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 the pattern 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 to what extent changes in WAB AQs 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 speaker.

Naïve 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: Naïve 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 on-line 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.

Speaker Information and Listener Ratings

PWA	Age	M/F	Time Elapsed (years)	AQ Time 1	Type Time 1	Severity Time 1	AQ Time 2	Type Time 2	Severity Time 2	AQ Change	Overall Rating Change
1	90.7	F	1	64.9	Wernicke's	Moderate	57.1	Wernicke's	Moderate	-7.8	-35.92
2	70	M	1	93.4	Broca's	Mild	88.9	Broca's	Mild	-4.5	-25.8
3	54.2	F	6	91.8	Anomic	Mild	90.4	Anomic	Mild	-1.4	-11.56
4	65.2	M	2	73.4	Broca's	Moderate	84.1	Broca's	Mild	+0.2	-56.64
5	48.9	M	2	68.5	Anomic	Moderate	70.9	Anomic	Moderate	+1	-12.44
6	41.2	M	4	82.3	NCL	Mild	86.1	NCL	Mild	+3.8	+20.68
7	55.6	M	6	76.3	Cond	Mild	81.1	Cond	Mild	+4.8	-44.56
8	71.1	M	5	89.6	NCL	Mild	95.2	Anomic	Mild	+5.6	+19.2
9	64.7	M	3	72.2	Broca's	Moderate	80.5	Broca's	Mild	+7.8	+0.32
10	49.6	F	1	60.9	Broca's	Moderate	68.9	Broca's	Moderate	+8	+25.4
11	56.6	F	5	73.4	Cond	Moderate	84.1	Anomic	Mild	+10.7	+161.92
12	59.3	M	3	57	Broca's	Moderate	68.2	Broca's	Moderate	+11.2	+34.96

- The ratings from the five questions were combined to yield an overall communication rating. The change in communication rating between Time 1 and Time 2 was simply the difference (Time 2 rating – Time 1 rating). This was then compared to the change in AQ (Time 2 AQ – Time 1 AQ). A Pearson product moment correlation between AQ Change and Overall Rating Change was significant (r(11) = .652, p=.011).

- For the group overall, changes in AQ were well reflected in naïve listener social communication ratings. However, for any individual, the relationship was more subtle and less predictable. We provide an example of two participants who improved about the same amount based on AQ but not on ratings, suggesting that social perceptions are not adequately captured by changes in AQ.

Transcripts from PWA-11

Time 1:
was health, health, health, home health
and I have , saca-sacareligious, I don't know but
OT, PT, I don't know what is else
and um, then I had Health South and OT PT I don't know
speech and fabby and um walking and I 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, three months
and then, I went to um, assisted living
I hated it
and I learned to drive
so I that's was made me feel better
and I drove and I you know, and I went to the gym, you know, started doing things normally
and I got out of there as soon as I can
and then, and then I, I now I live by myself and then on the weekends I live with Greg
so it's on and off

Transcripts from PWA-12

Time 1:
um....artist, artist, draw right there...the whole thing
I like, all thing, two week, two weeks
slow down
two days a month, come here
I like it alot, alot
I don't know what it is but I like it alot
I know, it's a nice place
I don't know why but I like it, I like it

Time 2:
well, walking...walking and exercise
no good but ...exercise and
talking enjoy....I enjoy
one day at a time, one day at a time

Direct Comparison of 2 PWA

Measure of Change	PWA-11	PWA-12
Change in AQ (Time 1 to Time 2)	10.7	11.2
Aphasia Type and Severity	Cond > Anomic (Mod > Mild)	Broca's (Mod > Mod)
% Change (increase) in Observer Ratings	67%	11%
Observer Rankings	22/25 reported Time 2 was better; 3/25 reported Time 1 was better	11/25 reported Time 1 was better; 10/25 Time 2 better; 4 = no difference
How Big a Difference (Time 1 to Time 2)	75 out of 100	37 out of 100
Difference in No. of Words Time 1 to Time 2 (CLAN)	+51	-37
Difference in Content Units (CLAN) Time 1 to Time 2	+10	-3
Difference in Words per Minute (CLAN)	+33.6	-7.09
Index of Lexical Efficiency (ILE) Content Units (Time 1 to Time 2)	6.1 to 4.2	5.7 to 4

Discussion

- Changes in WAB AQ were correlated with ratings changes in communication ratings by naïve listeners for the group of PWA. This suggests that AQ does in general reflect what naïve 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

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