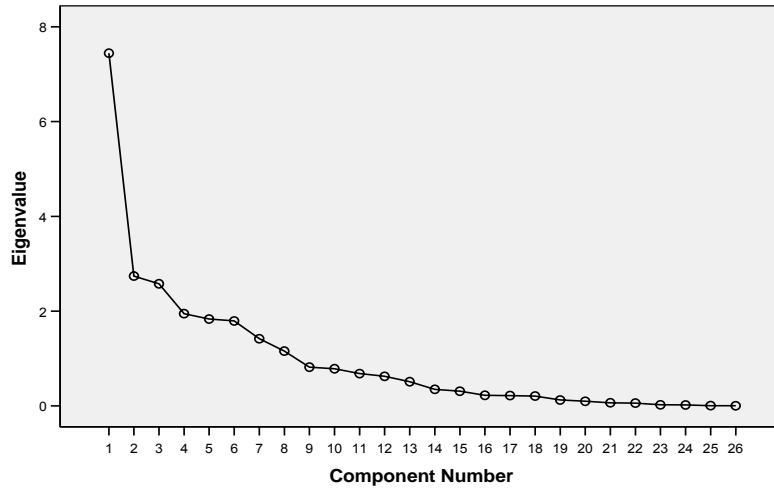
Component Matrix (a)

	Component							
	1	2	3	4	5	6	7	8
Frequency				.530				
Appealing		.648						
Narration	.506					-.521		
story	.591							
words	.615							
childlike	.556							
communication	.809							
representation	.803							
cover	.606							
Work together	.600							
Teacher attitude	.740							
Affective relation	.507							
Story services	.821							
Relationship					.575		.501	
Age	.597						.578	
Ethnic		.643						
Language		.807						
Education	.702							
Employment								
Financial		.572						
Amount	.742							
Child age			-.529					
Child gender								
Child group				.682				
Child performance								
location			.649					

Extraction Method: Principal Component Analysis.
a 8 components extracted.

Rotated Component Matrix (a)

|	Component							
	1	2	3	4	5	6	7	8
Frequency		.524				.612		
Appealing					.849			
Narration							.692	
story	.629							
words	.745							
childlike	.685							
communication	.865							
representation	.756							
cover		.746						
worktogether			.616					
teacherattitude	.762							
affectiverelation	.572							
storyservices	.711							
Relationship							.894	
Age		.695						.527
Ethnic				.867				
Language				.874				
Education		.601	.565					
Employment			.827					
Financial			.734					
Amount		.648						
childage								.621
childgender								
childgroup						.853		
childperformance								.773
location					.581	-.562		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 9 iterations.

Component Transformation Matrix

Component	1	2	3	4	5	6	7	8
1	.730	.460	.331	.128	-.157	.097	.256	.173
2	-.147	-.088	.350	.708	.517	.259	-.067	.085
3	.447	-.577	.313	-.197	.323	-.385	-.012	-.279
4	.151	-.037	-.107	-.397	.303	.799	.039	-.274
5	-.010	.217	-.358	.275	.173	-.201	.556	-.608
6	.423	.077	-.653	.181	.291	-.105	-.484	.161
7	-.140	.164	-.055	-.351	.571	-.199	.413	.540
8	.153	-.605	-.319	.233	-.267	.214	.464	.350

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Component Plot in Rotated Space
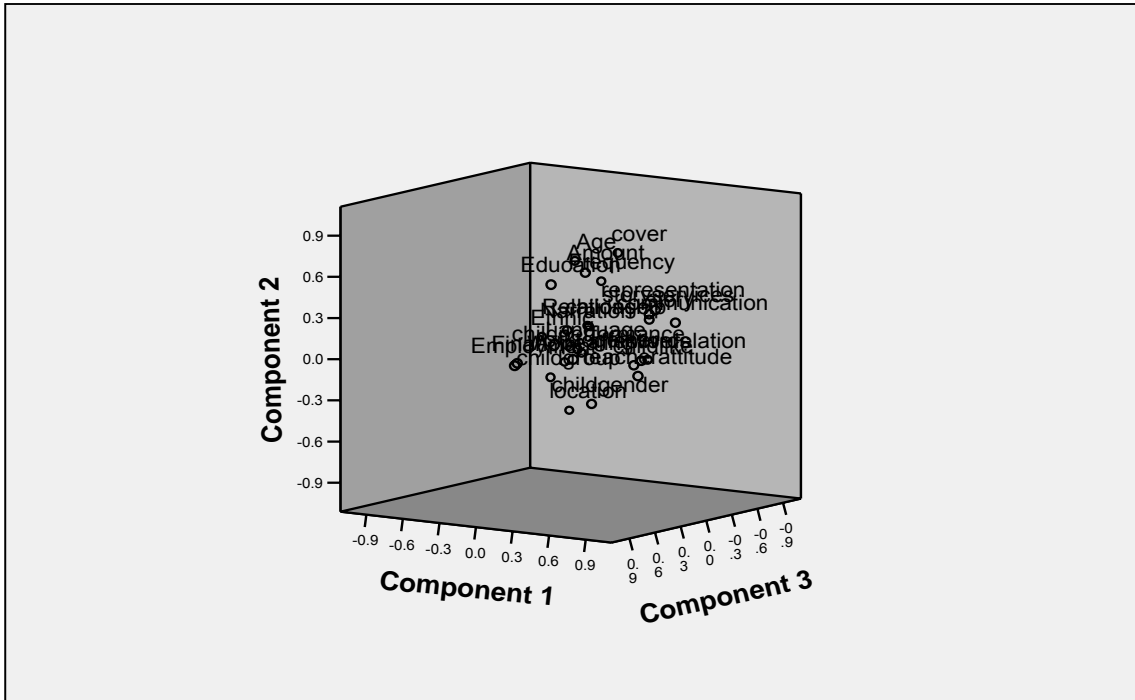
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