Aphasia Profiles and Implications for Technology Use

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Aphasia demographics...
Aphasia in North America by Nina Simmons-Mackie, 2018

Conservatively 2.5 million people in the US have aphasia.

Study results range from 26% to 50% of strokes cause in aphasia. Most likely about $\frac{1}{3}$ of strokes cause aphasia (Flowers et al, 2016).

Chronic “Invisible disability”
Survey respondents with a communication disability reported much more dissatisfaction with their medical care compared with respondents without a communication disability.

The incidence of major depression increased from 11% at three months to 33% at twelve months in a study of people with aphasia.

Poor health literacy is associated with increases in preventable hospital visits and admissions, and a higher rate of hospitalization and emergency services.
Aphasia is...

...the result of damage to one or more of the language centers in the brain.

...a disorder of LANGUAGE understanding and/or production

...a disorder of symbolic representation

...NOT a cognitive disorder

...most often caused by Stroke, Brain Injury, or Brain tumor

...usually stable, but some cases can be progressive (Primary Progressive Aphasia due to Frontotemporal Dementia).

"When people see someone who has a problem speaking. They think that they've lost their mind, that they're not intelligent anymore and one thing about people who have aphasia is that they're still intelligent. They're still the same person inside."

~ Louise.
### How is Aphasia Classified?

<table>
<thead>
<tr>
<th>Fluent</th>
<th>Comprehension</th>
<th>Repetition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Non-fluent</td>
<td>Intact</td>
</tr>
<tr>
<td>No</td>
<td>Global</td>
<td>Conduction</td>
</tr>
<tr>
<td>Yes</td>
<td>Wernicke's</td>
<td>Anomic</td>
</tr>
<tr>
<td>No</td>
<td>Broca's</td>
<td>Cortical</td>
</tr>
</tbody>
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**Cortical Aphasia**

- Non-fluent
- Intact comprehension
- Intact repetition

**Non-cortical Aphasia**

- Fluent
- Deficits in comprehension and repetition
Language Domains

- Auditory Comprehension
- Verbal Expression
- Reading Comprehension
- Written Expression

Language
Language Domains

Auditory Comprehension

Verbal Expression

Language

Reading Comprehension

Written Expression
Auditory Comprehension Deficits

Mild: difficulty with complex information, or large quantities of information presented quickly

Moderate: May understand portions of information. May be able to process only one thing at a time.

Severe: May laugh appropriately at jokes or answer yes/no questions without understanding

How many times have I had to ask someone at the movies, or watching TV, or listening to a lecture, "What did he say? What did he say?" I miss the first few words. My hearing is fine. My processing is not. I call this a time-delay. It takes me a few seconds to really understand what the speaker is saying.

~ Marion Rasmussen
What helps Auditory Comprehension?

**Strategies**
- Simplify language
- Face-to-face communication
- Intonation
- Repetition
- Slowing down, pausing to allow time to process
- “Show and Tell” — Pair language with visuals, pictures, and icons

**Technology Tools**
- Video calling
- Live Captioning
- Controlling the speech rate for recorded audio
Language Domains

- Auditory Comprehension
- Verbal Expression
- Reading Comprehension
- Written Expression
Anomia

Difficulty retrieving words. Sometimes called “word finding”
“Tip-of-the-Tongue” phenomenon
Common to all aphasia profiles
May be able to:
  - Describe it
  - Use it
  - Draw it
  - Think of the first letter
  - Write the word
  - Even rhyme the word,
... but still not retrieve the word!
Word Retrieval Errors (Paraphasias)

Error in Word Retrieval

Person with Aphasia knows what they want to say

May or may not be aware of the error

Television

Door

Window

Car

Shoe

Tevilision

Printzeen

Foolton

Botsly

Printzeen

Foistrun

Phonemic

Semantic- related

Semantic- unrelated

Neologism
NON-FLUENT
Verbal Expression

Words come slowly
Frequent hesitations
Halting production
Frequent fillers (uh, um)
Limited word types
  Nouns are most common
  Verbs are more difficult
  Few grammatical words
Nonfluent Aphasia

Associated Features

Written expression typically mirrors verbal skills

Usually co-occurs with hemiparesis of the dominant (right) hand

May co-occur with motor speech deficits (apraxia and/or dysarthria)
FLUENT

Verbal Expression

Relatively preserved grammatical structure

Logorrhea: Constant verbal output

Press of speech: A need to speak immediately and rapidly

Empty speech

Often associated with impaired auditory comprehension
Fluent Aphasia
Associated Features

Usually preserved motor skills
Poor self-awareness
Anosagnosia
May co-occur with reading deficits
What helps verbal expression?

**Strategies**
- Allow time
- Write down content words
- Repeat key words to confirm your understanding
- Encourage use of environmental supports

**Technology Tools**
- Video calling
- Video modeling/Video Assisted Technology
- Augmentative Communication Apps
Language Domains

- Auditory Comprehension
- Verbal Expression
- Reading Comprehension
- Written Expression
Alexia

Acquired deficit in reading ability when compared to prior level of ability

Tends to mirror receptive language skills, but not always

Reading comprehension is distinct from oral reading

“Reading was just as difficult. The printed word at first resembled hieroglyphics. Later, individual words became recognizable and took on meaning, but I could not decipher a printed statement. Looking at a group of words was overwhelming....The therapist presented two words, three words, four words and more until I graduated to sentences. I felt mournful and frightened, then tense, anxious and full of rage. Yet I knew that I had to get back on that horse.”

~A.H. Raskin
Alexia Breakdown Patterns

May have difficulty with:
- Recognizing sight words
- Decoding words
- Decoding/ reading novel words
- Decoding irregular word patterns
- Semantic substitutions
- Comprehension after oral reading
What helps reading comprehension?

**Strategies**
- Simplify language
- “Show and Tell” - Pair words with visuals, pictures and icons
- Listening and reading along

**Technology**
- Text-to-speech with controllable rate of speech
- Text-to-speech with word highlighting
- Scanning apps that convert text to speech
- Reader pens
Language Domains

Auditory Comprehension

Verbal Expression

Reading Comprehension

Written Expression

Language
DYSGRAPHIA

An acquired deficit in writing when compared to prior abilities

Is not related to motor deficits

Can include:

- Spelling words phonetically
- Difficulty forming letters
- Letter substitutions (not phonetic)
- Perseveration
1. How am I disciplining myself to do something I didn’t want to do, but needed to do anyway?

A To do Fast 
Do my things

2. What am I changing about my life?

Doing Things slower
3. In what ways have I kept myself grounded since I’ve been in the hospital?

By keeping myself positive.

4. What goals have I been working on? Have I been successful in reaching them?

Spell it out:
- Better
- Balance

5. How have my friends and family helped me since I’ve been here?

Supportive
Ten Positive Statements:

1. ____________ Want to reason.

2. ____________ Out of sight one.

3. ____________ Out of sight one.

4. ____________ Gain back my memory.
How has your stroke changed your life physically and mentally?

By physically and emotionally in the small emotion was requested.

Through this process, was there a defining moment for you about what you are going through?

By this emotional, there were emotional ones.

What impact has family and friends had on you since you’ve been here. Has anyone done something that has surprised you?

The impact has very good but there version.
WRITING
TASK
ANALYSIS
What helps written expression?

**Strategies**
- Have a notepad or whiteboard available
- Letter boards
- Word banks

**Technology Tools**
- Speech-to-text dictation software
- Emoji
- Predictive text
- Spell check
- Grammar checking software
- Sentence building software
Michael “Mike” Settles

Mike is a UMD alumnus (BS, finance). He walked on the football team and was eventually elected co-captain. He then earned a law degree from University of Baltimore.

His career has taken him from law firms, to the front office of the Baltimore Ravens, to becoming a Special Agent for the FBI.

At the age of 46, Mike sustained a stroke that cause aphasia. He brings his drive and determination to the recovery process as well as his aphasia advocacy. He received the American Speech-Language Hearing Association (ASHA) 2022 Advocate award for his work with the PlanetWord Museum in Washington, D.C.
Select Links

Speak4me app:  https://apps.apple.com/us/app/speak4me-text-to-speech/id894460403

Lingraphica (AAC company):  www.aphasia.com

Therapy App companies

Tactus Therapy:  https://tactustherapy.com

Constant Therapy:  https://constanttherapyhealth.com