In Wisconsin, one way students qualify for speech services is by scoring at least 1.75 on the Bernthal Test of Phonology (BBTOP). The focus of our study is to compare multiple articulation assessments for students with speech delays. We could only look at the Word Inventory score on the BBTOP because the other tests do not provide a comparable inventory.

Eight 6 to 8 year old students (3 boys, 5 girls, mean age = 7;5) participated. We also thank Jan Edwards and Franzo Law for their input with the data analyses. We wish to thank Trici Schraeder, the Middleton-Cross Plains Area School District and its students who participated. We also thank Jan Edwards and Franza Law for their input with the data analyses.

RESULTS

### Error Permissiveness

<table>
<thead>
<tr>
<th>Test</th>
<th>N</th>
<th>% Errors</th>
<th>Permitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBTOP</td>
<td>8</td>
<td>73%</td>
<td>0%</td>
</tr>
<tr>
<td>KLPA2</td>
<td>8</td>
<td>173%</td>
<td>31%</td>
</tr>
<tr>
<td>HAPPP3</td>
<td>8</td>
<td>173%</td>
<td>41%</td>
</tr>
<tr>
<td>GFTA2</td>
<td>8</td>
<td>173%</td>
<td>52%</td>
</tr>
</tbody>
</table>

### Error Profiles

Students showed the following error profiles:

<table>
<thead>
<tr>
<th>Subject</th>
<th>l/r</th>
<th>s/z</th>
<th>Other</th>
<th>Total</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lisa</td>
<td>17</td>
<td>17</td>
<td>0</td>
<td>44</td>
<td>73</td>
</tr>
<tr>
<td>Maggie</td>
<td>18</td>
<td>12</td>
<td>0</td>
<td>30</td>
<td>63</td>
</tr>
<tr>
<td>Marje</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>17</td>
<td>32</td>
</tr>
<tr>
<td>Millhouse</td>
<td>13</td>
<td>16</td>
<td>1</td>
<td>32</td>
<td>53</td>
</tr>
<tr>
<td>Nelson</td>
<td>12</td>
<td>17</td>
<td>2</td>
<td>34</td>
<td>62</td>
</tr>
<tr>
<td>Patti</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>9</td>
<td>17</td>
</tr>
<tr>
<td>Ralph</td>
<td>17</td>
<td>17</td>
<td>5</td>
<td>39</td>
<td>57</td>
</tr>
<tr>
<td>Selma</td>
<td>9</td>
<td>8</td>
<td>0</td>
<td>17</td>
<td>36</td>
</tr>
</tbody>
</table>

The most frequent errors occurred on the liquids /l, r, s, z/.

### Permissiveness of Error Profiles

As predicted, HAPPP-3 scored the greatest proportion of /l/z, r, s, z/.

<table>
<thead>
<tr>
<th>Test</th>
<th>l/r</th>
<th>s/z</th>
<th>Other</th>
<th>Total</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFTA2</td>
<td>47%</td>
<td>44%</td>
<td>4%</td>
<td>3%</td>
<td>49%</td>
</tr>
<tr>
<td>KLPA2</td>
<td>94%</td>
<td>0%</td>
<td>4%</td>
<td>2%</td>
<td>96%</td>
</tr>
<tr>
<td>HAPPP3</td>
<td>55%</td>
<td>49%</td>
<td>4%</td>
<td>2%</td>
<td>80%</td>
</tr>
</tbody>
</table>

Concordance

We tested the inter-test reliability of the GFTA-2, KLPA-2 and HAPPP-3 using Kendall's coefficient of concordance. There was not significant concordance among the three tests.

ACKNOWLEDGEMENTS

We wish to thank Trici Schraeder, the Middleton-Cross Plains Area School District and its students who participated. We also thank Jan Edwards and Franza Law for their input with the data analyses.

DISCUSSION

### Which tests do I choose?

- Word-level testing, as on the BBTOP, maximizes sensitivity.
- Students with /l, r, s, z/ errors (gliding, vocalization): BBTOP or KLPA-2
- Students with /l, r, s, z/ errors (gliding, bungling): BBTOP or KLPA-2
- Students with /l, r, s, z/ errors (lispings): BBTOP or HAPPP-3

### Study Limitations

We could only look at the Word Inventory score on the BBTOP because the Consonant and Phonological Process inventories translate errors into a 4-point scale.

On the HAPPP-3, we used the 7;11 norms for children 8 years and older in order to compare to results from all three tests. Their actual percentiles would only be lower compared to age-matched peers.

- Modest sample size