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## Objective Measuring Techniques Applied to Illustrations in Children's Picture Storybooks

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## Objective Measuring Techniques Applied to Illustrations in Children's Picture Storybooks

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OBJECTIVE MEASURING TECHNIQUES APPLIED TO  
ILLUSTRATIONS IN CHILDREN'S PICTURE STORYBOOKS

A Research Paper  
Presented to the  
Faculty of the Library Science Department

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In Partial Fulfillment  
of the Requirements for the Degree  
Master of Arts

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Diane Brown Harrington

December 1980

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Date *December 2, 1980*

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## Chapter 1

### INTRODUCTION

Literature focuses on all of human life with its thoughts, feelings and insights. It helps the child to gain knowledge of and to cope with the problems of everyday life. Each child develops new ways of seeing and sensing the world around him through books. The most precious benefit of good literature for each child is a sense of delight and involvement.

Literature for many children may begin with picture storybooks. These first books are important because they develop a child's taste in literature. A variety of picture storybooks introduced to a child during his preschool and early years may insure that he will read in many different areas as he matures. Since early experiences with books are an important influence upon a child's later reading enjoyment, it is important to identify the elements which contribute to the best picture storybooks.

Objective measuring techniques may be useful in identifying those aspects of illustrations in picture storybooks which make them an important part of a child's experience. Good picture storybooks contribute to a young child's transition from comprehension of oral language to the use of symbols in reading. Picture storybooks extend the imagin-

ative powers of childhood in a way to allow readers to cope with everyday situations. They develop the child's imagination and help her/him to observe different aspects of nature and/or different people's experiences and ideas. By relating these new ideas or experiences to her/his own life she/he gains new perspectives.

The stories and illustrations in picture books can make a strong positive contribution to a child's early education. When well conceived and well designed, such books reveal the delights of verbal and pictorial expression, suggest some nuances of human character, and display many of the various wonders of nature.<sup>1</sup>

It is the illustrations that matter to the child. The child uses the pictures to explain the words printed on the page. The illustrations need to communicate the idea of the book to the child. Adults may overlook the importance of illustrations in choosing picture storybooks for the child. As one way of establishing the importance of illustration to the child, this researcher will include in a review of the literature children's preferences and interests in illustration, reviewer's methods of identifying good storybooks, and information in literature on what constitutes good illustrations for children's books.

From this researcher's own teaching observations as well as those of other teachers and media specialists some ideas were formulated concerning what elements children prefer in picture storybooks. Children appear to prefer

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<sup>1</sup>Donnarae MacCann and Olga Richard, The Child's First Books (New York: H. W. Wilson Company, 1973), p. 1.

stories about everyday activities. They appear to favor animal stories, nature stories, fairy tales and humorous tales. Children appear to prefer stories that they can "read" themselves. Depending on the age of the child, this "reading" may be accomplished through the illustrations in one of two ways. One way is that the essence of the story is told through the illustrations so once the story has been read to the child she/he can then "read" the story by looking at the pictures. The second way the child can "read" the story is if the primary character is in most of the illustration thus expanding the story for the child. Another element children seem to look for in a picture storybook is illustrations with many objects or actions that can be discussed. Children enjoy sharing a book with a friend and the more discussion an illustration elicits the more the children appear to enjoy the book. The amount of space devoted to the illustrations must be adequate to hold the children's interest in the storyline.

Most authorities agree that there is value in picture storybooks. The methods of measuring a picture storybooks's worth appear to be more subjective than objective. Objective measuring techniques which determine what triggers children's interaction with the illustrations in picture storybooks need to be found or formulated. The preferences of children need to be considered in formulating these techniques as the children are the ones for whom the books are written. Objective measuring techniques need to be developed to discern if



the essence of the story is told only by looking at the pictures; if the primary character is in most of the illustrations; if enough page space is devoted to the illustration and if the illustrations stimulate the child to communicate with a friend about the book.

This study was designed to explore these elements in relation to results of studies done on children's preferences and interests in pictures. The intent of this study was to see if objective measuring techniques could be devised.

### Statement of the Problem

Using children's preferences and interests in illustration, what objective measuring techniques can be found, developed and applied to the illustrations of children's picture storybooks? Are these techniques effective when applied? Is it possible to learn more about the quality of the total picture storybook experience by applying objective measuring techniques?

### Hypotheses

The following hypotheses were proposed to test the effectiveness of the objective measuring techniques:

H<sub>1</sub>: The illustrations in sixty percent of the books will be in the areas of high and medium high language stimulation value using the Picture Potency Formula.

H<sub>2</sub>: For each of the books, the essence of the story can be told fifty percent of the time by a child looking at the illustrations. Either the child must mention the

character(s) and action(s) on fifty percent of the pages as she/he tells the story, or the child's comments must follow the written story on fifty percent of the pages.

H<sub>3</sub>: In each book the primary character(s) will be involved in seventy-five percent of the illustrations.

H<sub>4</sub>: Each page in the book will have twenty-five percent or more of the page space devoted to illustrations.

### Significance of the Problem

This researcher has found little objective evaluation of picture storybooks which attempted to measure the presence of elements in picture storybook illustrations for which children have expressed preferences. Because every person comes from a different cultural environment, the books in which one is interested are those which add to one's own home and neighborhood experience. For this reason, when choosing books the media specialists must be guided by interests and preferences of the children involved. The testing of objective measuring techniques as they may be applied to the pictures in storybooks according to children's preferences of illustration would be of practical assistance in identifying the best picture storybooks.

### Assumptions

A first assumption is that children have an interest in reading and looking at books. A second assumption is that children find illustrations in picture storybooks important. A third assumption is that aspects contributing

to this interest and importance can be measured. A final assumption is that a study of only one artist, using these objective measuring techniques, will be adequate for a preliminary study to determine the worth of studying picture storybooks.

### Limitations of the Study

This study was limited to fiction picture storybooks. It studied the work of two illustrators who work as one team to test the objective measuring techniques. Only the seven Bright and Early Books and the seven Beginning-to-Read Books written and illustrated by Stan and Jan Berenstain were used. This study dealt with the illustrations and not with the text of the chosen books.

### Definitions

For the purpose of this study the following definitions were used:

1) Picture Storybook: A book in which the illustrator must "consider plot and character development rather than just a unifying idea or concept of the picture book itself. Both the author and artist must sustain the children's interest, carry the storyline and portray subtle changes in expression and mood".<sup>2</sup>

2) Picture Potency Formula: A quasi-objective form-

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<sup>2</sup>Charlotte S. Huck, Children's Literature in the Elementary School (Third Ed. New York: Hold, Rinehart and Winston, 1976), pp. 107-108.

ula to predict the language stimulation value of the picture books for children between the ages of five and eight.<sup>3</sup>

3) Primary Character(s): "The chief figure(s) around which other things are set."<sup>4</sup>

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<sup>3</sup>Anthony V. Manzo and Alice Legenza, "A Method for Assessing the Language Stimulation Value of Pictures," Language Arts, November-December 1975, p. 1086.

<sup>4</sup>Ibid., p. 1086.

## Chapter 2

### REVIEW OF RELATED LITERATURE

The review of the literature for this study concentrated on three areas. These areas were: 1) studies done on children's preferences and interests in illustration; 2) the basic concepts of illustration in the children's picture storybooks; and 3) reviews of the Berenstain Bear books.

#### Children's Preferences and Interests

Studies on children's preferences and interests have been on-going since the 1920's. Unfortunately, little research published between 1955-1966 was found and almost none since 1966.

The qualities children preferred in pictures, as revealed in a study done by Dunn in 1921 were: surprise, action, repetition, and liveliness. For primary grade children humor and nonsense ranked high on their preferences.<sup>5</sup>

Whipple's study, done in 1953, indicated that the proportion of illustrations that depict action, in addition to the size and color of the illustration and number of

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<sup>5</sup>E. N. King, "Critical Appraisal of Research on Children's Reading, Interests, Preferences and Habits," Canadian Educational Research Digest, December 1967, p. 319.

illustration, increased the preference for a book.<sup>6</sup> Whipple also stated that children valued color rather than black and white pictures. The study indicated that preference for a book increases with the following factors: the proportion of illustrations that depict action, the size and color of the illustrations and the number of illustrations.<sup>7</sup>

John W. Stewig, in a review of eighteen studies concerned with determining what types of pictures children preferred, said that no definite statement could be made about the types of pictures children prefer. This was due to the inadequately controlled variables, incomplete reporting and wide variety of problem statements that did not allow for generalizations.<sup>8</sup>

However, Patrick Groff, in analyzing eight of the same studies as Stewig, plus ten other studies, stated that five points seem to be supported by research results. He supported each point by naming the studies that promoted his conclusions. The five points which indicate children's preferences are:

1. They prefer factual, realistic, and familiar appearing illustrations to stylized, impressionistic, fanciful, whimsical, or ironic ones.
2. They like eventful illustrations which have

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<sup>6</sup>G. Whipple, "Appraisal of the Interest Appeal of Illustration," Elementary School Journal, January 1953, pp. 262-269.

<sup>7</sup>King, op. cit., pp. 319-320.

<sup>8</sup>John Warren Stewig, "Children's Preference in Picture book Illustration," Education Leadership, December 1972, p. 227.

objects or animals involved in action or which tell a story.

3. They choose illustrations with many colors. Blue and red are especially favored colors over black and white. Rich, dark, brightly saturated, generalized primary colors are voted for rather than pastel shades.

4. They select humorous illustrations over those of a sobersided nature.

5. They opt for the artist's use of clear, definite or bold outlines for figures and objects rather than for faded, blurred, washed-out or otherwise indistinct shapes.<sup>9</sup>

In summary Patrick Groff noted that Ayer, Bamberger and Whipple in their studies revealed young children preferred large distinguishable objects while the Freemans and Martin disagree, as their findings revealed a preference for minute details. This contradiction of research findings makes it quite difficult to state the importance of detail to children's preferences in pictures.<sup>10</sup>

"Children are primarily interested in action....they want to know how a person or animal will behave under certain circumstances; therefore they must do things to show the type of person they are."<sup>11</sup>

Children between the ages of three and five appear to prefer illustrations on every other page, at least, with some color. Children between the ages of six and nine are beginning to read but still like books read to them. They

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<sup>9</sup>Patrick Groff, "Should Picture Books and Young Children be Matched?" Language Arts, April 1977, pp. 412-413.

<sup>10</sup>Ibid., p. 413.

<sup>11</sup>Joan E. Cass, Literature and the Young Child (London and Harlow: Green and Co. Ltd., 1968), p. 18.

appear to prefer pictures on every page to keep their interest.<sup>12</sup>

### Overview of Children's Book Illustrations

There are different types of picture books but this study dealt with the fiction picture storybook. Neither the text nor the illustrations alone tells the entire story. The text and the illustrations are carefully woven together to make a complete story. In a true picture storybook the text and the illustrations are of equal importance - neither would be effective alone. Both are necessary for either to be complete.

One basic fact of children's books is that they are visual art as well as verbal art. This is because children's reading is part looking. The preschooler lacks the ability to read the words printed on the page. Her/his book world is only heard so the illustrations are an invaluable reinforcer, and give meaning to what is being read aloud.<sup>13</sup>

"For poor readers, illustrations tell the story. For good readers, illustrations extend the story. For non-readers, illustrations lead them to books."<sup>14</sup>

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<sup>12</sup>Jean Poindexter Colby, Writing, Illustrating, and Editing Children's Books (New York: Hasting House, 1967) pp. 26-28, 100.

<sup>13</sup>Cass, op. cit., p. 305.

<sup>14</sup>William A. Jenkins, "What is Children's Literature? V. Illustrators and Illustrations." Elementary English, May 1964, p. 498.



The purpose of the illustrations in a picture story-book is primarily to tell a story. Each picture interacts with the succeeding pictures to further develop the story. Criteria for judging the illustrations in a picture story-book are: "how well they tell the story, how well they interact with each other, and how well they support and extend the text."<sup>15</sup>

Since books used in the researcher's study are illustrated in a **cartoon** style, information was sought about that style of illustration. Cartoon illustrations and caricatures were dealt with in only a few of the resources. The cartoon illustrations have a narrative function rather than a visual one. MacCann in one of the two paragraphs devoted to cartoon illustrations stated:

Engaging characters and imaginative narratives seem to flow from the pen of good cartoonists as readily as the simple drawings which make these narratives visible....good stories for children have often had this kind of origin, and although the illustrations do not offer great aesthetic richness in themselves, we can find in the stories the ideal qualities for pleasing young audiences.<sup>16</sup>

Cianciolo stated:

Cartoon art may be classified as a form of expressionistic art. The cartoon artist, like other expressionistic artists, gives vent to his feeling and provokes an emotional response by means of his sketches, but the emotionalism is usually expressed through or in some form of humor. Two basic qualities of cartoonism --

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<sup>15</sup>Walter Lorraine, "The Art of the Picture Book," Wilson Library Bulletin, October 1977, p. 146.

<sup>16</sup>Donnarae MacCann and Olga Richard, The Child's First Books (New York: H. W. Wilson Company, 1973), p. 79.

incongruous and incompatible characteristics or situations are depicted....Facial expression is important -- even primary children recognize how ridiculous these situations are.<sup>17</sup>

An illustrator must be careful in the drawing of facial expression as too much exaggeration can mean failure. Very little is required to change the entire expression of a face.

Authors with a true sense of humor -- which is nothing more or less than the capacity to understand and enjoy life, and the equal ability to put this understanding and enjoyment on paper -- are 'rare jewels'.<sup>18</sup>

Children appear to be delighted by slapstick. Understatement is often much more effective than a shout. An illustrator needs to be careful not to force an action or humor could be lost. The action needs to be natural for the character. "The best pictorial humor is the visualizing on paper of living creatures who experience emotions, not just a matter of picking out Expression B from a file."<sup>19</sup>

Most picture storybooks are written for young children's interests, not their reading levels. The books for beginning readers are directed towards the children's readability level. The type of print, the very simple writing style, and the controlled vocabulary are geared to their needs. These books are seen as the least well-done of

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<sup>17</sup>Patricia Cianciolo, Illustrations in Children's Books (2nd ed., Dubuque: Wm. C. Brown Publishing Co., 1976), p. 210.

<sup>18</sup>Colby, op. cit., p. 98.

<sup>19</sup>Richard Taylor, Introduction to Cartooning (New York: Watson-Guption Publications, Inc., 1947), p. 61.

all types of picture books. One reason is the vocabulary "constrains and often cripples the author's powers of imaginative creation". Books for beginning readers do, however, provide a transition from stilted basic readers to "library books". The books for beginning readers critical advantage - "that it can be read by the ...child on his own - makes it significant".<sup>20</sup>

Picture storybooks stimulate interest in the printed word. The words must be read for the story to be better understood as the illustrations tell only part of the story. A number of picture storybooks are being used as a means of teaching reading. This shows the educator's awareness of the necessity of good picture storybooks.

A picture book depends upon the turning of pages and how well the text and illustrations follow one another. The child can enjoy and experience the story at his own pace, choosing to dwell on some pages in a different way each time the book is read.<sup>21</sup>

One method which appears to lend itself to objectively evaluating pictures is the Picture Potency Formula (PPF) developed by Anthony V. Manzo and Alice Legenza. The PPF is a quasi-objective formula to predict the language stimulation value of pictures for children between the ages of five and eight. This formula gives a point value to ten

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<sup>20</sup>William Anderson and Patrick Groff, A New Look at Children's Literature (Belmont, California: Wadsworth Publishing Company, 1972), p. 169.

<sup>21</sup>Blair Lent, "There's Much More to a Picture Book Than Meets the Eye." Wilson Library Bulletin, October 1977, p. 37.

factors considered to be important in eliciting language from children.<sup>22</sup>

Alice Legenza validated this formula by showing sixty kindergarten through seventh grade students three pictures -- one from the high potency category, one from the medium potency category, and one from the low potency category. The PPF had been applied to each of these pictures to determine its potential for language stimulation prior to being shown to the students. The results indicated that students made significantly more responses to the high potency picture than to either the medium potency or low potency picture. These results validated the PPF as a predictor to the extent to which children will respond verbally to a picture.<sup>23</sup>

#### Reviews of the Stan and Jan Berenstain Books

The Bright and Early books and the Beginning-to-Read books written and illustrated by Stan and Jan Berenstain appear to be one good example of picture storybooks in the books for beginning readers category that have maintained their popularity with children. The researcher and other teachers and media specialists have observed this continued popularity at least during the last ten years. The observations are the same - the books are not on the shelves long

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<sup>22</sup>Manzo, op. cit., p. 1086.

<sup>23</sup>Alice Legenza, "Assessing Pictures Through Children's Responses" (paper presented to the annual meeting of the College of Reading Associates, Cincinnati, Ohio, October 16-29, 1977).

enough to gather dust. The enjoyment of the Berenstain books is witnessed by watching the children's faces as they turn each page or share something amusing in the book with a friend.

The reviews of the Berenstain's children's books are generally good. The books are referred to as having bright, lively, colorful, delightful or cartoonlike illustrations, with short, simple rhyming texts. More information about the illustrations would be helpful for anyone who has never seen a "Bear" book. The caricatures make them unique. The word "narrative" describes how well the illustrations complement each other and supplement the text. The illustrations were slighted in the reviews and little consideration was given the vocabulary and writing style, as the reviews were most concerned with the plot.

"Slapstick humor" and "humorous" were words used to describe the plots of the books. The opinions varied on the use of slapstick humor. One reviewer in the Times Literary Supplement obviously did not enjoy the Bear Scouts and stated so, but ended his review saying: "the children thought it exceedingly witty".<sup>24</sup> This would indicate that to children there is merit in slapstick humor.

In a picture storybook neither the text nor the illustrations alone tells the entire story, both are of equal importance. The primary purpose of the illustrations

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<sup>24</sup>\_\_\_\_\_. "Junior Information Books: Learning to Read," Times Literary Supplement, June 6, 1968, p. 594.

is to tell a story. Each illustration interacts with preceding illustrations to further develop the story. Illustrations that are brightly colored, have the figures and objects clearly outlined and have the objects or animals involved in the action are preferred by children.

The books written and illustrated by Stan and Jan Berenstain appear to be one good example of picture storybooks that have maintained their popularity with children. This popularity may be because these books appear to contain many of the points children prefer in illustrations.

## Chapter 3

### METHODOLOGY OF THE STUDY

The study dealt with formulating objective measuring techniques to apply to the illustrations in children's picture storybooks. The questions to be answered were:

1) Using children's preferences and interests in illustration, what objective measuring techniques can be found or developed to be applied to the illustrations of children's picture storybooks? 2) Are these techniques effective when applied? 3) Is it possible to learn more about the quality of the total picture storybook experience by applying these objective measuring techniques?

To answer the above questions, the following hypotheses were proposed:  $H_1$ : The illustrations in sixty percent of the books will be in the areas of high and medium high language stimulation value using the Picture Potency Formula.  $H_2$ : For each of the books, the essence of the story can be told fifty percent of the time by a child's looking at the illustrations. Either the child must mention the character(s) and the action(s) on fifty percent of the pages as she/he tells the story, or the child's comments must follow the written story on fifty percent of the pages.  $H_3$ : In each book the primary character(s) will be involved in seventy-five percent of the illustrations.  $H_4$ : Each page in the book will have twenty-five percent or more of the

page space devoted to illustrations.

The seven Bright and Early Books and the seven Beginning-to-Read books written and illustrated by Stan and Jan Berenstain were chosen as they appear to have several of the characteristics that appeared in the literature review. These books are listed below:

- |                                      |                                 |
|--------------------------------------|---------------------------------|
| 1) <u>The Berenstains' B Book</u>    | 8) <u>The Bear Detectives</u>   |
| 2) <u>C is for Clown</u>             | 9) <u>The Bear Scouts</u>       |
| 3) <u>Bears on Wheels</u>            | 10) <u>The Bears' Christmas</u> |
| 4) <u>Bears in the Night</u>         | 11) <u>The Bears' Vacation</u>  |
| 5) <u>Inside Outside Upside Down</u> | 12) <u>The Bears' Picnic</u>    |
| 6) <u>Old Hat New Hat</u>            | 13) <u>The Big Honey Hunt</u>   |
| 7) <u>He Bear She Bear</u>           | 14) <u>The Bike Lesson</u>      |

The objective measuring techniques to review picture storybooks were formulated from the review of the literature covering children's preferences and interests in illustration, reviewer's methods of identifying good picture books, and information in the literature covering what constitutes good illustrations for children's books. The following is the list of objective measuring techniques used:

1) The Picture Potency Formula (PPF) was used to test the potential of the illustrations to stimulate language.

2) Each book was read to a kindergarten child, after which the child retold the story. The researcher recorded how often the child mentioned: a) the character(s), b) the action(s) and c) additional comments on each page.

3) The number of illustrations showing the primary



character(s) was tabulated for each book.

4) The percentage of the page space devoted to the illustration was tabulated.

Hypothesis one concerning the language stimulation of the illustration was tested using the Picture Potency Formula developed by Anthony Manzo and Alice Legenza. It involved three steps.

The first step consists of making tallies of various aspects of a picture. This is a raw score. The second step is to transfer these tallies to 'scaled scores' and finally to compute an index representing the likely heuristic value.<sup>25</sup>

The various aspects of the picture, called "factors", which were tallied, are listed and explained in detail below:

dif thgs

- a) Count the total number of different things in the picture (e.g. people = 1 thing; hills = 1 thing; bestiary: birds, fish, animals = 1 thing each.) (In this study, bears acting as people were counted as people. Other animals which are incidental to the design of the illustrations were counted as animals.)

sig thgs

- b) Count the total number of significant things: i.e., the chief figure(s) around which other things are apparently set.

total thgs

- c) Count the total number of all things: each and everything is counted except for non-descript things: blades of grass, undifferentiated trees, birds, etc.

colors

- d) Number of different colors

actions

- e) Number of actions in progress - (a group of people can all be engaged in essentially one action.)

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<sup>25</sup>Manzo and Legenza, op. cit., p. 1086

## children

- f) Number of children present. (In this study young bears acting as children were counted as children.)

## people

- g) Total number of people present (count the children again. In this study, adult bears acting as people and young bears acting as children were counted as people.)

## potential movement

- h) Total number of things with potential for movement (other than people) e.g., cars, motion toys, planes, animals, etc. The heuristic value of animals is very strong. Multiply the number of animals by 2. (In this study, bears acting as people were not counted as animals.)

## size

- i) Size of plate. Give no points if plate is under (2x2), 1 pts. for (4x4), 2pts. for (5x7), 3 pts. for (8x10), 4 pts. for (11x14), 5 pts. for anything larger.

## empathy

- j) Assign the total picture a value from (1) low to (5) high for its overall compatibility with the interests and experiences of the children with whom it will be used. Factors such as racial similarities, empathetic quality of setting (urban, rural, etc.), and familiarity with events being depicted should be heavily weighted as positive factors (4's & 5's).<sup>26</sup>

The size of the plate was determined by the size of the page in each book. This researcher made an arbitrary decision that her students have come from schools of fewer than 500 students. These students are homogeneous, white, secure children from rural or small communities. The assignment of values to compatibility for the empathy factor was an arbitrary decision.

The total count for each of the above ten factors was assigned a rating from one to five based on the Table

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<sup>26</sup>Manzo and Legenza, op. cit., pp. 1086-87.

of Scaled Scores. The ten scores from the Table were then totaled to obtain a composite score of the picture. This composite score gave the language stimulation score as follows: "38+ high language stimulation value; 32-37 medium high value; 28-31 medium low value; below 28 low value."<sup>27</sup>

Table 1

Table of Scaled Scores

	0	1	2	3	4	5
a. dif thgs.	(0-1)	(2-5)	(6-8)	(9-12)	(13-19)	(20+)
b. sig. thgs.	(0)	(1)	(2)	(3)	(4-6)	(7)
c. total thgs.	(0)	(1-3)	(4-5)	(6-7)	(8-9)	(10)
d. colors	(0-1)	(2)	(3-5)	(6-7)	(9)	(10+)
e. action	(0)	(1)	(2)	(3)	(4)	(5)
f. children	(0)			(1-2)	(3-4)	(5+)
g. people	(0)		(1)	(2)	(3)	(4+)
h. potential movement	(0)	(1-2)	(3-4)	(5-6)	(7-8)	(9+)
i. size of plate	(2x2) or under	4x4	5x7	8x10	11x14	larger than 11x14
j. empathy	(0)	(1)	(2)	(3)	(4)	(5)

The Picture Potency Formula was developed to measure a single picture. This researcher applied the PPF using the

<sup>27</sup>Ibid., p. 1086.

three steps described by the authors and then went one step further. Each illustration of each book was measured individually. A chart with the following heading: pg., dif thgs, sig thgs, colors, action, children, people, pot. mov., size and empathy was used to compile the count for each factor. (See Appendix A. p. 65). After each page had been counted for each of the ten factors, a duplicate sheet was used to list the scaled scores of each picture. The scaled scores were added together to compute the composite score of each illustration. To obtain the language stimulation score of each book, the composite scores of all the illustrations were totaled and this total number was divided by the number of illustrations in the book. This quotient gave the language stimulation score of the book.

To test hypothesis two as to whether the illustrations enable the child to tell the essence of the story, the researcher worked with Greg, a kindergarten child. Greg was chosen for this study because he was an available kindergarten with whom the researcher already had established good rapport, he had not seen any of the Berenstain books before, and his parents approved of his being used in the study. A story from one book was read once to Greg in the morning. Greg could, as he wished, discuss and ask questions as the story was read. That afternoon, approximately four hours later, Greg was asked to retell the story by looking at the pictures. The researcher noted instances when Greg mentioned: a) the primary character(s) and b) the

action(s) or c) his comments followed the written text for each illustration. A chart with the headings: pg., mentions character(s), mentions action(s) and comments follow written story (to be answered yes or no) was used to record Greg's performance for each book. (See Appendix A, p. 66 ). If either the character(s) or the action(s) was not mentioned by Greg the page number(s) of the illustration and what was omitted were noted on the chart. After Greg finished retelling the story, the percentages for each of the six columns were figured. This process was repeated until Greg had worked with all the books.

When testing hypothesis three as to whether the illustration contained the primary character(s) in the illustration, the first step was to determine the primary character(s). A chart with the headings: pg., yes and no was used to show if the primary character(s) was in the illustration. (See Appendix A, p. 67 ). If the primary character(s) was in the illustration the "yes" column was checked; if the primary character(s) was not in the illustration the "no" column was checked. The total number of yeses was divided by the number of illustrations in each book to obtain the percentage of time the primary character(s) appeared in the illustrations.

To gain some insights as to whether the primary character(s) in each illustration was necessary to tell the essence of the story to a child, one Bright and Early Book and one Beginning-to-Read Book were used. The text in each

book was covered with pieces of white construction paper. Dawn, a third grade child, was given one book at a time to look through once. Dawn was told that after looking through the book she would be asked to give a page by page expansion of the story. A chart with the headings: pgs., yes, and no was used to record when Dawn did not mention the primary character(s). The number of no tallies was divided by the number of illustrations to determine the percentage of time the primary character(s) was not mentioned. This quotient was subtracted from one-hundred to obtain the percentage of time that the primary character(s) was mentioned. The purpose of having Dawn give an expansion of the story was to see whether or not the primary character(s) was necessary in the illustrations. Dawn was chosen for this study because she was an available third grader with whom the researcher already had established good rapport, she had not seen any of the Berenstain books before, and her parents approved of her being used in the study.

To test hypothesis four an  $8\frac{1}{2}$  x 11 inch transparency divided in  $\frac{1}{2}$  inch grid sections was used to ascertain how much of the page space was devoted to the illustration. The transparency was placed over each page and the number of squares containing part of the illustration was counted. Squares that were not completely filled with a part of the illustration were counted if: 1) the illustration covered half or more than half of the square; 2) if part of the illustration was a black and white drawing and the square

had specific parts of the illustration such as a road, grass, clouds, or a house; 3) if a portion of it was an important part of the illustration such as the mast of a boat, a flag, or stairs. The square was not counted if the illustration covered less than one-half of the square and was not an essential part of the illustration, such as scenery.

The total number of squares containing the illustration was divided by the total number of squares per page. This quotient gave the amount of page space devoted to the illustration. The percentage of page space devoted to the illustration in each book was tallied on a chart with the headings: pg., less than 24%, 25-49%, 50-74%, and 75% or more. (See Appendix A, p. 68 ).

## Chapter 4

### DATA ANALYSIS

This study was designed to determine if found and developed objective measuring techniques, using children's preferences and interests, were effective when applied to the illustrations of children's picture storybooks. The results of this study are presented in narrative and tabular form. Each hypothesis is discussed and analyzed individually with the appropriate table(s).

Table 2 deals with hypothesis one which stated: The illustrations in sixty percent of the books will be in the areas of high and medium high language stimulation value using the Picture Potency Formula (PPF). It has three columns: one listing the title of the book, one listing the PPF score in ascending order and one listing the language stimulation of the book according to the Picture Potency Formula. (The PPF analysis charts for the individual books are found in Appendix B.) Table 2 shows the books varied from 24.5 points to 34 points. The language stimulation column shows three books in the low language stimulation category, eight books in the medium low category and three books in the medium high category.

Hypothesis one is rejected since fewer than sixty



percent of the books were in the areas of high and medium high language stimulation. Only twenty-one percent (three) of the books met this requirement.

Table 2  
Picture Potency Formula Scores

Title of Book	PPF Score	PPF Category
*B Book	24.5	low
*Inside Outside Upside Down	27.0	low
*Old Hat New Hat	27.0	low
Bears' Christmas	29.0	medium low
*Bears on Wheels	29.0	medium low
*Bears in the Night	30.0	medium low
Bears' Picnic	30.0	medium low
Bears' Vacation	30.0	medium low
*C is for Clown	30.0	medium low
Bear Scouts	31.0	medium low
Bike Lesson	31.0	medium low
Big Honey Hunt	32.0	medium high
Bear Detectives	33.0	medium high
*He Bear She Bear	34.0	medium high

\*Bright and Early Books for Beginning Readers

The three books which were in the low PPF category were from the Bright and Early Books for Beginning Readers series and the text was descriptive in nature. Two of the books which were in the medium high PPF category were from

the I Can Read All By Myself series and one was from the Bright and Early Books for Beginning Readers series. The text was in conversational format for the medium high PPF books.

Table 3 shows the individual categories of the Picture Potency Formula. It is divided into twelve columns. The first column lists the title of the book, the second column lists possible points per book (TNP - total number possible which was computed by multiplying the number of pages by five), and columns three through twelve list the number of points and the percentage of points the book received in each category of the PPF. At the bottom of Table 3 is the number of points and the percentage of points all the books together received in each category. For example, the fourteen books as a whole received 700 points and forty percent of the points possible for different things. As one examines Table 3 the categories with the lowest percentage points are: column three - different things, column seven - action, column ten - potential movement, and column eleven - size.

As the different categories of the PPF were examined in regards to the three medium high books and the three low books, the only noticeable difference was in the people category. The low group received scores of 17, 59, and 54 while the medium high group received scores of 98, 63, and 92. When the scores of the low PPF books and the scores of the medium high PPF books were averaged, six categories

Table 3  
Picture Potency Category Scores

Column:	1	2	3	4	5	6	7	8	9	10	11	12									
Title of Book	TNPA	dif <sup>b</sup> thgs		sig <sup>b</sup> thgs		total <sup>b</sup> thgs		colors <sup>b</sup>		action <sup>b</sup>		children <sup>b</sup>		people <sup>b</sup>		potential <sup>b</sup> movement		size <sup>b</sup>		empathy <sup>b</sup>	
		Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%	Pts.	%
*B Book	70	22	31	41	59	54	77	50	71	29	41	0	0	12	17	46	66	28	40	61	87
Bear Detectives	135	70	52	98	73	135	100	129	96	74	55	90	67	120	89	65	48	54	40	108	80
Bear Scouts	185	72	39	124	67	185	100	145	78	78	42	143	77	181	98	15	8	72	39	129	70
Bears' Christmas	155	64	41	55	35	144	96	150	97	85	55	93	60	103	66	27	17	62	40	123	79
* Bears in the Night	80	31	39	40	50	78	98	47	59	44	55	63	79	64	80	6	7	32	42	69	86
* Bears on Wheels	85	23	27	39	46	68	80	60	71	46	54	76	89	79	93	23	27	34	40	51	60
Bears' Picnic	150	68	45	95	63	150	100	124	83	76	57	90	60	121	81	22	15	60	40	120	80
Bears' Vacation	165	75	45	102	62	163	99	151	92	82	56	99	60	104	63	51	31	66	40	110	67
Big Honey Hunt	175	61	35	98	56	169	97	136	78	81	46	105	60	110	63	56	32	70	40	157	90
Elke Lesson	150	67	45	79	53	148	99	133	87	75	50	90	60	100	67	48	32	60	40	111	74
* C is for Clown	80	32	40	63	79	80	100	77	96	41	51	0	0	44	55	60	75	32	40	80	100
* He Bear She Bear	120	53	44	62	52	119	99	108	90	74	62	88	73	110	92	40	33	48	40	103	86
* Inside Outside Upside Down	95	33	39	48	56	79	99	66	78	31	36	51	60	46	54	9	11	43	40	66	78
* Old Hat New Hat	110	29	26	60	55	95	86	96	87	46	42	66	60	65	59	3	2	44	40	90	82
Total points and Percentage	1755	700	40	1004	57	1667	95	1472	84	862	49	1054	60	1259	72	471	27	705	40	1378	79

<sup>a</sup> TNPA (total number possible) - number of pages x 5

<sup>b</sup> see pages 20-21 for definition of each category.

\* Bright and Early Books for Beginning Readers

showed either no difference or a two to three point difference, while four categories showed differences of ten points or more. These four categories were different things, action, children, and people.

The largest variances of scores were in column 8 - children (89 percentage points); column 9 - people (81 percentage points); and column 10 - potential movement ( 73 percentage points). The books which scored at the bottoms of the ranges were Bright and Early Books for Beginning Readers with the exception of the book The Bears' Christmas. There were four books from the Bright and Early Books for Beginning Readers and five books from the I Can Read All By Myself series at the tops of the ranges.

It needs to be remembered that the PPF was designed for analyzing the language stimulation of a single picture. The illustrations in a picture storybook are used to supplement and extend the story rather than elicit language from a child. Therefore, a picture takes on a different purpose when used as an illustration in a picture storybook. This difference may be one reason for a low percentage under the category number of different things. If the illustration in a picture storybook is too "busy" a child may have difficulty following the storyline. Since the actions in a book need to be tied into one storyline this limits what the illustrator can do and therefore may account for the low percentage in the action category. Toys, cars, or similar items were rarely used in these illustrations. This fact

accounts for the low percentage in the potential movement category.

The illustrations were generally the size of the book page. Though the books were of sufficient size to be measured by the PPF, the 5" x 7" illustrations in the books were awarded two points out of a possible five. This accounts for the low percentages for individual books in the size category.

The areas in which the books scored highest were column 5 - total things, column 6 - colors, and column 12 - empathy. Details were included in most of the illustrations which may account for the high percentage in the total things category. The book Bears in the Night had the lowest percentage of color, fifty-nine percent. However, the nature and feeling of night was conveyed by this lack of color. Empathy was the final category in which the books consistently scored high. The appeal of the different subject matters to a young child was considered high.

Hypothesis two stated that for each of the books, the essence of the story can be told fifty percent of the time by a child looking at the illustrations. Either the child must mention the character(s) and the action(s) on fifty percent of the pages as she/he tells the story, or the child's comments must follow the written story on fifty percent of the pages. Data for hypothesis two is shown in Table 4.

Each morning one book was read to Greg. Four hours later, Greg would return to the researcher's home and retell

the story by looking at the illustrations. As Greg retold the story, this researcher recorded on a table cell if Greg mentioned the character(s) and action(s) and if his comments followed the written story.

Table 4 shows Greg's performance for each book. The first column lists the title of the book, column two lists the percentage of times Greg mentioned the main character(s), column three lists the percentage of times Greg mentioned the action(s), and column four lists the percentage of times Greg's comments followed the written story. (The analysis charts for the individual books are found in Appendix C.) Hypothesis two is accepted because either the character(s) and the action(s) were mentioned or the comments followed the written story fifty percent of the time.

As one examines Table 4 one notices Old Hat New Hat was the only book in which Greg did not mention the character(s) or the action(s) fifty percent of the time. However, Greg's comments followed the written story eighty-three percent of the time. This is possibly due to the fact that the book Old Hat New Hat described different types of hats and the main character was looking at hats throughout the story. Greg may have thought no action was taking place.

Ten of the Berenstain books have a sustained storyline which is largely revealed through conversation between characters. Even so the illustrations showed what was being discussed and Greg's comments followed the storyline over fifty percent of the time. All Greg's comments followed the

storyline a minimum of fifty percent of the time. The six books on which Greg commented least effectively (50 percent to 71 percent) are all from the I Can Read All By Myself series and have a conversational text. The conversational

Table 4

Percentage of Times Greg Mentioned  
Character(s) and Action(s) and  
Matched Comments with Narrative

Title	Percentage of times Greg Mentioned		
	Character(s)	Action(s)	Comments
*B Book	93.0	100.00	100.0
Bear Detectives	87.5	87.50	54.0
Bear Scouts	97.0	97.00	50.0
Bears' Christmas	97.0	90.00	53.0
*Bears in the Night	100.0	100.00	71.0
*Bears on Wheels	100.0	100.00	88.0
Bears' Picnic	100.0	100.00	54.5
Bears' Vacation	100.0	100.00	53.0
Big Honey Hunt	100.0	100.00	61.0
Bike Lesson	100.0	87.00	73.0
*C is for Clown	87.5	56.25	75.0
*He Bear She Bear	95.0	86.00	95.0
*Inside Outside Upside Down	94.0	94.00	76.0
*Old Hat New Hat	28.0	28.00	83.0

\* Bright and Early Books for Beginning Readers

text may account for Greg's comments following the written text.

C is for Clown, The Bear Detectives and Old Hat New Hat were poorest for Greg's scores for the number of times the character(s) was mentioned. His scores for C is for Clown, Old Hat New Hat, and He Bear She Bear were the lowest for the number of times the action(s) was mentioned. Of these four mentioned books, three are from the Bright and Early Books for Beginning Readers series.

Table 5 deals with hypothesis three which stated: In each book the primary character(s) will be involved in seventy-five percent of the illustrations. Table 5 has four columns. The first column lists the titles of the books and the second column lists the total possible times the main character(s) could have appeared in the illustrations. Column three gives the number of times and column four gives the percentage of times the main character(s) does appear in each book's illustrations.

Hypothesis three was accepted as twelve of the fourteen books had the main character(s) in the illustrations one-hundred percent of the time. The other two books had the main character(s) in the illustrations ninety-three percent and eighty-eight percent of the time. The Berenstain's appear to view the main character as important to the illustration.

To further test the importance of the main character(s) in illustrations, with the text of each book covered, Dawn



Table 5

Number and Percentage of Illustrations  
In Which Main Character(s) Appeared

Title	TNP**	Main Character(s)	
		Number	Percentage
*B Book	14	13	93
Bear Detectives	26	26	100
Bear Scouts	36	36	100
Bears' Christmas	30	30	100
*Bears in the Night	17	17	100
*Bears on Wheels	17	17	100
Bears' Picnic	31	31	100
Bears' Vacation	33	33	100
Big Honey Hunt	34	34	100
Bike Lesson	31	31	100
*C is for Clown	17	15	88
*He Bear She Bear	25	25	100
Inside Outside Upside Down	17	17	100
Old Hat New Hat	20	20	100

\* Bright and Early Books for Beginning Readers

gave a story expansion of the two books Bear Scouts and Bears In the Night. This researcher recorded on a table cell the number of times Dawn mentioned the character(s) during her expansion of each book. Dawn mentioned the character(s) in one-hundred percent of the illustrations.

The data supporting hypothesis three showed that all the books had the primary character(s) involved in more than seventy-five percent of the illustrations. When comparing Dawn's expansion of the two stories, there was no discrepancy between the number of times Dawn mentioned the main character(s) and the researcher's tally of the number of times the main character(s) was depicted in the illustrations.

Table 6 presents the data for hypothesis four which stated that each page of each book will have twenty-five percent or more of the page space devoted to illustrations. Table 6 is divided into seven columns. Column one lists the title of the book, column two lists the total number of pages per book, and columns three through six show the number of pages in each of the following four categories of space occupied by the illustration: less than 24%, 25-49%, 50-74%, and 75% or more. Column seven shows the number of pages and the percentage of pages in the 25-75% or more categories for each book.

Hypothesis four was rejected because ten of the fourteen books had pages with less than twenty-five percent of the page space devoted to illustration. The table shows that three percent of the pages did not have twenty-five percent or more of the page space devoted to the illustration, while forty-three percent of the total pages had seventy-five percent or more of the page space devoted to the illustrations. Of the total pages, thirty-two percent fell in the 50-74 percent category of space utilization and twenty-two percent were found in the 25-49 percent category.

Table 6

Number and Percentage of Pages in Each of Four Categories  
Of Page Space Used for Illustrations

Title	TNP**	less than 24%		25-49%		50-74%		75% or more		25-100%	
		N	%	N	%	N	%	N	%	N	%
*B Book	26	4	15	15	58	1	4	6	23	22	87
Bear Detectives	37	0	0	2	5	15	41	20	54	37	100
Bear Scouts	62	0	0	10	16	20	32	32	52	62	100
Bears' Christmas	59	0	0	0	0	8	14	51	86	59	100
*Bears in the Night	31	1	3	1	3	12	39	17	55	30	97
*Bears on Wheels	31	1	3	21	68	5	16	4	13	30	97
Bears' Picnic	61	3	5	11	18	13	21	34	56	58	95
Bears' Vacation	61	1	2	16	26	17	28	27	44	60	98
Big Honey Hunt	61	2	3	20	33	17	44	12	20	59	97
Bike Lesson	61	1	2	15	25	24	39	20	33	59	97
*C is for Clown	31	1	3	3	10	16	52	11	35	30	97
*He Bear She Bear	35	2	6	6	17	16	46	11	35	33	94
*Inside Outside Upside Down	27	0	0	6	22	10	37	11	41	17	100
*Old Hat New Hat	27	2	7	8	30	14	52	3	11	25	93
Totals and Percentages	609	18	3	134	22	198	32	259	43	591	97

\*Bright and Early Books for Beginning Readers

\*\*TNP - total number possible - total number of pages in each book

A total of ninety-seven percent of the pages had twenty-five percent or more of the page space devoted to illustrations.

As this researcher examined the books which did not have twenty-five percent or more of the page space devoted to illustrations, it was discovered that of these ten books, five had only one page with less than twenty-five percent of the page space devoted to illustrations, three had two pages, one had three pages and one had four pages. Upon examination of these pages in each book it was discovered that none of the pages with less than twenty-five percent were consecutive pages and that each was part of a two-page illustration.

Table 7 shows into which category of the Picture Potency Formula each book fits and gives the percentage of time Greg mentioned the character(s), the action(s) and the percentage of time his comments followed the written story. The medium high language stimulation books ranked higher than the low language stimulation books in Greg's mentioning of the character(s) and action(s) but lower in his recapitulation of the written story. The same is true when books from the medium low category are compared with those in the low category. This could be due to the fact that the text in the books of the low category narrate the action while the texts of the medium high category are conversation-oriented. The medium low category contains two books which were description-oriented and six which were conversation-oriented.

When comparing the averages of the medium low books with the medium high books there was a three percent

Table 7

PPF Scores Compared with Percentage of Times  
 Greg Mentioned Character(s) and Action(s)  
 And Matched Comments with Narrative

Title	PPF	TNP**	Greg's Percentages					
			Character(s)		Action(s)		Comments	
			N	%	N	%	N	%
Bear Detectives	Med. High	24	21	87.5	21	87.5	13	54
Big Honey Hunt	Med. High	33	33	100.0	33	100.0	20	61
*He Bear She Bear	Med. High	22	21	95.0	19	86.0	21	95
Averages	Med. High	70	75	95.0	73	92.0	54	68
Bear Scouts	Med. Low	36	35	97.0	35	97.0	18	50
Bears' Christmas	Med. Low	30	29	97.0	27	90.0	16	53
*Bears in the Night	Med. Low	17	17	100.0	17	100.0	12	71
*Bears on Wheels	Med. Low	17	17	100.0	17	100.0	15	88
Bears' Picnic	Med. Low	31	31	100.0	31	100.0	20	64
Bears' Vacation	Med. Low	32	32	100.0	32	100.0	17	53
Eike Lesson	Med. Low	30	30	100.0	26	87.0	22	73
*C is for Clown	Med. Low	16	14	87.0	9	56.0	12	75
Averages	Med. Low	209	205	98.0	194	93.0	132	63
*B Book	Low	14	13	93.0	14	100.0	14	100
*Inside Outside Upside Down	Low	17	16	94.0	16	94.0	13	76
*Old Hat New Hat	Low	18	5	28.0	5	28.0	15	83
Averages	Low	49	34	69.0	35	71.0	42	86

\*Bright and Early Books For Beginning Readers

\*\*TNP - Total Number Possible

discrepancy in Greg's mentioning the character(s), a one percent discrepancy in Greg's mentioning the action(s) and a five percent discrepancy in Greg's comments following the written story. The medium low category contained two books which narrated the action and six which were conversation-oriented. This combination may account for the differences in these two areas. Greg's ability to tell the essence of the story from looking at the illustrations in conjunction with the Picture Potency Formula showed that he mentioned the character(s) and the action(s) more in the medium high and medium low categories than in the books in the low category. Yet Greg's comments followed the written story more in the PPF's low category. The average of the number of times Greg mentioned the character(s) in the medium high category was ninety-five percent while in the low category the average was sixty-nine percent. The average number of times Greg mentioned the action(s) in the medium high category was ninety-two percent while in the low category the average was seventy-one percent. However, the average number of times Greg's comments followed the written story was sixty-eight percent in the medium high category and eighty-six percent in the low category.

There may be a relationship between the PPF and Greg's mentioning of the character(s) and action(s). There appears to be no relationship between the PPF and Greg's comments matching the narrative. However, the difference of a conversational text compared to a descriptive text

cannot be overlooked as a possible reason for this discrepancy.

Table 8 shows the percentage of time the main character(s) was in the illustrations and the percentage of time Greg mentioned the character(s) in each book. Old Hat New Hat showed the largest variance between the number of times the character appeared in the illustration and the number of times Greg mentioned the character(s). This could be due to the fact that the main character was in a passive role during most of the story; therefore Greg did not mention the character. The book Bear Detectives also had a discernible variance of twelve and a half percent. Listening to the tape of Greg telling the story explained this difference. Greg gave the conversation of the text on some pages rather than mentioning the character(s) or the action(s). (See Appendix C, p. 104-105).

Five methods were used to gather data for this study. The first method was applying the Picture Potency Formula to the fourteen Berenstain books to obtain the language stimulation value of each book. Another method was using Greg, a kindergarten child, to determine if the essence of the story can be told by a child from looking at the illustrations. Recording the number of times the main character(s) was contained in the illustrations of each book was a third method used. Dawn, a third grade child, giving a page by page expansion of two of the Berenstain books was the method used to determine if the main character(s) was necessary to the illustrations. Counting the number of half-inch squares

Table 8

Percentage of Illustrations in Which  
The Main Character(s) Appeared and  
Percentage of Time Greg Mentioned  
The Main Character(s)

Title	Percentages Main Character(s)	
	Appeared	Mentioned
B Book	93	93.0
*Bear Detectives	100	87.5
*Bear Scouts	100	97.0
*Bears' Christmas	100	97.0
Bears in the Night	100	100.0
Bears on Wheels	100	100.0
*Bears' Picnic	100	100.0
*Bears' Vacation	100	100.0
*Big Honey Hunt	100	100.0
*Bike Lesson	100	100.0
C is for Clown	88	87.5
He Bear She Bear	100	95.0
Inside Outside Upside Down	100	94.0
Old Hat New Hat	100	28.0
Percentage of Total	98	89

\* I Can Read All By Myself books



which contained parts of the illustration was used to determine page utilization and was the last method used in this study.

## Chapter 5

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### Summary

This study was designed to determine if found and developed objective measuring techniques, using children's preferences and interests, were effective when applied to the illustrations of children's picture storybooks.

Hypothesis one stated that the illustrations in sixty percent of the books would be in the areas of high and medium high language stimulation using the Picture Potency Formula (PPF). This hypothesis was rejected. Tables 2 and 3 showed how the data failed to support hypothesis one. Only twenty-one percent of the books were in the high and medium high areas of language stimulation. One possible reason the books were not in the above mentioned categories was that the PPF was designed for analyzing a single picture. Therefore, the areas in which the books rated low would have detracted from the purpose of the illustrations in a picture storybook, to complement and expand the text.

Hypothesis two stated that for each of the books, the essence of the story could be told fifty percent of the time by the child's looking at the illustrations. This hypothesis was accepted. Table 4 showed conclusively how the data supported this hypothesis. Greg either mentioned

the character(s) and action(s) fifty percent of the time or his comments followed the written story fifty percent of the time. Old Hat New Hat was the only book in which Greg did not mention the character(s) and action(s) at least fifty percent of the time. His comments, however, followed the written story eighty-three percent of the time, so the essence of the story was told by Greg. The text of ten of the fourteen books was conversation-oriented. Even so the illustrations showed what was being discussed well enough for Greg's comments to follow the written story a minimum of fifty percent of the time.

Hypothesis three stated that in each book the primary character(s) would be involved in seventy-five percent of the illustrations. This hypothesis was accepted. Table 5 showed how the data supported hypothesis three. Twelve of the fourteen books had the main character(s) involved in the illustrations one-hundred percent of the time. Only C is for Clown and the Berenstains' B Book had the primary character(s) involved in fewer than one-hundred percent of the illustrations. These two books had the main character(s) involved in eighty-eight and ninety-three percent of the time.

Hypothesis four stated that each page in each book would have twenty-five percent or more of the page space devoted to illustrations. This hypothesis was rejected. Ten of the fourteen books had pages with less than twenty-five percent of the page space devoted to illustration. Of these

ten books, five had only one page with less than twenty-five percent, three had two pages, one had three pages, and one had four pages with less than twenty-five percent of the page space devoted to the illustration. Upon examination, it was discovered that none of these pages were consecutive pages and that each page was part of a two-page illustration. With few exceptions, Table 6 showed support for hypothesis four. However, as three percent of the illustrations had less than twenty-five percent of the page space devoted to the illustration, hypothesis four was rejected.

The Berenstain books ranked in the areas of medium high, medium low and low language stimulation. They ranked high in the child's ability to tell the essence of the story from looking at the illustrations. Twelve of the fourteen books had the main character involved in one-hundred percent of the illustrations. Only three percent of the pages of the books had less than twenty-five percent of the page space devoted to the illustration.

### Conclusions and Recommendations

There were few obstacles to overcome during the data gathering processes. One minor obstacle encountered was that in many of the books the pages had to be numbered.

The Picture Potency Formula, which was designed to test the language stimulation of a single picture, was very time consuming. It did not prove to be a good measuring technique in determining the effectiveness of the illustration

in children's picture storybooks due to the fact that a picture storybook is a series of pictures which unfolds a story and complements the text. The four areas in which each book scored low, "different things", "action", "potential movement", and "size" should be revised for use with picture storybooks, as each of these areas could make a picture storybook too "busy" and thus detract from the storyline.

The "size" category would definitely need to be revised before the PPF would be a useful measuring technique in studying picture storybooks. Though the books were of sufficient size to be measured by the PPF, the 5"x7" format of most of the illustrations was a disadvantage.

The areas which scored highest were "total things", "colors", and "empathy". Detail was good in all the books which accounts for the high scores under the category "total things". The use of color was another area in which the books scored high. Bears in the Night had the lowest percentage (59 percent). However, the story took place during the night so the mood of night-time was accomplished by this lack of color. "Empathy" was the final category in which the books consistently scored high. The subject matter was judged as having appeal to the population of children described in the methodology.

More information concerning the Picture Potency Formula needs to be gathered before definite conclusions as to its appropriateness can be made. However, this researcher believes a Picture Potency Formula for picture storybooks

should include "total things", "colors", and "empathy" as scored in the PPF because these were categories in which all the books rated high. This researcher would also include the categories "significant things" and "action". However, she would change the point values of these two categories. One possibility would be the following:

	0	1	2	3	4	5
Significant things	0			1	2-3	4+
Action	0			1	2	3+

This researcher's reasons for suggesting a revision of the PPF for use with picture storybooks is because Greg and Dawn had no difficulty in commenting on the illustrations. The illustrations in each book prompted much conversation from both children. This is the major reason for revising the PPF as a measuring technique in determining the effectiveness of illustrations in children's picture storybooks. Although the Stan and Jan Berenstain books contain more color, detail and action than most other picture storybooks, even they do not substantiate the PPF.

Working with Greg twice a day to gather data for hypothesis two posed no major problem. The difficulty of keeping the four-hour interval between when the story was read to Greg and when he retold the story was alleviated by choosing days when there was no conflict in the needed time

span. However, this meant it took longer to gather the necessary data. The table cell used for gathering this data for hypothesis two worked very well.

Greg was a delight to work with as he was very cooperative and enthusiastic. Each day Greg chose which book would be read. His comments as he viewed the book covers while choosing each book were delightful. As each story was read, Greg would often comment on something he felt was funny or on a detail in the illustrations. In the afternoon, Greg would hurry to the room, turn on the tape recorder and pick up the needed book. After he had "read" the story, Greg wanted to hear what he had said on the tape. Some days we played the complete tape, other days only a portion of it.

On the last day Greg asked if there weren't more books that he could do as he thought this was fun and he liked to read books. The rapport that had been established with Greg prior to the data gathering process alleviated any anxiety he may have felt. Greg's parents' support and willingness to work around conflicting time schedules aided in making the data gathering process easier.

In this study only one child was used as a means of testing the hypothesis. An alternative study would be to use more than one child. For instance, the use of one class of kindergartners would allow for differences in children's ages and abilities in regard to reading and analyzing.

Another study would be to have the time span varied between when the story is read to the kindergartner and when

she/he retells the story. One possibility would require the use of different groups of children: one group could have a four hour interval between when the story is read and each child retells the story, one group could have an eight hour interval, and one group could have a twenty-four hour interval.

Another alternative study would be not reading one or two of the pages to the child when the story is read, but allowing her/him to see the illustrations. Then it could be determined if she/he used those unread pages in the retelling of the story.

Interpretation of hypothesis three posed the major problem. When there was more than one primary character and only one appeared in an illustration, the question was whether one should mark the "yes" column because one character was shown or the "no" column because both characters were not shown. Since the table had only a "yes" or "no" column, it was decided to mark the "yes" column if one or more of the primary characters were in the illustration. Future studies might use a table with headings of "number of primary characters" and "number of characters shown". This may unfold new ideas as to how the primary character(s) are used in illustrating a story. This suggested table would alleviate the problem of a flat "yes" or "no" statement which occurred in this study.

It was difficult to draw a conclusion from this study as to the importance of the character(s) being in the



illustrations and a child's ability to tell the essence of the story, as twelve of the books used by this researcher had the main character(s) in the illustration one-hundred percent of the time. The other two books used the main character(s) in the illustrations eighty-eight and ninety-three percent of the time. Since the percentage of time the main character(s) was in the illustration was so even among the books no real conclusion could be made. Had some of the books had the main character(s) in the illustrations seventy-five percent or less of the time, the importance of the main character(s) in the illustration could have been determined. Old Hat New Hat was the only book which showed the main character(s) being in the illustrations as not important. However, Old Hat New Hat dealt with the main character being in a passive role of looking at hats and describing them, whereas the other books involved the main character(s) in an active role.

Dawn was also an enthusiastic and cooperative child. As she gave her story expansion she would periodically look at me for assurance that she was telling the story as it had been written. After she had given her story expansion, the white pieces of paper were removed from the text so Dawn could read the story. When she read the text, Dawn was obviously pleased with how accurate she had been in telling the story from the illustrations alone. She especially expressed pleasure with the humor in the text. After Dawn had finished the two books, she was asked if she

would like to see the other books. Her answer was an enthusiastic "yes". As Dawn and the researcher's daughter read the stories and discussed them together, it became obvious that following this methodology of covering the text in a picture storybook may be one way to spark interest in different picture storybooks.

Old Hat New Hat revealed the most interesting data concerning the number of times the main character was in the illustration and the number of times Greg mentioned the character. The research with Dawn had been completed before Greg did the book Old Hat New Hat. Otherwise, this researcher would have had Dawn do a story expansion of Old Hat New Hat to see if there would be similar results in the number of times she mentioned the character(s) and action(s) or the number of times her comments followed the written story.

More could be decided as to the importance of the main character(s) in an illustration by following the methodology used with Dawn than by using a table to determine if a character(s) is in the illustration. Old Hat New Hat shows that a main character can be in an illustration but not necessary for the storyline. A study could be done to determine if books with no main character (e.g. Hide and Seek Fog, Room for One More) would alter a child's ability to recall events.

The methodology for hypothesis four posed no problems. Counting squares which contained the illustration became

very time consuming. Often knowing the number of squares per page and subtracting the number of squares with no illustration proved to be a faster method. The table cell was efficient. To save time, this researcher computed the number of squares for twenty-four percent, twenty-five percent, forty-nine percent, fifty percent, seventy-four percent and seventy-five percent of the squares per page. This enabled the researcher, after counting the number of squares per page with the illustration, to tell at a glance which column to mark.

The hypothesis concerning page space utilization was too stringent. This fact became apparent when the eighteen pages that did not meet the requirement were examined. Each of these eighteen pages was part of a two-page illustration. None of these pages were consecutive.

The importance of page utilization is questionable as a book page may be all illustration as in the Little Golden Book's Pokey Little Puppy but show little or no action and/or detail, therefore not expanding the text very much. Or a book may have a small illustration, such as the Mercer Mayer books, but have an abundance of action and/or detail, therefore expanding the text.

The size of the illustration may not be as significant as what the illustration contains. A future study could be done on a comparison of page space devoted to the illustration and the child's ability to tell the essence of the story. This researcher believes the size of the illustration would

not be a factor in the child's ability to tell the essence of the story. Rather the major factor would be what was contained in the illustration. A larger illustration does make it easier for a child to view the character(s), action(s), and details, but does not necessarily enhance the storyline.

An alternative study would be to have the third grade child give a story expansion of all the books the kindergarten child did. Then a comparison could be made between the number of times each child mentions the character(s) and action(s) and the number of times the storyline is followed.

For objective measuring techniques to be useful to a teacher or media specialist, the techniques should be brief and easy to do. A revised PPF could be applied to two or more pages of a picture storybook. This would save time and might be conclusive in its results.

As only books illustrated by the Berenstains were used in this study it is not possible to generalize these findings and apply them to all children's picture storybooks. Replication of this study could be done using the Caldecott books, books in which each illustrator used a different type of illustration, and books which cover different areas such as mood or concept books. From the data gathered in these other areas, along with this study, generalizations could be made as to the appropriateness of these four objective measuring techniques when applied to the illustrations of children's picture storybooks.

Counting the number of times the main character(s) appeared in the illustrations of a book was time consuming and revealed no new insights. The importance of page utilization proved to be questionable. The best objective measuring techniques to apply to picture storybooks probably would be a revised Picture Potency Formula designed for picture storybooks and the use of children's own reactions to the illustration.

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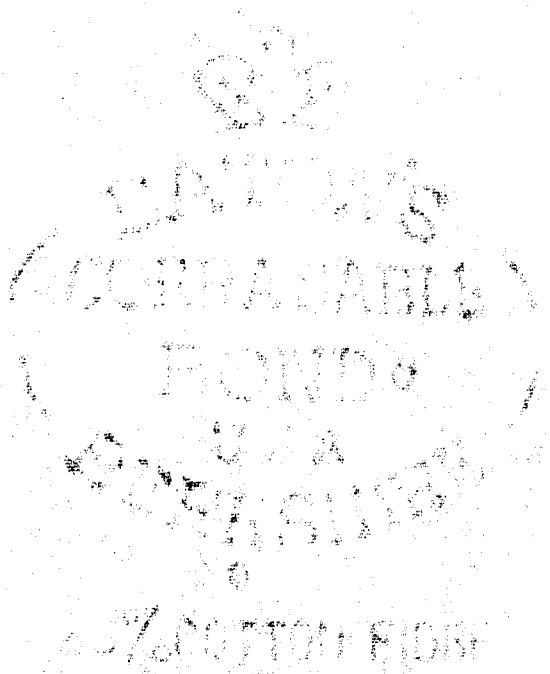
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APPENDIX A

TABLE CELLS











APPENDIX B

PICTURE POTENCY FORMULA DATA

Title of Book The Berenstains' B Book

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
1	0	1	1	2	0	0	0	1	2	2
2-3	0	1	1	2	0	0	0	1	2	3
4-5	1	2	2	2	2	0	0	3	2	3
6-7	2	3	4	3	2	0	0	3	2	3
8-9	2	4	5	3	2	0	0	3	2	5
10-11	2	4	5	4	2	0	0	3	2	5
12-13	2	4	5	4	2	0	0	3	2	5
14-15	1	1	1	2	0	0	0	0	2	5
16-17	2	4	5	4	3	0	0	4	2	5
18-19	2	4	5	4	3	0	0	5	2	5
20-21	2	4	5	4	3	0	0	5	2	5
22-23	2	4	5	5	4	0	2	5	2	5
24-25	2	3	5	5	3	0	2	5	2	5
26	2	2	5	5	2	0	3	5	2	5

Average - 24.5 points

Title of Book The Bears' Christmas

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
3	2	3	5	4	2	3	4	0	2	5
4-5	4	1	5	4	3	3	4	1	2	5
6-7	3	3	5	5	3	3	4	1	2	5
8-9	3	3	5	4	4	3	4	1	2	5
10-11	2	2	5	3	3	3	3	1	2	5
12-13	2	2	5	3	3	3	3	1	2	5
14T	1	2	5	3	3	3	3	1	2	5
14B	1	2	5	3	4	3	3	1	2	5
15	1	2	5	3	3	3	3	1	2	5
16-17	1	1	4	3	2	3	3	1	2	5
18-19	1	2	5	3	3	3	3	1	2	4
20-21	1	2	5	3	3	3	3	1	2	5
22-23	2	2	5	4	2	3	3	1	2	5
24-25	2	2	5	4	3	3	3	1	2	4

continued next page

Title of Book The Bears' Christmas

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
26-27	2	1	5	3	3	3	3	0	2	4
28-29	2	1	5	4	3	3	3	1	2	4
30-31	2	1	5	4	2	3	3	1	2	4
32-33	2	2	5	4	2	3	3	1	2	4
34-35	3	2	5	4	3	3	3	1	2	4
36-37	3	2	5	4	5	3	3	1	2	4
38-39	3	2	5	4	3	3	3	1	2	5
40-41	2	2	5	4	3	3	3	1	2	3
42-43	2	1	5	4	2	3	3	1	2	3
44-45	1	1	5	4	2	3	3	2	2	3
46-47	2	1	5	4	3	3	3	0	2	3
48-49	2	2	5	4	2	3	3	0	2	3
50-51	3	2	5	5	3	3	5	1	2	4
52-53	3	1	5	5	3	3	4	1	2	4

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Title of Book The Bear Detectives

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
1	2	5	5	5	3	4	5	0	2	4
2	2	4	5	5	3	4	5	2	2	4
3	2	2	5	5	2	4	5	2	2	4
4-5	4	2	5	5	4	4	5	2	2	4
6-7T	2	2	5	5	1	4	5	2	2	4
6-7B	2	3	5	5	2	4	5	2	2	4
8T	2	5	5	5	4	4	5	2	2	4
8B	2	5	5	5	2	4	5	2	2	4
9	2	5	5	5	4	4	5	2	2	4
10-11	4	4	5	5	4	4	5	2	2	4
12	2	2	5	3	1	0	2	2	2	4
13	1	3	5	4	2	0	2	2	2	4
14	3	4	5	5	3	4	5	5	2	4
15	3	4	5	5	2	4	5	2	2	4

continued next page

Title of Book The Bear Detectives

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
16-17	3	3	5	5	3	4	5	3	2	4
18	2	3	5	5	3	0	2	2	2	4
19	2	3	5	5	3	4	5	2	2	4
20-21	5	4	5	5	3	4	5	5	2	4
22	2	3	4	4	3	3	3	2	2	4
23	3	4	5	5	2	3	4	2	2	4
24-25	5	4	5	5	4	4	5	2	2	4
26-27	3	4	5	5	4	4	5	2	2	4
28-29	2	5	5	4	2	0	2	5	2	4
30-31	3	3	5	4	4	4	5	5	2	4
32-33	2	4	5	5	3	4	5	5	2	4
34-35	3	3	5	5	3	4	5	2	2	4
36-37	2	5	5	5	1	4	5	2	2	4

Average - 33 points

Title of Book Bears in the Night

Pg.	dif thgs	sig thrs	total thgs	colors	action	children	people	pot. mov.	size	empathy
1-2	2	2	5	4	2	5	5	0	2	5
3-4	2	1	5	2	2	5	5	0	2	5
5-6	1	4	5	2	3	4	5	0	2	4
7-8	2	1	3	3	3	3	3	0	2	4
9-10	2	2	5	3	3	3	3	0	2	4
11-12	3	3	5	3	4	4	4	0	2	4
13	1	2	5	3	3	3	3	0	2	4
14	2	2	5	3	3	3	3	0	2	4
15-16	2	2	5	3	4	4	4	0	2	4
17-18	1	2	5	3	2	3	3	0	2	4
19-20	3	2	5	3	5	5	5	0	2	4
21-22	2	3	5	3	3	4	4	2	2	4
23-24	1	2	5	3	3	4	4	2	2	4
25-26	3	5	5	3	5	5	5	2	2	5

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Title of Book Bears on Wheels

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
1	1	2	1	2	1	3	2	1	2	3
2-3	1	2	2	2	2	3	3	1	2	3
4-5	1	2	3	3	3	4	5	1	2	3
6	1	2	2	3	3	4	4	1	2	3
7	1	2	3	3	3	4	5	1	2	3
8-9	1	2	4	3	2	5	5	1	2	3
10-11	1	2	4	3	3	5	5	1	2	3
12-13	2	2	5	3	4	4	5	1	2	3
14-15	2	4	5	4	2	4	5	1	2	3
16-17	2	2	5	5	3	5	5	1	2	3
18-19	1	2	4	4	1	5	5	1	2	3
20-21	2	2	5	5	3	5	5	1	2	3
22-23	2	2	5	5	3	5	5	1	2	3
24-25	2	4	5	4	4	5	5	1	2	3

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Title of Book The Bears' Picnic

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
3	2	3	5	4	2	3	4	0	2	4
4-5	3	4	5	5	3	3	4	0	2	4
6-7	3	4	5	5	2	3	4	0	2	4
8-9	3	4	5	4	4	3	4	1	2	4
10-11	3	3	5	4	1	3	4	0	2	4
12-13	3	4	5	5	1	3	4	0	2	4
14-15	2	3	5	5	3	3	4	0	2	4
16-17	3	5	5	5	5	5	5	3	2	4
18-19	2	3	5	4	2	3	4	0	2	4
20-21	2	3	5	4	2	3	4	0	2	4
22-23	2	3	4	4	1	3	4	0	2	4
24-25	2	5	5	5	2	3	4	5	2	4
26-27	3	3	5	5	3	3	4	3	2	4
28-29	3	3	5	5	3	3	4	1	2	4

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Title of Book The Bears' Picnic

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
30-31	2	3	5	5	1	3	4	1	2	4
32-33	2	3	5	5	2	3	4	1	2	4
34-35	2	3	5	4	2	3	4	1	2	4
36-37	2	4	5	5	3	3	4	1	2	4
38-39	1	3	5	5	3	3	4	0	2	4
40-41	2	3	5	5	2	3	4	0	2	4
42-43	2	3	5	4	2	3	4	0	2	4
44-45	2	3	5	4	2	3	4	0	2	4
46-47	2	3	5	4	2	3	4	0	2	4
48-49	2	1	5	4	2	3	4	1	2	4
50-51	2	4	5	5	4	3	4	1	2	4
52-53	2	3	5	5	4	3	4	1	2	4
54-55	2	2	5	5	5	3	4	2	2	4
56-57	3	3	5	5	3	3	4	0	2	4

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Title of Book Bear Scouts

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
2-3	3	2	5	5	3	4	5	0	2	4
4-5	2	4	5	4	1	4	5	0	2	4
6-7	2	4	5	4	2	4	5	0	2	4
8T	2	3	5	4	4	4	5	0	2	4
8B	2	3	5	5	3	4	5	0	2	4
9	1	1	5	4	1	3	4	0	2	4
10-11	1	4	5	4	2	4	5	0	2	3
12-13	2	4	5	4	2	4	5	0	2	3
14-15	2	4	5	5	1	4	5	0	2	4
16	2	2	5	4	2	4	5	0	2	4
17	2	2	5	5	1	4	5	0	2	4
18-19	1	5	5	5	2	0	2	4	2	3
20-21	2	5	5	4	1	4	5	0	2	3
22-23	2	4	5	4	1	4	5	0	2	3

continued next page

Title of Book The Bear Scouts

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
24	2	2	5	4	2	4	5	0	2	3
25	2	4	5	4	3	4	5	0	2	3
26-27	2	2	5	4	3	4	5	0	2	3
28-29	2	2	5	5	2	4	5	1	2	3
30-31	2	3	5	4	3	4	5	1	2	3
32-33	2	4	5	4	2	4	5	1	2	3
34-35	3	4	5	5	2	4	5	1	2	3
36-37	2	2	5	5	3	4	5	0	2	3
38	2	2	5	4	4	4	5	0	2	3
39	2	4	5	4	3	4	5	0	2	3
40-41	2	4	5	4	3	4	5	0	2	4
42-43	2	3	5	4	2	4	5	0	2	4
44	2	4	5	3	2	4	5	0	2	4
45	2	4	5	4	2	4	5	0	2	4

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Title of Book The Bear Scouts

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
46-47	2	3	5	4	2	4	5	0	2	4
48-49	2	5	5	5	2	4	5	0	2	4
50-51	2	2	5	4	2	4	5	0	2	4
52-53	2	4	5	3	3	4	5	0	2	4
54-55	1	2	5	3	2	4	5	5	2	3
56-57	2	4	5	4	2	4	5	0	2	3
58-59	2	5	5	4	3	4	5	0	2	4
60-61	2	4	5	3	3	4	5	1	2	3
62-63	2	4	5	4	3	4	5	1	2	4

Average - 31 points

Title of Book The Bears' Vacation

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
3	3	4	5	5	2	3	4	1	2	5
4-5	3	4	5	5	2	3	4	1	2	3
6-7	3	3	5	5	3	3	4	1	2	3
8-9	2	1	5	4	3	3	4	0	2	4
10-11	2	3	5	4	3	3	3	0	2	4
12-13	3	3	5	4	2	3	3	0	2	4
14	2	3	5	2	3	3	3	0	2	4
15	2	3	5	4	2	3	3	0	2	4
16-17	4	3	5	5	2	3	3	0	2	4
18-19	1	3	4	4	3	3	3	0	2	4
20-21	2	2	4	5	2	3	3	0	2	4
22-23	3	4	5	5	4	3	4	0	2	4
24	2	3	5	4	3	3	4	1	2	3
25	2	3	5	5	3	3	4	1	2	3

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Title of Book The Bears' Vacation

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
26-27	3	3	5	4	4	3	4	2	2	3
28-29	2	3	5	4	2	3	3	2	2	3
30-31	3	4	5	5	2	3	3	2	2	3
32-33	3	2	5	5	2	3	3	0	2	3
34-35	2	3	5	5	2	3	3	0	2	3
36-37	2	2	5	5	3	3	3	1	2	3
38-39	1	5	5	4	3	3	3	3	2	3
40-41	3	3	5	5	2	3	3	2	2	3
42-43	2	3	5	4	3	3	3	1	2	3
44-45	1	4	5	5	3	3	3	1	2	3
46-47	1	4	5	5	3	3	3	1	2	3
48-49	2	4	5	5	3	3	3	1	2	3
50-51	2	2	5	5	1	3	3	5	2	3
52-53	2	2	5	5	1	3	3	4	2	3

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Title of Book The Bears' Vacation

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
4-55	3	3	5	4	3	3	3	3	2	3
56-57	2	3	5	5	1	3	3	5	2	3
58-59	2	4	5	5	2	3	3	1	2	3
60-61	3	3	5	5	2	3	3	1	2	3
62-63	2	3	5	4	3	3	4	1	2	3

Average - 30 points

Title of Book The Big Honey Hunt

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
3	2	4	5	3	3	3	4	0	2	5
4-5	3	3	5	3	4	3	4	0	2	5
6-7	3	2	5	5	3	3	4	0	2	5
8-9	2	2	5	5	2	3	3	0	2	5
10-11	1	3	5	4	2	3	3	1	2	5
12	1	3	4	4	2	3	3	1	2	5
13	2	3	5	3	2	3	3	1	2	5
14-15	2	3	5	3	3	3	3	1	2	5
16-17	2	2	5	4	4	3	3	2	2	5
18-19	3	3	5	4	3	3	3	2	2	5
20-21	2	3	5	4	4	3	3	1	2	5
22T	1	3	5	4	2	3	3	1	2	5
22B	1	3	5	4	2	3	3	1	2	5
23	2	3	5	4	2	3	3	1	2	5

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Title of Book The Big Honey Hunt

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
24-25	1	2	4	4	3	3	3	0	2	5
26-27	2	2	5	5	3	3	3	2	2	5
28-29	2	2	5	4	3	3	3	2	2	5
30-31	2	2	5	4	2	3	3	1	2	5
32-33	2	3	5	4	3	3	3	1	2	5
34-35	2	3	5	4	1	3	3	1	2	5
36-37	2	4	5	4	2	3	3	5	2	4
38-39	3	2	5	5	2	3	3	5	2	4
40-41	2	2	5	4	1	3	3	1	2	4
42-43	2	2	5	5	2	3	3	1	2	4
44	1	3	4	4	1	3	3	0	2	4
45	1	3	4	4	1	3	3	0	2	4
46-47	1	3	4	4	1	3	3	0	2	4
48-49	1	2	4	4	1	3	3	0	2	4

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Title of Book The Big Honey Hunt

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov;	size	empathy
50-51	1	5	5	4	3	3	3	5	2	3
52-53	1	5	5	5	3	3	3	5	2	4
54-55	2	3	5	4	2	3	3	5	2	3
56-57	1	2	5	3	3	3	3	5	2	3
58-59	2	2	5	2	3	3	3	5	2	3
60-61	1	3	5	5	3	3	4	0	2	5
62-63	2	3	5	5	3	3	4	0	2	5

Average - 32 points

Title of Book           The Bike Lesson          

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov;	size	empathy
2-3	2	2	5	5	2	3	4	1	2	5
4-5	2	3	5	4	3	3	4	1	2	5
6-7	3	2	5	5	2	3	4	1	2	4
8-9	3	2	5	5	3	3	4	1	2	4
10-11	2	2	4	4	2	3	3	1	2	4
12-13	2	3	5	5	2	3	3	1	2	5
14-15	2	3	5	4	2	3	3	1	2	5
16-17	2	3	5	4	3	3	3	1	2	4
18-19	3	4	5	5	2	3	3	1	2	5
20-21	3	2	5	5	2	3	3	1	2	4
22-23	2	3	5	4	2	3	3	1	2	4
24-25	3	3	5	5	3	3	3	1	2	4
26-27	3	3	5	5	2	3	3	1	2	4
28-29	2	3	5	4	2	3	3	1	2	5

continued next page

Title of Book The Bike Lesson

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
30-31	2	2	5	5	2	3	3	1	2	4
32-33	2	3	5	4	2	3	3	1	2	4
34-35	2	1	5	5	2	3	3	3	2	5
36-37	3	2	5	5	3	3	4	5	2	4
38-39	2	3	5	4	2	3	4	5	2	4
40-41	2	3	5	5	3	3	4	5	2	4
42-43	2	3	5	4	2	3	3	1	2	4
44-45	2	3	5	4	2	3	3	1	2	4
46-47	2	2	5	4	2	3	3	1	2	4
48-49	2	3	5	4	3	3	3	1	2	4
50-51	2	3	5	4	3	3	3	1	2	4
52-53	3	3	5	4	3	3	3	1	2	4
54-55	3	2	5	4	3	3	3	1	2	4
56-57	3	3	5	4	4	3	5	5	2	4

continued next page



Title of Book C is for Clown

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
1	2	2	5	4	2	0	3	0	2	5
2-3	2	3	5	5	2	0	3	0	2	5
4-5	2	4	5	5	3	0	3	2	2	5
6-7	2	3	5	5	3	0	3	2	2	5
8-9	2	3	5	5	4	0	3	5	2	5
10-11	2	4	5	5	3	0	3	5	2	5
12-13	2	4	5	5	3	0	3	5	2	5
14-15	2	4	5	5	4	0	3	5	2	5
16-17	2	5	5	5	2	0	3	5	2	5
18-19	2	5	5	5	2	0	3	5	2	5
20-21	2	5	5	5	2	0	3	5	2	5
22-23	2	5	5	5	2	0	2	5	2	5
24-25	2	5	5	5	2	0	3	5	2	5
26-27	2	5	5	5	3	0	3	5	2	5

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Title of Book C is for Clown

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
28-29	2	1	5	3	1	0	0	1	2	5
30-31	2	5	5	5	3	0	3	5	2	5

Average - 30 points

Title of Book He Bear She Bear

Pg.	dif thrs	sig thrs	total thrs	colors	action	children	people	pot. mov.	size	empathy
1	1	2	4	3	1	3	3	0	2	5
2-3	4	2	5	5	5	4	5	3	2	5
4-5	3	4	5	4	2	3	5	1	2	5
6-7	3	2	5	5	3	3	5	0	2	5
8-9	3	2	5	5	5	3	5	1	2	5
10-11	3	3	5	5	5	3	5	2	2	4
12-13	3	5	5	5	1	3	5	3	2	4
14-15	2	3	5	5	5	3	5	1	2	5
16-17	3	2	5	5	5	5	5	2	2	5
18-19	2	2	5	5	5	3	5	1	2	5
20-21	3	2	5	5	2	3	4	2	2	4
22	1	2	5	4	2	3	3	0	2	5
23	2	4	5	5	3	4	5	2	2	4
24	1	3	5	4	4	5	5	0	2	5

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Title of Book He Bear She Bear

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
25	2	1	5	4	2	3	3	5	2	4
26	1	2	5	4	3	4	5	2	2	5
27	3	4	5	4	4	3	3	2	2	4
28	2	1	5	4	2	3	5	1	2	4
29	1	1	5	4	1	3	3	0	2	3
30	3	2	5	5	3	5	5	2	2	3
31	3	3	5	4	2	4	5	5	2	3
32	1	4	5	5	3	5	5	2	2	3
33	2	4	5	4	3	5	5	2	2	4
34-35	3	2	5	5	3	5	5	1	2	4

Average - 34 points

Title of Book Inside Outside Upside Down

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
1	1	2	3	3	1	3	2	0	2	5
2	1	2	3	3	1	3	2	0	2	5
3	1	2	4	3	2	3	3	0	2	5
4	1	4	5	4	2	3	3	0	2	3
5	1	4	5	4	2	3	3	0	2	3
6	3	4	5	4	2	3	3	1	2	3
7	3	3	5	4	2	3	3	1	2	3
8-9	2	3	5	4	2	3	3	1	2	3
10-11	3	4	5	5	2	3	3	1	2	3
12-13	3	4	5	5	2	3	3	1	2	4
14-15	2	4	5	5	2	3	3	1	2	4
16-17	3	2	5	4	2	3	3	1	2	4
18-19	1	2	4	2	2	3	2	1	2	3
20-21	2	2	5	4	2	3	2	1	2	4

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Title of Book Inside Outside Upside Down

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
22-23	2	2	5	4	1	3	2	0	2	4
24-25	2	2	5	4	2	3	3	0	2	5
26-27	2	2	5	4	2	3	3	0	2	5

Average - 27 points

Title of Book Old Hat New Hat

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
1	1	2	2	4	2	3	2	0	2	4
2-3	1	2	4	4	1	3	2	0	2	5
4-5	3	3	5	5	3	3	3	0	2	5
6	2	2	5	5	3	3	3	0	2	4
7	2	3	5	5	3	3	3	0	2	4
8	2	3	5	5	4	3	3	0	2	4
9	2	2	5	5	2	3	3	0	2	4
10L	1	2	4	4	2	3	3	0	2	4
10R	1	2	4	4	2	3	3	0	2	4
11L	1	2	3	3	1	3	3	0	2	4
11R	1	2	5	5	3	3	3	1	2	4
12-13	1	4	5	4	3	3	5	0	2	4
14T	1	4	5	4	2	3	3	0	2	4
14B	1	3	3	3	1	3	2	0	2	4

continued next page

Title of Book Old Hat New Hat

Pg.	dif thgs	sig thgs	total thgs	colors	action	children	people	pot. mov.	size	empathy
15T	1	2	2	2	1	3	2	0	2	4
15B	1	2	4	4	3	3	2	1	2	4
16-17	1	5	5	5	2	3	5	0	2	4
18-19	1	5	5	5	2	3	3	1	2	4
20-21	1	1	5	5	2	3	2	0	2	4
22-23	1	3	4	5	1	3	2	0	2	4
24-24	2	3	5	5	1	3	3	0	2	4
26-27	1	3	5	5	2	3	5	0	2	4

Average - 27 points

APPENDIX C

DATA ON PERCENTAGE OF TIMES GREG MENTIONED  
CHARACTER(S) AND ACTION(S) AND MATCHED  
COMMENTS WITH NARRATIVE

Title of Book Berenstain B Book

Page	Mentions character(s)		Mentions action(s)		Comments follow written story	
	Yes	No	Yes	No	Yes	No
1	X		X		X	
2-3	X		X		X	
4-5	X		X		X	
6-7	X		X		X	
8-9	X		X		X	
10-11	X		X		X	
12-13	X		X		X	
14-15		X	X		X	
16-17	X		X		X	
18-19	X		X		X	
20-21	X		X		X	
22-23	X		X		X	
24-25	X		X		X	
26	X		X		X	
N	13	1	14	0	14	0
%	93	7	100	0	100	0

Title of Book The Bears' Christmas

Page	Mentions character(s)		Mentions action(s)		Comments follow written story	
	Yes	No	Yes	No	Yes	No
3	X		X		X	
4-5	X		X		X	
6-7	X		X			X
8-9	X		X			X
10-11	X		X			X
12-13	X		X		X	
14	X		X		X	
15	X		X		X	
16-17	X		X			X
18-19	X		X			X
20-21		X		X	X	
22-23	X		X			X
24-25	X			X	X	
26-27	X		X		X	
28-29	X		X		X	
30-31	X		X		no written text	
32-33	X		X			X
34-35	X			X	X	
36037	X		X		X	
38-39	X		X			X
<b>X</b>	<b>19</b>	<b>1</b>	<b>17</b>	<b>3</b>	<b>11</b>	<b>8</b>





Title of Book The Bear Detectives

Page	Mentions character(s)		Mentions action(s)		Comments follow written story	
	Yes	No	Yes	No	Yes	No
1	X		X			X
2-3	X		X			X
4-5	X		X		X	
6-7	X		X		X	
8	X		X		X	
9	X		X		X	
10-11	X		X		X	
12	X		X			X
13	X		X			X
14		X		X	X	
15		X		X	X	
16-17	X		X		X	
18	X		X		X	
19	X		X		X	
20-21	X		X		X	
22	X		X		X	
23	X		X		X	
24-25		X		X		X
26-27	X		X			X
28-29	X		X			X
<del>N</del>	17	3	17	3	11	9
<del>2</del>	continued next page					

Title of Book The Bear Detectives

Page	Mentions character(s)		Mentions action(s)		Comments follow written story	
	Yes	No	Yes	No	Yes	No
30-31	X		X			X
32-33	X		X		X	
34-35	X		X		X	
36-37	X		X			X
<b>N</b>	21	3	21	3	13	11
<b>%</b>	87.5	12.5	87.5	12.5	54	46

Title of Book Bears In The Night

Page	Mentions character(s)		Mentions action(s)		Comments follow written story	
	Yes	No	Yes	No	Yes	No
1-2	X		X			X
3-4	X		X		X	
5-6	X		X			X
7-8	X		X		X	
9-10	X		X		X	
11-12	X		X		X	
13	X		X		X	
14	X		X		X	
15-16	X		X		X	
17-18	X		X		X	
19-20	X		X		X	X
21-22	X		X		X	
23-24	X		X			X
25-26	X		X		X	
27-28	X		X		X	
29-30	X		X		X	
31	X		X			X
<b>N</b>	17	0	17	0	12	5
<b>%</b>	100	0	100	0	71	29

Title of Book Bears On Wheels

Page	Mentions character(s)		Mentions action(s)		Comments follow written story	
	Yes	No	Yes	No	Yes	No
1	X		X		X	
2-3	X		X		X	
4-5	X		X		X	
6	X		X		X	
7	X		X		X	
8-9	X		X		X	
10-11	X		X		X	
12-13	X		X		X	
14-15	X		X			X
16-17	X		X		X	
18-19	X		X		X	
20-21	X		X		X	
22-23	X		X		X	
24-25	X		X			X
26-27	X		X		X	
28-29	X		X		X	
30-31	X		X		X	
N	17	0	17	0	15	2
%	100	0	100	0	88	12

Title of Book The Bears' Picnic

Page	Mentions character(s)		Mentions action(s)		Comments follow written story	
	Yes	No	Yes	No	Yes	No
3	X		X		X	
4-5	X		X		X	
6-7	X		X		X	
8-9	X		X		X	
10-11	X		X		X	
12-13	X		X			X
14-15	X		X		X	
16-17	X		X		no written text	
18-19	X		X		X	
20-21	X		X			X
22-23	X		X		X	
24-25	X		X		X	
26-27	X		X			X
28-29	X		X			X
30-31	X		X		X	
32-33	X		X		X	
34-35	X		X		X	
36-37	X		X		X	
38-39	X		X			X
40-41	X		X			X
<b>N</b>	20	0	20	0	13	?
	continued next page					



Title of Book The Bear Scouts

Page	Mentions character(s)		Mentions action(s)		Comments follow written story	
	Yes	No	Yes	No	Yes	No
2-3	X		X			X
4-5	X		X			X
6-7	X		X		X	
8	X		X			X
9	X		X		X	
10-11	X		X			X
12-13	X		X			X
14-15	X		X			X
16	X		X		X	X
17	X		X			X
18-19	X		X		X	
20-21	X		X			X
22-23	X		X			X
24	X		X		X	
25	X		X		X	
26-27	X		X		X	
28-29	X		X			X
30-31	X		X		X	
32-33	X		X			X
34-35	X		X			X
<b>NN</b>	<b>20</b>	<b>0</b>	<b>20</b>		<b>7</b>	<b>13</b>
<b>continued next page</b>						





Title of Book The Bears' Vacation

Page	Mentions character(s)		Mentions action(s)		Comments follow written story	
	Yes	No	Yes	No	Yes	No
3	X		X		X	
4-5	X		X		X	
6-7	X		X		X	
8-9	X		X		X	
10-11	X		X			X
12-13	X		X			X
14	X		X			X
15	X		X			X
16-17	X		X		X	
18-19	X		X		X	
20-21	X		X		X	
22-23	X		X		X	
24-25	X		X			X
26-27	X		X		X	
28-29	X		X		X	
30-31	X		X		X	
32-33	X		X		X	
34-35	X		X			X
36-37	X		X			X
38-39	X		X			X
	20	0	20	0	12	8
	continued next page					



Title of Book The Big Honey Hunt

Page	Mentions character(s)		Mentions action(s)		Comments follow written story	
	Yes	No	Yes	No	Yes	No
3	X		X		X	
4-5	X		X		X	
6-7	X		X		X	
8-9	X		X			X
10-11	X		X		X	
12-13	X		X		X	
14-15	X		X		X	
16-17	X		X			X
18-19	X		X		X	
20-21	X		X			X
22	X		X			X
23	X		X		X	
24-25	X		X		X	
26-27	X		X			X
28-29	X		X		X	
30-31	X		X			X
32-33	X		X		X	
34-35	X		X		X	
36-37	X		X		X	
38-39	X		X		X	
<b>T</b>	20	0	20	0	14	6
continued next page						



Title of Book The Bike Lesson

Page	Mentions character(s)		Mentions action(s)		Comments follow written story	
	Yes	No	Yes	No	Yes	No
2-3	X		X		X	
4-5	X		X		X	
6-7	X		X		X	
8-9	X		X		X	
10-11	X			X	X	
12-13	X		X			X
14-15	X		X			X
16-17	X		X		X	
18-19	X			X	X	
20-21	X		X		X	
22-23	X		X		X	
24-25	X		X			X
26-27	X		X		X	
28-29	X		X		X	
30-31	X		X			X
32-33	X		X		X	
34-35	X		X		X	
36-37	X		X		X	
38-39	X		X		X	
40-41	X			X	X	
N	20	0	17	3	16	4
continued next page						

Title of Book The Bike Lesson

Page	Mentions character(s)		Mentions action(s)		Comments follow written story	
	Yes	No	Yes	No	Yes	No
42-43	X		X			X
44-45	X			X	X	
46-47	X		X		X	
48-49	X		X			X
50-51	X		X		X	
52-53	X		X		X	
54-55	X		X		X	
56-57	X		X			X
58		NO	ILLUSTRATION			
59	X		X			X
60-61	X		X		X	
N	30	0	26	4	22	8
<del>N</del>	100	0	87	13	73	27

Title of Book C is for Clown

Page	Mentions character(s)		Mentions action(s)		Comments follow written story	
	Yes	No	Yes	No	Yes	No
1	X		X		X	
2-3	X		X			X
4-5	X		X		X	
6-7	X			X	X	
8-9	X			X	X	
10-11	X		X		X	
12-13	X			X		X
14-15	X		X		X	
16-17	X			X	X	
18-19	X			X		X
20-21	X		X		X	
22-23	X		X			X
24-25	X			X	X	
26-27		X		X	X	
28-29	X		X		X	
30-31	X		X		X	
<b>N</b>	<b>14</b>	<b>2</b>	<b>9</b>	<b>7</b>	<b>12</b>	<b>4</b>
<b>%</b>	<b>87.5</b>	<b>12.5</b>	<b>56.2</b>	<b>43.75</b>	<b>75</b>	<b>25</b>



Title of Book He Bear She Bear

Page	Mentions character(s)		Mentions action(s)		Comments follow written story	
	Yes	No	Yes	No	Yes	No
1	X		X		X	
2-3	X		X		X	
4-5	X			X	X	
6-7	X			X	X	
8-9	X		X		X	
10-11	X		X		X	
12-13	X		X		X	
14-15	X		X		X	
16-17	X		X		X	
18-19	X		X		X	
20-21	X		X		X	
22		X		X		X
23	X		X		X	
24	X		X		X	
25	X		X		X	
26	X		X		X	
27	X		X		X	
28	X		X		X	
29	X		X		X	
30-31	X		X		X	
<b>T</b>	19	1	17	3	19	1
	continued next page					

Title of Book He Bear She Bear

Page	Mentions character(s)		Mentions action(s)		Comments follow written story	
	Yes	No	Yes	No	Yes	No
32-33	X		X		X	
34-35	X		X		X	
N	21	1	19	3	21	1
%	95	5	86	14	95	5

Title of Book Inside Outside Upside Down

Page	Mentions character(s)		Mentions action(s)		Comments follow written story	
	Yes	No	Yes	No	Yes	No
1	X		X		X	
2	X		X		X	
3	X		X		X	
4	X		X		X	
5	X		X		X	
6	X		X		X	
7	X		X		X	
8-9		X		X		X
10-11	X		X		X	
12-13	X		X		X	
14-15	X		X		X	
16-17	X		X		X	
18-19	X		X		X	
20-21	X		X			X
22-23	X		X		X	
24-25	X		X			X
26-27	X		X			X
N	16	1	16	1	13	4
%	94	6	94	6	76	24

Title of Book Old Hat New Hat

Page	Mentions character(s)		Mentions action(s)		Comments follow written story	
	Yes	No	Yes	No	Yes	No
1	X		X		X	
2-3	X		X		X	
4-5	X		X		X	
6		X		X	X	
7		X		X	X	
8		X		X	X	
9		X		X	X	
10		X		X	X	
11		X		X	X	
12-13		X		X	X	
14		X		X	X	
15		X		X	X	
16-17		X		X	X	
18-19		X		X	X	
20-21		X		X	X	
22-23	X			X		X
24-25	X		X			X
26-27		X		X		X
N	5	13	5	13	15	3
%	28	72	28	72	83	17

## ABSTRACT

This research study was designed to determine if found and developed objective measuring techniques, using children's preferences and interests, were effective when applied to the illustrations of picture storybooks.

Using only fourteen books written and illustrated by Stan and Jan Berenstain, the five methods used to gather data for this study were: 1) applying the Picture Potency Formula to obtain the language stimulation value of each book; 2) Using a kindergarten child to determine if the essence of the story can be told by a child from looking at the illustrations; 3) recording the number of times the main character(s) was contained in the illustrations of each book; 4) having a third grade child give a page by page expansion of two of the books to determine if the main character(s) was necessary to the illustrations; and 5) counting the number of half-inch squares which contained parts of the illustration to determine page utilization.

The study suggests that: 1) counting the number of times the main character(s) appeared in the illustrations of a book revealed no new insights; 2) the importance of page utilization was questionable; and 3) the best objective measuring techniques probably would include using a revised Picture Potency Formula and children's own reactions to the illustrations.