Social Validity of Changes in WAB Score: Do Unfamiliar Listeners Perceive a Difference?

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Introduction

- The Western Aphasia Battery-Revised (WAB) (Kertesz, 2006) is a comprehensive aphasia test, widely used by clinicians and researchers to assess the severity and recovery of aphasia.
- The WAB aphasia quotient (AQ) represents the "essential summary value of the individual’s aphasic deficit" (Kertesz, 2006).
- Aphasia quotients indicate relative severity of aphasia in the following manner: AQ of 0-25 = very severe; 26-50 = severe; 51-75 = moderate; and 76-100 = mild.
- Clinicians and researchers use the AQ to describe overall severity and to document changes in language ability over time (e.g., Bakheit, Shaw, Carrington, & Griffiths, 2007).
- Literature suggests that the WAB AQ, an impairment-based measure, correlates with other measures of clinical change over time, including functional-level assessments, such as the Communication Effectiveness Index (CETI) (Bakheit, Carrington, Griffiths, & Searle, 2005).

Research Questions

- No study has directly explored whether the AQ is socially valid, that is whether the AQ represents differences in language ability that are perceived in social (as opposed to clinical) contexts.
- In this study, we ask if what extent changes in WAB AQ parallel ratings of communication ability by unfamiliar observers.

Methods

Stimuli: Video samples were obtained from 12 people with aphasia (PWA) at two points in time from Aphasia Bank (MacWhinney, et al., 2011). The samples were excerpted from a longer interview to create video segments of approximately two minutes each. In each video, the PWA responded to the prompt, "Tell me about the types of things you have been doing to help with your recovery?" The two samples are referred to as Time 1 and Time 2 to indicate when they were elicited during the PWA’s recovery. Videos were selected to represent a range of aphasia severity and range changes in AQ between two points in time for each participant.

Naive Raters: 25 individuals (7 men; 18 women) who were not familiar with aphasia were recruited through advertisement via the extended social networks of the researchers. All observers had functional hearing and vision and spoke English as a first language. Mean age of observers was 40.12 years (range = 21-69). Four raters completed high school; 8 completed college; 13 held advanced degrees.

Procedure: Naive raters viewed two videos of each PWA. The videos were counterbalanced so that some Time 1 videos were presented first and others were presented second. The videos were presented using an online survey tool (SurveyGizmo). After each video, raters used a visual analog scale between 0 and 100 to rate their level of agreement with five statements regarding the speaker’s overall effectiveness:

1. The speaker was easy to follow;
2. The speaker was a competent communicator;
3. I would be comfortable having a conversation with this speaker;
4. I understood this speaker;
5. I would be willing to have a conversation with this speaker.

After viewing and rating each video for a single PWA, raters then directly compared the two videos by responding to this question: "Was the PWA able to communicate better in video 1 or 2 or was there no difference?"

If raters reported a difference, they then indicated the size of the difference on a visual analog scale and described any differences they noticed.

Transcripts from PWA-11

Time 1:

I was healthy, health, health care health... I have, seven consecutively, I don’t know but... OT, PT, I don’t know what is this and all, then I had health South and OT PT (I don’t know speech and melody and am walking and don’t know)

Time 2:

I had, um, well I was in the hospital for almost two months and then when I got out, I had therapy at home um, for about, almost three months and then I went to on, assisted living plateaued it and learned to drive that’s what made me feel better and know add you know, and I went to the gym, you know, started doing things normally and right out of there as soon as I can and there, and then I now live by myself and then on the weekends I live with Greg and so on and off.

Transcripts from PWA-12

Time 1:

um... artist, artist, draw right then... the whole thing I like, art, two weeks... week down two days a month, come here I eat, eat, eat don’t know what is it but I like it eat I know, it’s not great place don’t know why but I like it, I like it

Time 2:

well, walking...walking and exercise get better and exercise and talking enjoy... enjoy one day at a time, one day at a time.

Direct Comparison of 2 PWA

Table: Measure of Change

<table>
<thead>
<tr>
<th>PWA-11</th>
<th>PWA-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in AQ (Time 1 to Time 2)</td>
<td>10.7</td>
</tr>
<tr>
<td>Aphasia Type and Severity</td>
<td>Broca’s (Mod &gt; Mod)</td>
</tr>
<tr>
<td>% Change (increase) in Observer Ratings</td>
<td>67%</td>
</tr>
</tbody>
</table>

Table: Observer Rankings

<table>
<thead>
<tr>
<th>PWA-11</th>
<th>PWA-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>How Big a Difference (Time 1 to Time 2)</td>
<td>75 out of 100</td>
</tr>
<tr>
<td>Difference in No. of Words (Time 1 to Time 2)</td>
<td>+51</td>
</tr>
<tr>
<td>Difference in Content Units (CLAN)</td>
<td>+10</td>
</tr>
<tr>
<td>Difference in Words per Minute (CLAN)</td>
<td>+33.6</td>
</tr>
<tr>
<td>Index of Lexical Efficiency (ILE)</td>
<td>6.1 to 4.2</td>
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</tbody>
</table>

Discussion

- Changes in WAB AQ were correlated with ratings changes in communication ratings by naive listeners for the group of PWA. This suggests that AQ does in general reflect what naive listeners notice about PWA.
- However, for individuals who showed marked improvement in AQ, social ratings were inconsistent, suggesting that some factors that influence social ratings are different than those used to compute the AQ.
- Analyses of the two patients with the greatest improvement in AQ suggested that social ratings were influenced by number of words used, speech rate (words per minute) and content units, factors that are either not measured by the AQ or do not greatly contribute to the AQ.

References

Bakheit, Carrington, Griffiths, & Searle (2005). High scores on the Western Aphasia Battery correlate with good functional communication skills (as measured with the Communicative Effectiveness Index) in aphasic stroke patients. Disability Rehabilitation, 27(6), 287-295.
Bakheit, Shaw, Carrington, & Griffiths (2007). The rate and extent of improvement with therapy from the different types of aphasia in the first year after stroke. Clinical Rehabilitation, 10, 941-949.