Communication skills and the confidence to utilize those skills substantially impact the quality of life of individuals with aphasia, who are prone to isolation and exclusion given their difficulty with communication (Le Dorze & Brassard, 1995; Parr, Byng & Gilpin, 1997). There are many different self-assessment and proxy measures of perception of communication skills, quality of life specific to aphasia, and the burden of stroke.

One aspect which is not assessed by these measures is "communication confidence." The notion of communication confidence was introduced by participants and family members during qualitative exit interviews as part of a study using a computer program to deliver language therapy (reference removed for anonymity). Only one test of the research protocol battery, the ASHA-QCL, touched on communication confidence by asking the person to rate a single item "I am confident I can communicate." Therefore, a more comprehensive scale asking persons to rate communication confidence was needed.

This poster describes preliminary results from the CCRSA, its psychometric properties which were assessed using rating scale (Rasch) analysis (Rasch, 1960; Wright & Masters, 1982), and its subsequent modification.

Methods

Development of the CCRSA

The Communication Confidence Rating Scale for Aphasia (CCRSA) was based on eight items from the ASHA-QCL which were well-suited to being adapted to rating confidence. The items were reworded in a format similar to a questionnaire in the stuttering literature, the Self-Efficacy Scaling for Adult Stutters (SESAS– Ornstein & Manning, 1985), which asks participants to rate confidence in a variety of communication situations. See Table 1 for the CCRSA items.

The following is an example from the CCRSA:

How confident are you about your ability to talk with people?

0	10	20	30	40	50	60	70	80	90	100
l	l	l	l	l	l	l	l	l	l	l
Not Confident				Moderately Confident						Very Confident

Subjects

The CCRSA was administered to 21 participants (10 males) prior to starting treatment in a research study and after nine weeks of treatment. Participant's WAB-AQ scores ranged from 41.3 to 85.0 with a mean of 66.7 (SD=12.6). Sixteen were characterized as non-fluent and five were fluent. Mean age of stroke onset was 50.3 years (SD=15.4) with a range of 18.0 to 75.1. The mean months post-onset to date of first testing was 49.7 (SD=36.6) with a range of 10.6 to 163.1 months.

Statistical Methods

Because the CCRSA uses an ordinal rating scale, rating scale analysis (Rasch) was used to explore its psychometric properties with Winsteps software (Linacre, 2008).

Results

The overall percent change in scores from pre- to post-testing on the 8-item CCRSA showed improvements of 14.1%, whereas, percent change in the ASHA-QCL scores was only 1.6%. The paired samples *t*-test comparing pre- and post-therapy scores on the 8-item CCRSA showed significant

improvement (t(df=20) = -3.159, (p=.005). In contrast, the differences from pre- to post-therapy on the ASHA-QCL were not statistically significant.

Responses on the 100-point scale of the CCRSA were rescored to a 5-point scale for the rating scale analysis. Analysis of the CCRSA's 8 items revealed a person reliability of .77 and an item reliability of .86. The average measure across the 5 rating scale categories increased monotonically from -.65 to 2.33. However, item 3 (How confident are you about your ability follow news, sports, stories on TV/movies?) misfit the underlying construct (mean square infit = 1.69, item-measure correlation = .41). Misfit may have resulted from the complex wording that addresses multiple situations.

Results were re-analyzed after deleting item 3 which resulted in slightly increased person reliability (.79) and unchanged item reliability (.86). The monotonic increase in the rating scale categories' average scores remained about the same and ranged from -.88 to 2.64. In this sample, there is a ceiling effect as 7 of the 42 response sets (17%) were at the maximum possible value.

Table 2 shows the difficulty and fit of each item on the modified 7-item CCRSA. Mean square infit values were in the range of .79 to 1.28; item-measure correlations were large and ranged from .56 to .82. Figure 1 shows the map of persons and items. Confidence in using the telephone was the hardest item to rate while confidence making one's own decisions was the easiest item.

We used the person measures derived from the 7-item CCRSA to evaluate sensitivity to change. A paired samples t-test found significant improvement between pre- and post-treatment measures (t (df=20) = -3.00, p=.007). Rescored to range from 0 to 100, the average CCRSA measure improved from 45.1 (SD = 27.4) to 61.8 (SD = 30.3). The average gain of 16.7 corresponds to a large effect size (.65, standard deviation of gain = 25.5).

Figure 2 plots individuals' pre- and post-treatment measures. Most individuals improved, although three individuals' confidence declined.

Discussion and Conclusions

Rating scale analysis of the Communication Confidence Rating Scale for Aphasia provides preliminary support for the usefulness of the scale for people with aphasia. The types of questions in the CCRSA appeared to be appropriate. However, item 3, which addressed multiple situations could be divided into two situations. The rating scale also needed modification to make it "harder" to endorse the positive end of the rating scale. Similarly, additional data from a larger number of lower functioning participants is recommended, since several respondents rated themselves as being confident in all situations.

Analysis of individuals' change revealed that not all participants perceived improved confidence (see Figure 2). In particular, severity of aphasia may impact self-assessment of communication confidence. Interestingly, the three participants whose ratings on the CCRSA did not increase after treatment had relatively low WAB AQ scores at baseline (50.4, 51.9, and 59.7). Furthermore, four misfitting responses were from the participants with more severe aphasia.

Research Implications

Following recommendations derived from the Rasch analysis, questions were modified and added to the CCRSA. For example, item #3: "How confident are you about your ability to follow news, sports, stories on TV/Movies?" was divided into two items: "How confident are you about your ability to follow news and sports on TV?" and "How confident are you about your ability to follow movies on TV or in a theater?" An additional item was included to address more complex communication situations: "How confident are you that you can participate in discussions about your finances?" This has now resulted in a 10-item CCRSA. Future directions with the CCRSA will be to gather more data from a broad range of severity levels and to examine the external and internal validity and inter- and intra-rater reliability.

References

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Table 1 – Questions from ASHA-QCL developed for the CCRSA

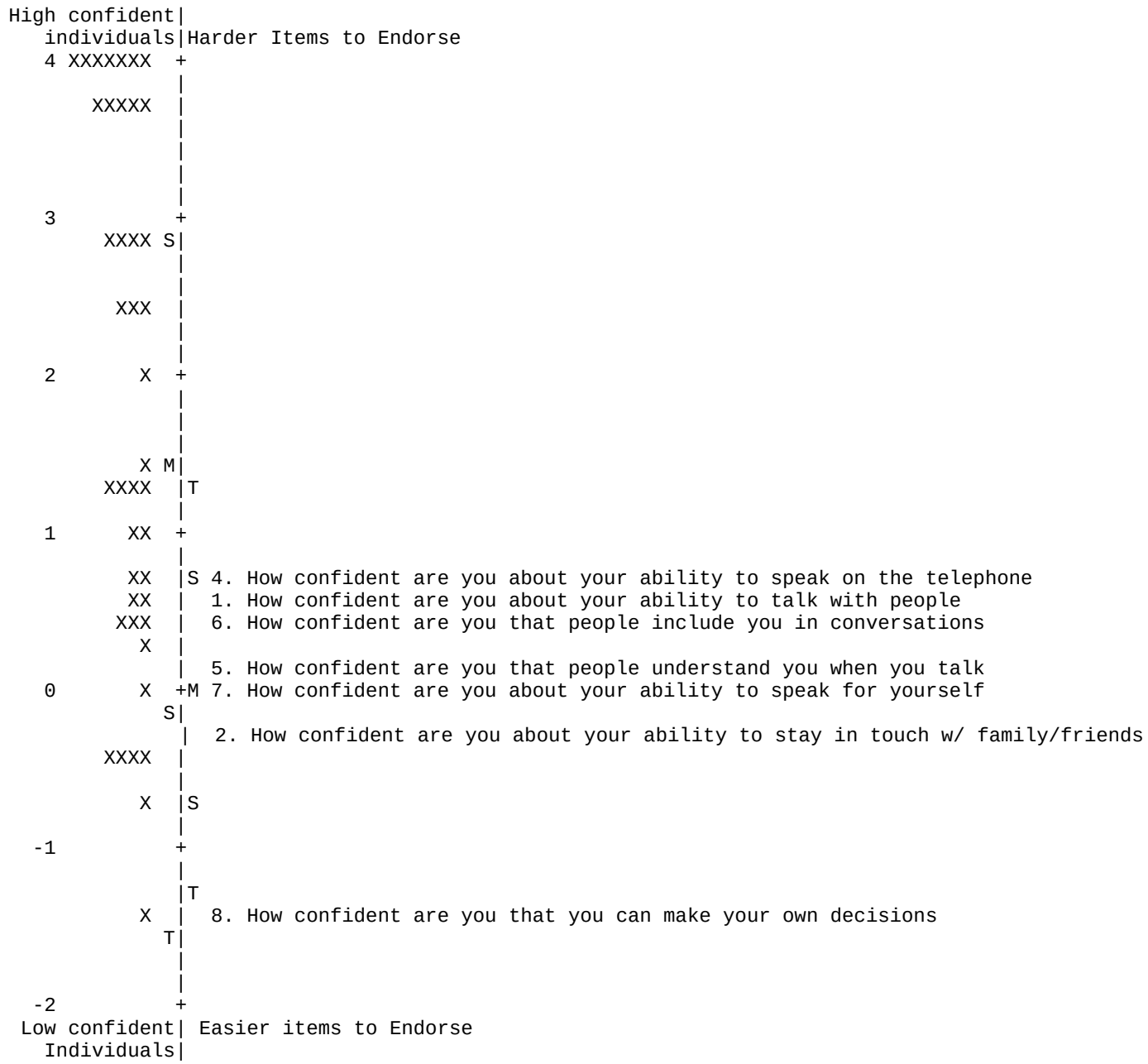
ASHA QCL	Communication Confidence Rating Scale for Aphasia
1. I like to talk with people.	How confident are you about your ability to talk with people?
6. I stay in touch with family and friends.	How confident are you about your ability to stay in touch with family and friends?
7. People include me in conversations.	How confident are you that people include you in conversations?
8. I follow news, sports, and stories on TV/movies.	How confident are you about your ability to follow news, sports, and stories on TV/movies?
9. I use the telephone.	How confident are you about your ability to speak on the telephone?
11. People understand me when I talk.	How confident are you that people understand you when you talk?
13. I make my own decisions.	How confident are you that you can make your own decisions?
17. I speak for myself.	How confident are you about your ability to speak for yourself?

Table 2: CCRSA Item Statistics in Measure Order (7-item version)

Measure	Model S.E.	Infit MnSq	Infit ZStd	r	Item "How confident are you… "
.69	.21	.79	-.9	.82	4. about your ability to speak on the telephone
.51	.21	.90	-.3	.80	1. about your ability to talk with people
.38	.21	1.10	.5	.75	6. that people include you in conversations
.14	.22	1.03	.2	.69	5. that people understand you when you talk
-.01	.23	.77	-.8	.78	7. about your ability to speak for yourself
-.27	.24	1.28	1.1	.68	2. about your ability to stay in touch with family and friends
-1.44	.30	1.15	.6	.56	8. that you can make your own decisions
Mean .00	.23	1.00	.0		
S.D. .66	.03	.18	.7		

Note: Items are ordered by their difficulty ("Measure" column) in decreasing order of difficulty. Measure = item difficulty in logits; item difficulties are anchored at a mean of 0 and a standard deviation of 1. Model S.E. = Standard error of measurement. MnSq = Mean square fit statistic with expectation of 1. Values greater than 1.3 indicate unexpected noise; values less than .7 indicate dependency in the data. ZStd = Standardized mean square fit statistic with an approximate, theoretical mean of 0 and variance of 1. r = Point biserial correlation between the item and measure.

Figure 1 – Person and Item Map of the 7-Item CCRSA



Note: The distribution of patient measures (in log-odds units, or logits) is shown in the left histogram. The distribution of item difficulties is illustrated in the right histogram. The sample is functioning at a somewhat higher level than the test was designed to measure as revealed by the average measure of 1.37 (indicated by "M").

Figure 2 – Individuals' Improvement in CCRSA Measures