ABSTRACT

Children with normal hearing spend much less time looking at print than at illustrations during storybook reading. However, children are more likely to attend to print when storybooks have high print salience. Although children with hearing loss exhibit deficits in print knowledge, little is known about attention to print for children with hearing loss. The purpose of this study was to investigate visual attention to print during storybook reading in preschool children with hearing loss. Preschoolers with and without hearing loss participated in storybook reading sessions. One book with high print salience and one book with low print salience were displayed on a computer screen while a female voice read the text. Visual attention to print was tracked using a Tobii X50 eye tracking system. Eye gaze analysis indicated that younger children with hearing loss focused more on print than children without hearing loss. Children with and without hearing loss both focused more on print in storybooks with high print salience than low print salience. Despite adequate visual attention to print, children without hearing loss do not appear to learn about print during storybook reading. Future research should investigate ways of explicitly teaching children with hearing loss about print.

METHOD

Participants

Four children with hearing loss (three 3-year-olds, one 5-year-old) and five children with normal hearing (two 3-year-olds, three 5- and 6-year-olds) participated in a storybook reading session.

Procedures

Two storybooks were used in the study. Spot’s Birthday Party (high print salience) and Spot’s Show and Tell (low print salience). Book pages were scanned into jpeg files, and a female adult voice was recorded reading the book text. E-prime was used to program the experiment. Book pages were displayed on a computer screen one after another. Audio of the reading began 500 ms after the page appeared, and the page changed 3000 ms after the audio ended.

RESULTS

Do children with hearing loss exhibit less visual attention to print than children with normal hearing during storybook reading?

No. Cohen’s d effect sizes indicated that children with hearing loss attended to print more than children with normal hearing.

<table>
<thead>
<tr>
<th>Percent of Total Time During Storybook Reading</th>
<th>Older (age 5-6)</th>
<th>Younger (age 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Print Salience</td>
<td>HL</td>
<td>NH</td>
</tr>
<tr>
<td>Print</td>
<td>0.4</td>
<td>0.6</td>
</tr>
<tr>
<td>Contextualized Print</td>
<td>4.7</td>
<td>2.0</td>
</tr>
<tr>
<td>Pictures</td>
<td>65.1</td>
<td>79.9</td>
</tr>
<tr>
<td>White Space</td>
<td>9.3</td>
<td>5.5</td>
</tr>
<tr>
<td>Not Looking at Book</td>
<td>20.3</td>
<td>11.9</td>
</tr>
</tbody>
</table>

Disability Impact

When targeting print knowledge during storybook reading, books with high print salience should be used.

DISCUSSION

Children with hearing loss exhibit documented deficits in print knowledge. One possible explanation for these deficits is that they do not attend to print during storybook reading. However, contrary to our hypothesis, younger children with hearing loss did not attend less to print during storybook reading than children with normal hearing. In fact, effect sizes indicated that younger children with hearing loss looked at print, particularly contextualized print, more than their peers with normal hearing.

The older child with hearing loss, in contrast, attended to print less than peers with normal hearing. The rate of growth of visual attention to print may be slower for children with hearing loss than children with normal hearing. Perhaps this slower rate of growth of visual attention to print can explain deficits in print knowledge in this population.

Children with hearing loss were much more likely to visually attend to print in books with high print salience than low print salience. When targeting print knowledge during storybook reading, books with high print salience should be used.

Because of the early visual attention to print of children with hearing loss, explicit print referencing during storybook reading (e.g., Justice & Ezel, 2000; 2002) may be an effective intervention method for this population. Future research should explore the effectiveness of explicit print referencing interventions for children with hearing loss.

ACKNOWLEDGEMENTS

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*This work was completed when the first author was a Research Experience for High School Students participant and the second author was a doctoral student at Vanderbilt University.