Treating Aphasia Over the Internet: A Clinical Trial

Leora R. Cherney1,2, Jaime B. Lee1, Rosalind Hurwitz1, Sarel Van Vuuren1, Nattawut Ngampatipatpong3, Ronald Cole4

1Rehabilitation Institute of Chicago, Chicago, IL
2Northwestern University, Feinberg School of Medicine, Chicago, IL
3University of Colorado, Boulder CO; 4Mentor Interactive

ORAL READING FOR LANGUAGE IN APHASIA

ORLA Procedure

- SLP sits opposite person with aphasia (PWA)
- SLP reads stimulus (sentence) aloud to the PWA (look and listen)
- SLP reads stimulus aloud, with SLP and PWA pointing to each word
- SLP and PWA read aloud together, with PWA continuing to point to each word
- SLP adjusts rate and volume
- Above step is repeated twice more

ORLA Procedure cont.

- For each line or sentence, SLP states word for the PWA to identify
- For each line or sentence, SLP points to word for the PWA to read
- both content words and functors
- PWA reads stimulus aloud
- with the SLP, as needed

ORAL READING FOR LANGUAGE IN APHASIA

Theoretical Background

- Based on neuropsychological models of reading
- Improve reading comprehension by providing practice in grapheme-to-phoneme conversion
- As oral reading becomes more fluent and automatic, the reader can focus on comprehension


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Cherney et al. (2008)
ORLA – Preliminary Studies

- Cross-modal generalization
- Improvements in oral expression, auditory comprehension, and written expression in both fluent and non-fluent aphasia
  - Cherney, Merbitz & Grip (1986)
  - Cherney (1995)
  - Cherney (2004)

Demographic Data by Severity Level

<table>
<thead>
<tr>
<th></th>
<th>Severe Aphasia (AQ &lt; 25)</th>
<th>Moderate Aphasia (AQ 45-65)</th>
<th>Mild-Moderate Aphasia (AQ 66-85)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial WAB AQ</td>
<td>13.73 (3.97)</td>
<td>54.74 (3.53)</td>
<td>76.84 (5.56)</td>
</tr>
<tr>
<td>Number</td>
<td>6</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Male : Female</td>
<td>2 : 4</td>
<td>5 : 4</td>
<td>9 : 1</td>
</tr>
<tr>
<td>Age at Stroke Onset</td>
<td>66.33 (11.79)</td>
<td>51.62 (17.59)</td>
<td>50.59 (9.10)</td>
</tr>
<tr>
<td></td>
<td>60.21 – 80.36</td>
<td>25.20 – 78.60</td>
<td>33.96 – 64.03</td>
</tr>
<tr>
<td>Months post Onset</td>
<td>31.96 (24.13)</td>
<td>71.83 (83.86)</td>
<td>47.34 (43.38)</td>
</tr>
<tr>
<td></td>
<td>12.38 – 71.97</td>
<td>12.16 – 253.21</td>
<td>12.16 – 138.56</td>
</tr>
<tr>
<td>Age at Baseline Testing</td>
<td>65.00 (10.28)</td>
<td>57.61 (13.46)</td>
<td>54.84 (10.74)</td>
</tr>
<tr>
<td></td>
<td>56.22 – 81.65</td>
<td>39.00 – 79.64</td>
<td>35.18 – 71.95</td>
</tr>
</tbody>
</table>

Summary

- Severe aphasia
  - Greatest improvements in reading comprehension
- Moderate aphasia
  - Greatest improvements in discourse production
- Mild-moderate aphasia
  - Greatest improvements in written expression and discourse production

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Cherney et al. (2008)
Modifications

- Add animated agent with visible speech
- Assess intensity of SLT:
  - 10 hrs/week vs 4 hrs/week

Web Based ORLA

- Computerized ORLA delivered over the internet
- Participation from subjects all over the country
- Interactive treatment: virtual therapist and live therapist providing instruction, support, feedback
- Requires internet connection, web-cam, head-set

Subject Recruitment

- We are currently enrolling participants from all over the country
- Inclusion Criteria:
  - Diagnosis of aphasia
  - Single left hemisphere stroke
  - At least 6 months post-stroke
- Travel Required to Chicago for language assessments and computer training

The hospital has recently celebrated its fiftieth anniversary.

That red sweater was knitted by my grandmother.
Referrals?

- Have a client who you think would be interested in WEB BASED ORLA?

- Please contact The Center for Aphasia Research and Treatment
  Phone: (312) 238-6163
  Email: lcherney@ric.org or jlee1@ric.org
If you're hungry, let's eat.

ORLA WEB practice

Study Design  N=25

Pre-treatment Assessment

ORLA Web-Based Tx 6 weeks Clinician oversight

Control Computer Tx 6 weeks Clinician oversight

Post-treatment Assessment

Maintenance Assessment

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Cherney et al. (2008)
Control Therapy: Bejeweled 2

How to Play

- Match three gems of the same color and shape to score points.
- Use your mouse to move gems.
- Score enough points to move onto the next level.
- There is no time limit.
- A little triangle will point to a gem that you should move if you get stuck.
- The Hint button on the bottom left corner of the screen can also give you tips on what to do if you are stuck.

Control Treatment: Bejeweled 2

Take your pills with food.

Probe Sentence Scoring

<table>
<thead>
<tr>
<th>Score</th>
<th>Elicited Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No response</td>
</tr>
<tr>
<td>1</td>
<td>Unintelligible, unrelated response, or &gt;50% of word has apraxic errors</td>
</tr>
<tr>
<td>2</td>
<td>Semantic or verbal paraphasia or apraxic errors in half of the word</td>
</tr>
<tr>
<td>3</td>
<td>Appropriate and intelligible response but with a minor error including: omission of a grammatical morpheme (e.g. “walk” for “walked”), single phonemic paraphasia (e.g. “tair” for “chair”), prosodic error, or minimal apraxic distortion</td>
</tr>
<tr>
<td>4</td>
<td>Accurate but delayed or self-corrected response</td>
</tr>
<tr>
<td>5</td>
<td>Accurate and immediate response</td>
</tr>
</tbody>
</table>

Conclusions

- Cross-modal improvements consistent with previous findings when ORLA given by SLP or via computer with avatar
- Tx delivered over internet with SLP oversight may be an efficacious and cost effective option
- Awaiting future results from randomized trial

Supported by grant H133G060055 from NIDRR