Book-Handling Behaviors in Early Childhood:

Evidence from Eye Movement Monitoring

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Abstract

Current literature shows that orientation preference becomes consistent by the age of 30 months, despite the fact that the ability to process inverted images is already consistent by the age of 18 months (DeLoache, Uttal, & Pierroutsakos, 2000; Pierroutsakos, DeLoache, Gound, & Bernard, 2005). This study systematically examined book-handling behaviors of 18- to 30-month-old children to determine whether familiarity and the level of top-bottom visual cues of a picture book may affect young children's orientation preferences. Participants were five children ranging from 18 to 30 months in age. They never changed the book's orientation when it was upright, and only occasionally changed it when it was upside down. On most of the trials the children turned the pages from right to left and visually scanned from left-to-right. The frequencies of these actions were similar when the book was in upright and in upside down orientation. Given so few participants, the results can only be exploratory.

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My two-year-old son consistently holds his book upside down and continues to look at it that way until I correct him! Is this normal? Is something wrong with him? Does he have some kind of learning disability? Should I inform his pediatrician? One of the biggest challenges of being a parent is to find the Goldilocks degree of worry—not too much that the parents are consistently experiencing anxiety and not insufficient that the child's disability remains undetected. To maintain this optimal level of worry, parents need to be conscious of the typical language learning behaviors and accomplishments that children start to demonstrate since birth.

An important step in language learning is learning how to read books. A book is a human invention, so is the way we write and read it. The direction of writing and reading books is different across cultures and languages. For example, books in English-speaking cultures are written and read from left to right, while books in Arabic-speaking cultures are written and read from right to left (Casasanto, 2009). Books in Japan and Taiwan are written "in columns, with each column being read from top to bottom and the columns read from right to left" (Osaka & Oda, 1991). As suggested by the diversity in reading directions, humans are not born to read from left to right or from right to left. People learn how to write and read in certain ways. Yet, when does this learning occur? When do children begin to understand a book as a tool, and when do they to learn how to master this tool?

Studies show that children have definite concepts and hypotheses about literacy prior to instruction, suggesting that actual reading is a continuation of children's previous learning and literacy development (Whitmore, Martens, Goodman, & Owocki, 2005). To learn more about children's literacy development before formally learning to read, this study investigated

children's book-handling behaviors, which are early literacy behaviors that pave the way for actual reading. Some examples of book-handling behaviors include holding the book right-side up, starting the book at the front and moving toward the back, and looking at pictures from left to right (Rothlein & Meinbach, 1991).

Previous research on book handling behaviors found that 30-month-olds consistently preferred to interact with canonically-oriented picture books (DeLoache, Uttal, & Pierroutsakos, 2000). This means that they would reorient upside-down picture books, choose upright books over inverted ones, and acknowledge or protest being read to from an upside-down book. At age five, most kindergarteners are able to understand that print is read from left to right and from top to bottom (U.S. Department of Education, 2003).

This study is based in part on the important study by DeLoache, Uttal, and Pierroutsakos. In their study with 18- to 30-month-old children, they used several different assessments to test the difference between children's reactions towards upright and inverted picture books. Some of them include presenting a picture book to the child in an upside-down manner, observing to see whether the child acknowledged and/or protested against being read to from an inverted book, and having the child choose between an upright and an inverted copy of the same book. According to the results, the 18-month-old group in these studies did not show a strong orientation preference. They usually looked at a book in whatever orientation it was presented to them. They did not acknowledge or protest being read to from an upside-down book, nor did they show preference of upright books over inverted ones. The 24-month-old group did not demonstrate much difference from the 18-month-old group. The 30-month-old group, however, showed a strong orientation preference. They were significantly more likely to reorient inverted

books, protest being read to from an upside-down book, and prefer to interact with canonically oriented picture books.

DeLoache et al.'s study results show that children are not born with a strong preference for canonically oriented books. The orientation preference develops substantially between the age of 24 and 30 months. This prompted me to learn more about the development of the orientation preference, and the possible factors that may affect its progress of development.

Based on the results of DeLoache et al.'s study of orientation preference, I designed two studies, with the help of Professor John Rieser and Professor Ann Neely, to investigate book-handling behaviors of 18- to 30-month-olds. Like Deloache et al., we have 18-month-olds, 24-month-olds, and 30-month-olds as our three age groups, but instead of only focusing on orientation preference, we also studied right-to-left page turning and left-to-right visual scanning.

This study has three dependent variables, namely the frequencies of reorienting the book, the frequencies for which the first page-turn was from right to left, and the frequencies for which the first visual scanning movement was from left to right.

Four independent variables are of interest. One is the participants' ages at the time of test. Based on earlier research, we investigated children who are 18, 24, and 30 months in age. We have selected these three ages because we planned to compare results of this study to DeLoache et al.'s to see if the other two independent variables may demonstrate effects on the development of orientation preference. However, we were delayed in recruiting participants and tested a total of five. These five ranged from 18 to 30 months of age.

There were three stimulus variables relating to the books the participants were asked to explore. One is the book's orientation. On half of the trials, participants were handed a

book in its upright orientation, so that there would be no obvious reason for them to turn it around. On the other half of the trials, participants were handed the book when it was upside down, which created a situation where they might have reoriented it.

The second stimulus variable is the book's familiarity to the individual participant. To assess this, we interviewed the participant's parents or caregivers to find out what books they had available, and what books had the participant been reading for more than five times in the six months prior to the time of test. We used a frequently read book as the "familiar" one, and a recently published book as the "unfamiliar" one. We believe that familiarity might make a difference in children's performances because previous studies on face recognition found that with enough experience, 9- month-olds may succeed at a face recognition task that they originally failed. The study on face recognition showed that it is very difficult for 9-month-olds to tell the difference between one monkey face and another (Pascalis, de Haan, & Nelson, 2002). In a follow up study, 6-month-olds had daily experience at home for three months with pictures of monkeys. When they were then tested at the age of 9 months, they retained their ability to distinguish between monkey faces (Pascalis et al., 2005). This shows that experience may help infants to improve their performance on a certain task. Correspondingly, if 18-month-olds are presented with a book that they have much experience with, but in an upside-down matter, we expect that their experience with the book may help them to succeed at reorienting it.

The third stimulus variable is the presence or absence of strong top-bottom visual cues. The expectation that top-bottom visual cues may affect children's orientation preference derives from the expectation that familiarity of the book may make a difference. With extensive experience to a type of object or stimuli, children gradually develop a well-organized perceptual

prototype for the object or stimuli. The human face, for example, is one of the most common stimulus that a child may have experience with. As a result, children gradually develop a perceptual prototype for human faces—the eyes are in the upper half and the mouth in the lower half. Therefore, if a picture book shows a human face in an upside-down manner, even if it is a novel book that the child has no experience with, we expect the child to sense how the book's content contradicts the prototype he/she formed; and for the next step, we expect the child to reorient the book to make the book fit his/her perceptual prototype.

The question of interest of this study is how children's reorientation of picture books is affected by the level of familiarity and top-bottom visual cues of the book. We are also interested in finding out when do children begin to develop left-to-right visual progression and right-to-left turning of pages when reading wordless picture books. A follow up study was designed but not conducted to find out if children's left-to-right progression while reading picture books is a habit or a stimulus-driven behavior.

Study 1

In the study, the two specific questions of interest are: (a) Do children reorient a book faster or at an earlier age when they are familiar with the book? (b) Do children reorient a book faster or at an earlier age when the book contains strong top-bottom visual cues?

Method

Participants

Participants were five children: one 18-month-old boy, one 21-month-old girl, two 25-month-old girls, and one 30-month-old boy. They were recruited through the experimenters' social network of friends and families. They were not from the same day care center or

neighborhood. Originally I proposed to study 48 children, with 16 (8 girls, 8 boys) in each of three age groups: 18- month-olds, 24-month-olds, and 30-month-olds.

Design

The effect of: (a) the book's initial orientation, (b) the book's familiarity to the child, and (c) the presence or absence of strong visual cues were tested. Each child was tested four times for each of the two stimulus variables (familiarity and level of strong visual cues), resulting in a total of eight trials. In half of the trials, the book was given to the child in the upright format. And in the other half, the book was given in the upside down/inverted format. There was a short break after the fourth trial.

Each participant was randomly assigned to one of four stimulus orders. In the description below, a familiar book presented to the child in an upright format is written as "familiar-upright". Other presentations follow the same format.

The four stimulus orders are:

a) Familiar-Upright, Familiar-Inverted, Unfamiliar-Upright, Unfamiliar-Inverted
   Strong-Upright, Strong-Inverted, Weak-Upright, Weak-Inverted
b) Familiar-Inverted, Familiar-Upright, Unfamiliar-Inverted, Unfamiliar-Upright
   Strong-Inverted, Strong-Upright, Weak-Inverted, Weak-Upright
c) Unfamiliar-Upright, Unfamiliar-Inverted, Familiar-Upright, Familiar-Inverted
   Weak-Upright, Weak-Inverted , Strong-Upright, Strong-Inverted
d) Unfamiliar-Inverted, Unfamiliar-Upright, Familiar-Inverted, Familiar-Upright
   Weak-Inverted, Weak-Upright , Strong-Inverted, Strong-Upright

In half of the stimulus orders, the child was handed a book in an upright manner first. In the other half, the child was handed a book in an inverted manner first. The same goes for familiarity and presence of strong top-bottom visual cues.

During the trials, we had a parent of the child sit right next to him/her so the parent's position may not affect the child's decision of reorienting the book. We videotaped the trials to code the child's actions.

Materials

Four wordless picture books were used: (a) a novel book, (b) a familiar book (c) a book with strong top-bottom visual cues, and (d) a book with weak top-bottom visual cues.

A novel book is a newly published book that the child has never read before. It is chosen by the parent, and provided by the experimenter. A familiar book is a book that the child has read more than five times in the past six months. It is chosen and provided by the parent. A book with strong top-bottom visual cues is a book that readers can easily decide where the top is and where the bottom is. For example, a book showing human characters is a book with strong top-bottom visual cues because people naturally assume that the head is the top and the feet the bottom. A book with weak top-bottom visual cues is the exact opposite. It is a book that is difficult for the readers to decide where the top is and where the bottom is. The specific book that is used for this study is Patricia Intriago's picture book *Dot*. See image 1 for a page of the book.

A camera was used to videotape participants' behaviors during the observation sessions.

Procedure

All tests were conducted at the children's homes, with at least a parent present. The child was given time to be comfortable with the experimenter before the experimenter started testing.

The parent that accompanied the child during the testing was informed beforehand to not interfere with the child's actions during reading. The parent may hold the book for the child, but should not point at images or turn the pages for the child.

During the trials, the child sat beside the parent. In each trial, the experimenter handed the child an open book in either an upright or inverted manner, depending on the stimulus order assigned. The experimenter let the child read the book for at least 60 seconds before proceeding to the next trial.

The first four trials tested the effect of familiarity on orientation preference. After four trials, there was a short break, and then the experimenter repeated the same procedure that was done in the first four trials, but now with books of strong versus weak visual cues.

The experimenter was present throughout the process to observe the child's behaviors and videotape the entire session. Neither the experimenters nor the parent commented on the books' orientation.

Results and Statistical Analysis

The purpose of the experiment was to investigate how young children explore picture books as a function of the book's familiarity, initial orientation, and level of visual cues specifying top and bottom. The study involved four independent variables. One was age, but since there was a delay in recruiting participants, I tested only five children. As a result, it does not make sense to treat age as an independent variable, but it provides a basis for exploring the possible effects of age on my measures. The other three independent variables were stimulus variables, namely initial book orientation (the child was given the book in either upright or upside down format), book familiarity (a familiar book from home or an unfamiliar book brought

by the experimenter), and book orientation cues (a book with strong top-bottom visual cues or a book with weak top-bottom cues).

The dependent variables were whether the child reoriented the book on a given trial; the direction of the first page-turning action; and the direction of the first visual exploratory eye movement.

Coding. All trials were videotaped. Experimenters coded participants' actions by reviewing the tapes. The specific exploratory actions that were coded from the tapes are: (a) reorienting an upside down book, (b) turning a page from left to right, and (c) visually scanning a page from left to right. Reorientation and page turning are obvious and so are easy to code, but left-to-right reading progression requires a reliable and valid method of coding. Since the goal was to identify the direction of the participant's eye movement, eye tracking for this study does not have to be accurate to a point. The only information that we needed to know was where of the four quadrants is the participant looking at, and how does it change during the reading process. As a result, we tracked children's eye movement by identifying their eye gaze on a 2x2 quadrant (as shown in image 2).

This method of eye-movement monitoring was tested by experimenters before the study was conducted. During the testing, the experimenters divided the surface of a picture book into nine sections (3x3 matrix), and labeled each with a number on both sides (written on a sticky note). The front and back numbers match. See image 3. Experimenter 1 held the book in her hand and experimenter 2 sat across from her. We started by testing how accurate experimenter 2 could identify which section experimenter 1 was looking at. Experimenter 1

would look at somewhere on the picture book, and experimenter 2 would say the number of the section that she believed experimenter 1 was looking at. We had twenty trials and the accuracy rate was 100%. We then started testing how well experimenter 2 could describe experimenter 1's eye movement. Her eyes would move from one section to another, and experimenter 2 would have to name the numbers that her eyes moved from and to. We had twenty trials and the accuracy rate was 95%.

Reliabilities. Each child participated in eight trials, so across the five participants there was a total of 40 trials. One experimenter coded all of the trials. A second experimenter coded 40% of the trials, independently of the first coder. They disagreed on a total of one observation. It was relatively fast and easy to code these exploratory behaviors from the video tapes.

Frequencies for the different dependent variables. Both books that were used to test the effect of strong top-bottom visual cues were novel books to the participants. As a result, all participants were presented unfamiliar books during six of the total of eight trials: three times in the upright and three times in the upside down formats. Because there were repeated trials, meaning the same book is presented but in different format, I tallied the number of times each participant reoriented the book, turned pages from right-to-left, and visually scanned from left-to-right. These frequencies appear in Tables 1,2, 3, and 4. The numbers of subjects were small, so there wasn't enough power to expect any statistically significant effects. Nevertheless, I ran t-tests for repeated measures to compare the proportions of reorientations, of right-to-left page turning, and left-to-right visual scanning

when the book was handed to them in the upright versus upside down orientation for the unfamiliar books. None of the t-values approached statistical significance.

Table 1. Familiar book and Orientation Preference. This table shows whether each participant reoriented the familiar book. Each participant received the familiar book once in its upright orientation and once in its upside down orientation. The order of the two trials was varied. In the table, "Yes" means the book was reoriented.

Participant	Book was Upright	Book was Upside down
18-month-male	No	No
21-month-female	No	Yes
25-month-female	No	Yes
25-month-female	No	Yes
30-month-male	No	No

Table 2. Unfamiliar books and Orientation Preference. Each child explored unfamiliar books in a total of six trials. The number of times they reoriented the books in the upright and upside down orientations were tallied. The ratios show the number of times children reoriented the book tallied across their three trials in each condition.

Participant	Book was Upright	Book was Upside down
18-month-male	0/3	0/3
21-month-female	0/3	0/3
25-month-female	0/3	2/3
25-month-female	0/3	1/3
30-month-male	0/3	0/3

number of reorientation / three trials

Table 3. Unfamiliar books and right-to-left page-turning. Each child explored unfamiliar books in a total of six trials: three where the book was presented in upright format and three where the book was presented in upside down format. In some trials, the participant did not turn a page. These tallies show the number of times they turned the pages from right-to-left out of the total number of times they turned a page throughout the six trials.

Participant	Book was Upright	Book was Upside down
18-month-male	1/1	1/1
21-month-female	2/3	0/0
25-month-female	0/1	1/1
25-month-female	2/2	3/3
30-month-male	2/3	2/3

number of right-to-left page-turning / total number of page-turning

Table 4. Unfamiliar books and left-to-right visual progression. In some trials of unfamiliar books, the participant did not look at the book so a direction of visual scan was coded as "N/A". These tallies show the number of times their initial visual scan was from left to right out of the total number of times they looked at the book.

Participant	Book was Upright	Book was Upside down
18-month-male	2/2	2/2
21-month-female	2/3	0/1
25-month-female	1/3	1/3
25-month-female	2/2	1/1
30-month-male	2/3	2/3

number of left-to-right visual progression / total number of looking at the book

Complete data. Tables showing the coded results appear in Table 5 and 6. Table 5 show one block of trials, including the familiar and unfamiliar books in upright and upside down orientation. Table 6 includes the other block of trials, using books that were all unfamiliar to the children, and included strong versus weak pictorial cues for orientation handed to the children in upright versus upside down orientation.

Future Directions

This study opens up several avenues for future work in book handling behaviors in early childhood. For example, a specific question that can be asked is: If given a book that will only make sense when one reads it from right to left and top to bottom, will children be able to adjust their normal reading progression (left-to-right and top-to-bottom) in order to make sense of the book's content? In other words, do children understand that reading progression is a cultural design that serves the purpose of helping them understand the book's content? Are children flexible enough to change their reading progression to interpret a novel stimuli? Described below is the second study that was designed to answer this question but was not conducted.

Method

Participants

Participants will be 48 children, with 16 (8 girls, 8 boys) in each of three age groups. The specific age groups are yet to be decided. Since this study aims to examine young children's abilities to change their normal reading progression, it has to test children who are successful in demonstrating normal reading progression. This information will not become available until we have statistically significant results of the current study.

Materials

Four right-to-left wordless picture books will be used in the trials. A right-to-left wordless picture book is a wordless picture book that makes no sense when you read it from left to right. In order to understand a right-to-left picture book, participants' reading progression has to start from the upper right corner then progress to the upper left corner. Then to the lower right corner then progress to the lower left.

A camera will be used to videotape participants' eye movement and book-handling behaviors during the observation sessions.

Procedure

Each participant will go through four trials. In each trial, the participant will be handed one of the four right-to-left picture books that are created by the experimenters. To counterbalance the order of presentation, participants will be presented the four books in different orders. The book will be handed to the participants as a closed book, with its front page on top, and in a right-side up manner. The gutter of the book will be on the right side of the book and the pages will be on the left. Participants will be invited to read the book.

The focuses of observation will be: where do participants start reading—from the book's front cover (the unfamiliar way) or back cover (the familiar way)? If the participants start in the middle, where do they progress—toward the front page or the back page? If the participants started from the back cover, do they restart the book from the front cover after reading a page of the book? Do participants start by reading the book from left-to-right, top to bottom? If they do, do they later adjust their reading direction to right-to-left? How long does it take before the participants decide to change their reading directions? How long do participants need to finish reading the book?

Observation sessions will take place at participants' homes, or at day care centers. A parent or caregiver of the participant will be present in the same room in which the observation takes place to provide comfort to the participant when needed, but will not be involved in any other way. Experimenters will be present throughout the process to monitor the trials and videotape the sessions. Neither the experimenters nor the caregiver will comment on how the participants handle and read the books. Results of the study should provide important information to teachers, parents, and publishers regarding children's behaviors and needs during their early stages of literacy development.

General Discussion

The study conducted has some limitations. One of them is that 18- to 30-month-old children are hard to control. Their attention spans are short so they easily got tired with the repeated measures. Also, they were vulnerable to distractions. They sometimes got distracted by objects around them, such as toys and treats. Some of them also stared at the experimenter instead of focusing on the book.

Another limitation was the parent's habit of pointing at pictures and turning pages for their children when reading with them. Although it was explained beforehand that the parents should not do anything to guide their children's actions during the trials, some parents still unintentionally interfered their children's actions. For example, a mother turned the pages for her daughter in several trials, leading to several "misses" in results because we were not supposed to code actions that were not performed by the children themselves.

For the two studies described in this paper, most of the questions that we were determined to answer are simple and straightforward questions. For example, do participants

reorient a book at an earlier age when they are familiar with the book? When do children start to develop left-to-right and top-to-bottom progression when reading wordless picture books? Do the participants adjust their reading direction to right-to-left if needed? In future studies, the dynamic between age and book-handling behaviors can be observed in a more sophisticated matter by investigating how other factors such as parents' educational level or socioeconomic status may play a role in affecting the development of children's book-handling behaviors. Some questions to consider are: how do parents' educational levels correlate with children's ability to adjust their reading direction? Do middle-class children reorient novel books faster than working-class children?

Another way that future studies may further investigate book-handling behaviors in early childhood is to observe how infants read pictures. If experimenters show infants two copies of the same page of a picture book, one in a right-side up manner and one in an upside-down manner, which one will the infants look longer at? Is there a pattern to their reading progression?

In summary, the conducted research aimed to examine book-handling behaviors of 18- to 30-month-olds. One important thing to note is, the findings of this study should not be generalized to children in other places and at other times. The effect of culture on book-handling behaviors is still unknown. The studies should be replicated in other countries before we generate our findings to a larger extent.

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Image 1

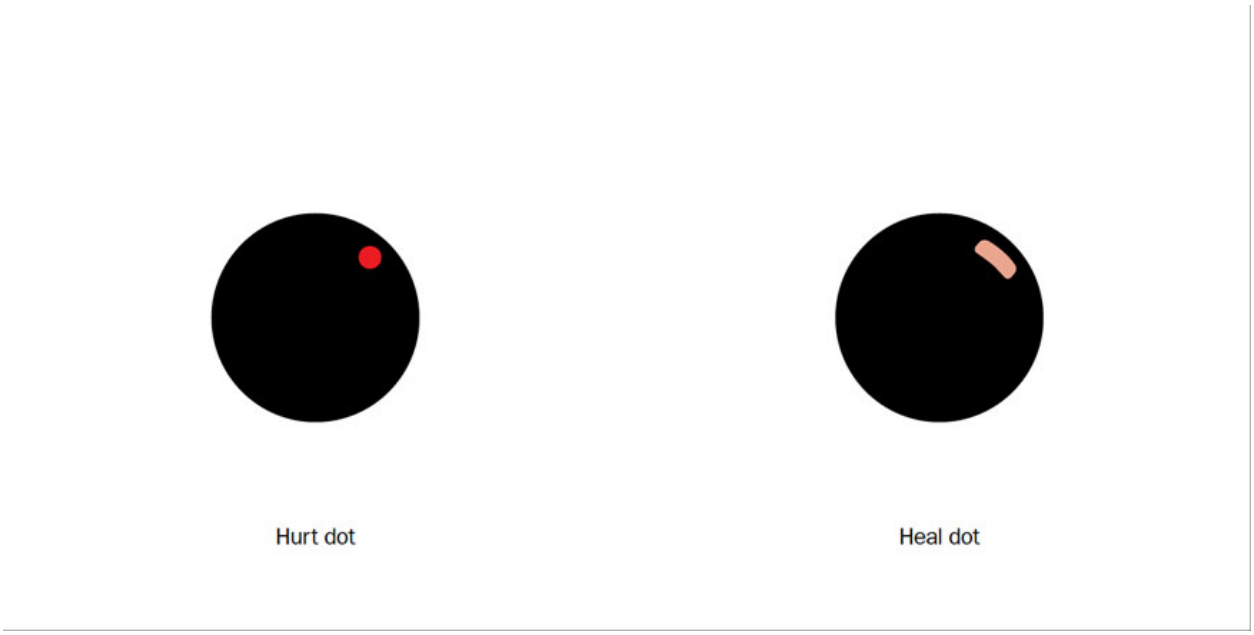

Image 2

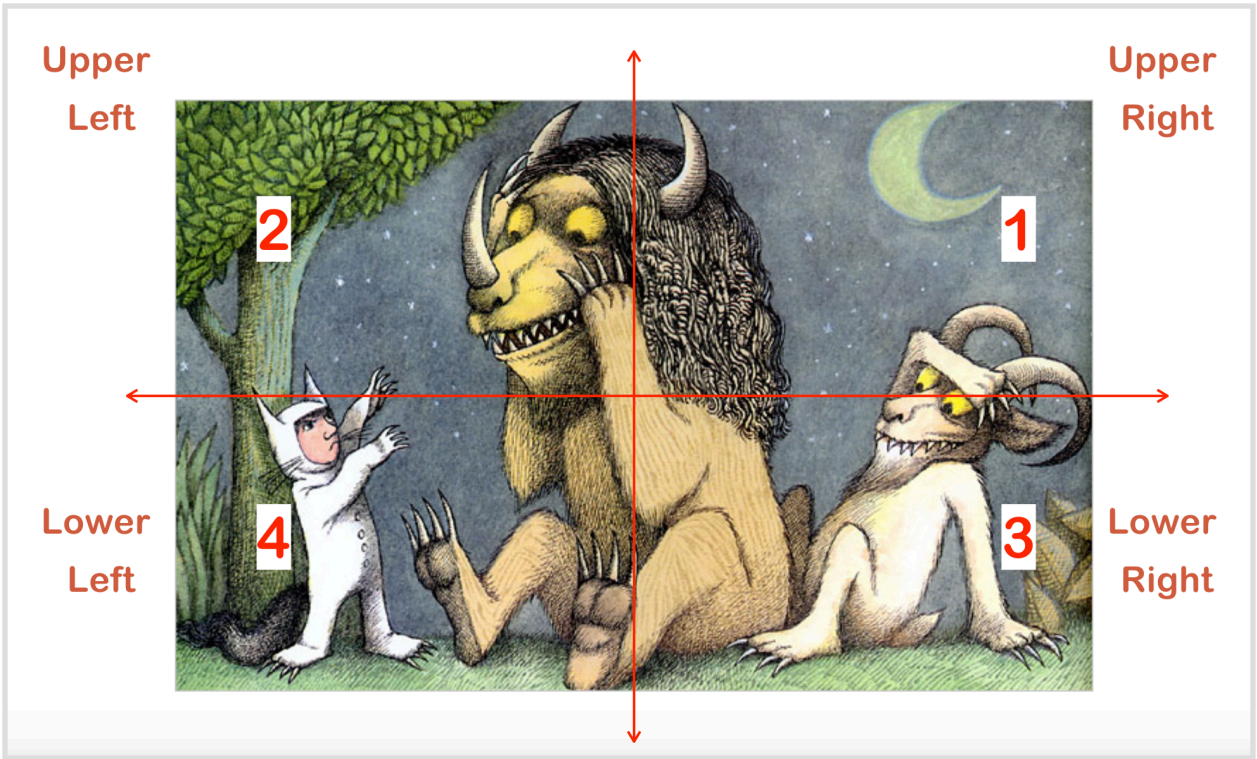

Image 3

Experimenter 1's vision:

1	2	3
4	5	6
7	8	9

Experimenter 2's vision:

3	2	1
6	5	4
9	8	7

Table 5. Complete data for Independent variable 1 (Familiarity)

Participant ID	Familiar Up	Familiar Down	Unfamiliar Up	Unfamiliar Down
18M **Order: 1**	Reorient: NO Latency: N/A	Reorient: NO Latency: N/A	Reorient: NO Latency: N/A	Reorient: NO Latency: N/A
	Page turning: NORMAL	Page turning: ABNORMAL THEN NORMAL	Page turning: NORMAL	Page turning: NORMAL
	Eye direction: L — R	Eye direction: L — R	Eye direction: L — R	Eye direction: L — R
21F **Order: 3**	Reorient: NO Latency: N/A	Reorient: YES Latency: 12 SEC	Reorient: NO Latency: N/A	Reorient: NO Latency: N/A
	Page turning: NORMAL	Page turning: NORMAL	Page turning: ABNORMAL	Page turning: N/A
	Eye direction: L — R	Eye direction: R — L	Eye direction: R — L	Eye direction: N/A
25F **Order: 1**	Reorient: NO Latency: N/A	Reorient: YES (IMMEDIATELY REALIZES) Latency: 16 SEC	Reorient: NO Latency: N/A	Reorient: YES (IMMEDIATELY REALIZES) Latency: 7 SEC
	Page turning: ABNORMAL THEN NORMAL	Page turning: N/A	Page turning: N/A	Page turning: N/A
	Eye direction: L — R	Eye direction: L — R	Eye direction: R—L (THEN L—R)	Eye direction: R—L
25F **Order: 4**	Reorient: NO Latency: N/A	Reorient: YES Latency: 1 SEC	Reorient: NO Latency: N/A	Reorient: YES Latency: 31 SEC
	Page turning: NORMAL	Page turning: N/A	Page turning: NORMAL	Page turning: NORMAL
	Eye direction: N/A	Eye direction: L — R	Eye direction: L — R	Eye direction: L — R
30M **Order: 2**	Reorient: NO Latency: N/A	Reorient: NO Latency: N/A	Reorient: NO Latency: N/A	Reorient: NO Latency: N/A
	Page turning: ABNORMAL	Page turning: NORMAL THEN ABNORMAL	Page turning: ABNORMAL	Page turning: NORMAL THEN ABNORMAL
	Eye direction: L — R	Eye direction: L — R	Eye direction: L — R	Eye direction: L — R

Table 6. Complete data for Independent variable 2 (Strong or weak top-bottom visual cues)

Participant ID	Strong Up	Strong Down	Weak Up	Weak Down
18M **Order: 1**	Reorient: NO Latency: N/A Page turning: N/A Eye direction: L — R	Reorient: NO Latency: N/A Page turning: N/A Eye direction: L — R	Reorient: NO Latency: N/A Page turning: N/A Eye direction: N/A	Reorient: NO Latency: N/A Page turning: N/A Eye direction: N/A
21F **Order: 3**	Reorient: NO Latency: N/A Page turning: NORMAL Eye direction: L — R	Reorient: NO Latency: N/A Page turning: N/A Eye direction: R — L	Reorient: NO Latency: N/A Page turning: NORMAL Eye direction: L — R	Reorient: NO Latency: N/A Page turning: N/A Eye direction: N/A
25F **Order: 1**	Reorient: NO Latency: N/A Page turning: ABNORMAL Eye direction: L — R	Reorient: YES (IMMEDIATELY RECOGNIZES) Latency: 7 SEC Page turning: N/A Eye direction: L — R	Reorient: NO Latency: N/A Page turning: N/A Eye direction: R—L	Reorient: NO Latency: N/A Page turning: NORMAL Eye direction: R—L
25F **Order: 4**	Reorient: NO Latency: N/A Page turning: NORMAL Eye direction: L — R	Reorient: NO Latency: N/A Page turning: NORMAL Eye direction: N/A	Reorient: NO Latency: N/A Page turning: N/A Eye direction: N/A	Reorient: NO Latency: N/A Page turning: NORMAL Eye direction: N/A
30M **Order: 2**	Reorient: NO Latency: N/A Page turning: NORMAL Eye direction: R—L	Reorient: NO Latency: N/A Page turning: ABNORMAL Eye direction: L—R	Reorient: NO Latency: N/A Page turning: NORMAL Eye direction: L—R	Reorient: NO Latency: N/A Page turning: NORMAL Eye direction: R—L (BACK & FORTH)