

When PALPA Meets LPAA:
Finding the Perfect Balance in Aphasia Intervention

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Learning objectives

- ❖ Compare and contrast impairment-based and life participation models in assessment and treatment of aphasia
- ❖ Create a specific profile of strengths, weaknesses, and needs for an individual with aphasia
- ❖ Choose appropriate interventions that address PWA's personal goals for life participation in the context of their specific impairments and strengths

Disclosures

- ❖ Katherine is the owner of Afferent Connections, a private practice and consulting company, and works for Piedmont Healthcare.
- ❖ Katherine has no nonfinancial relationships to disclose.

What is aphasia?

- ❖ An impairment in expression and/or comprehension of spoken and/or written language
- ❖ Currently affects over 2 million Americans
- ❖ Most common etiology is stroke
- ❖ Left hemispheric dominance (usually)
 - Frontal lobe: praxis, high-level syntax comprehension, grammaticism
 - Parietal lobe: integration of information, association, repetition
 - Temporal lobe: comprehension, phonological processing, linguistic memory

Types of Aphasia

Fluent?

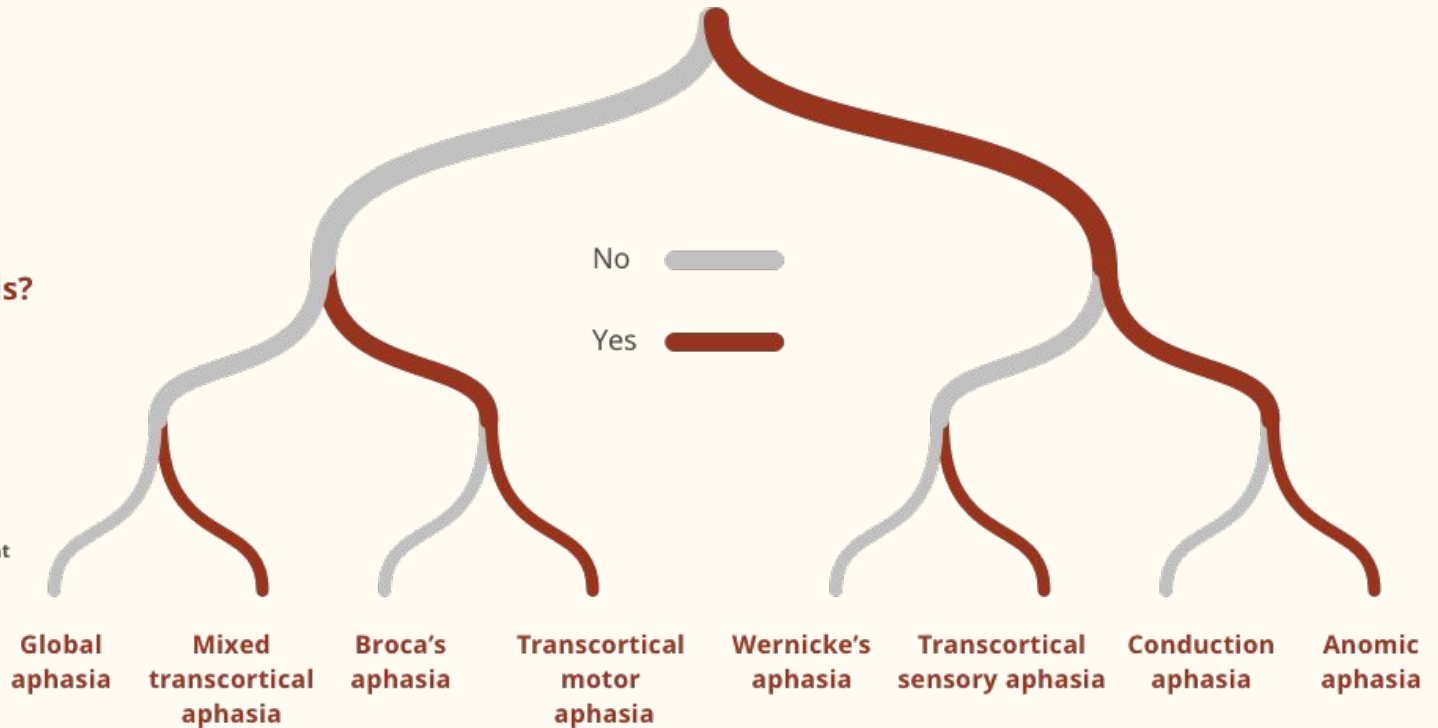
Is speech fluent?

Comprehends?

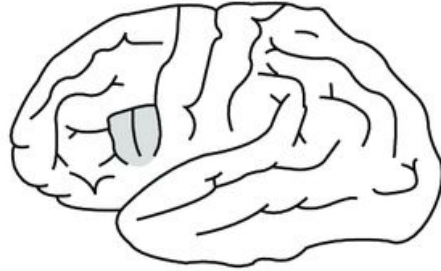
Can you comprehend of spoken messages?

Repeats?

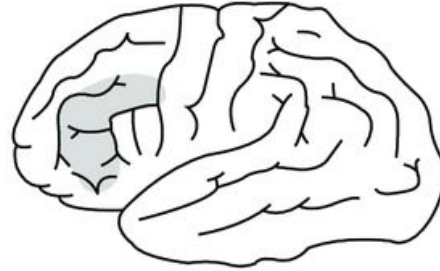
Can the person repeat words or phrases?



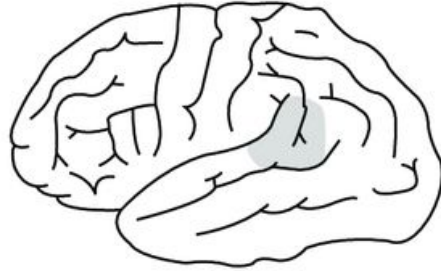
Broca's aphasia



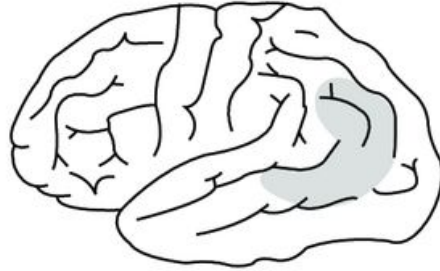
Transcortical motor aphasia



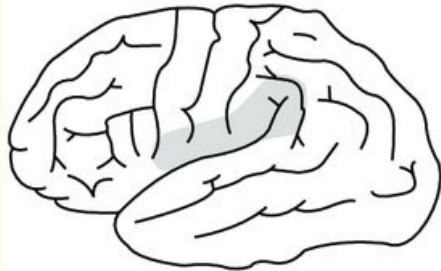
Wernicke's aphasia



Transcortical sensory aphasia



Conduction aphasia



Anomic aphasia



Global aphasia



Aphasia's impact upon society

- ❖ More prevalent than Parkinson's disease, cerebral palsy, or multiple sclerosis; yet poorly understood by both the medical community and general population
- ❖ 28.4% of young PWA (18-65 years old) return to work (compared to 44.7% of young stroke patients without aphasia)
- ❖ **Greater negative impact upon quality of life than Alzheimer's disease or cancer**

Speech therapy makes it all better...right?



Aphasia therapy challenges (from literature)

- ❖ Depression/patient motivation
 - Experienced by at least 60% of PWA
 - SLPs do not feel confident providing psychosocial support to PWA
 - Lack of counseling education in SLP graduate programs
- ❖ Unclear expectations surrounding when to discharge therapy
 - PWA are often confused about why they are discharged and do not feel comfortable asking the SLP
 - SLPs also often reluctant to discuss discharge in detail

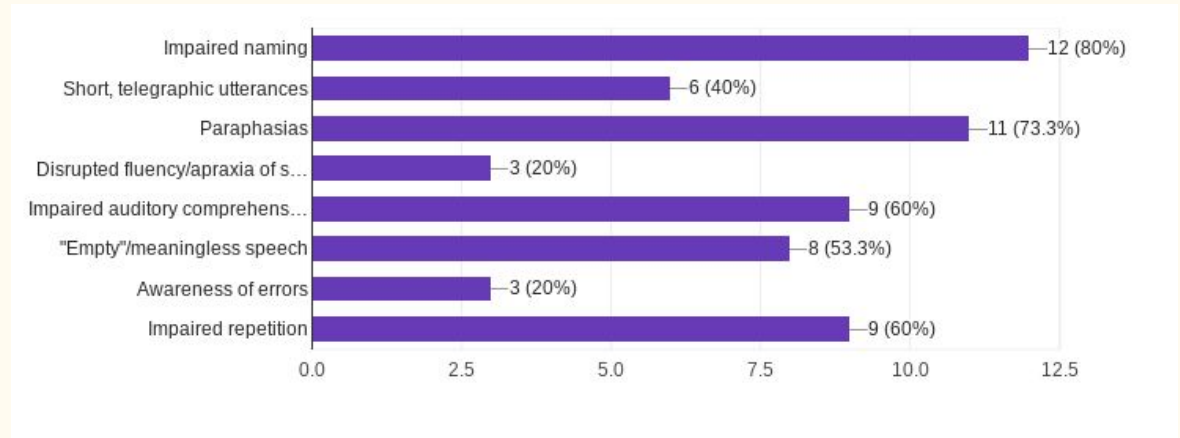
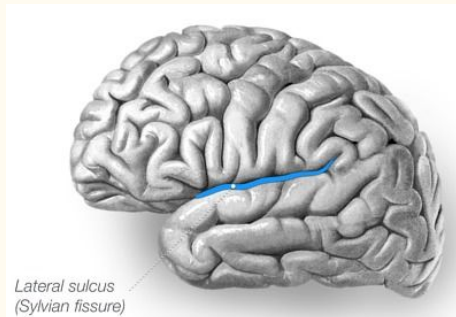
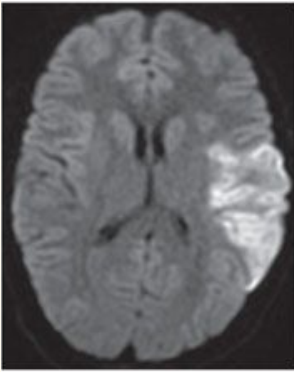
Aphasia therapy challenges (on the clinical side)

Informal online poll of SLPs (Stewart 2021) indicates:

- ❖ Lack of confidence and experience with PWA specifically
 - On a scale of 1-5 for grad school coursework preparation for working with PWA, average 3.2
 - Majority only worked with 0-5 PWA during student practicums
- ❖ Inconsistency among clinicians
 - 75% of poll respondents indicated that >50% of their clinical decision making comes from:
 - CEU courses
 - Independent research
 - Personal clinical experience
 - **Therefore, a PWA could have a vastly different experience with one SLP than another**

Aphasia consensus poll continued

Case study: patient with stroke affecting left posterior perisylvian region, no deficits in ambulation or ADLs; respondents asked to predict language findings:



(Stewart 2021)

Aphasia consensus poll continued

Case study continued: our patient (posterior left perisylvian stroke with no mobility/ADL issues) demonstrated...

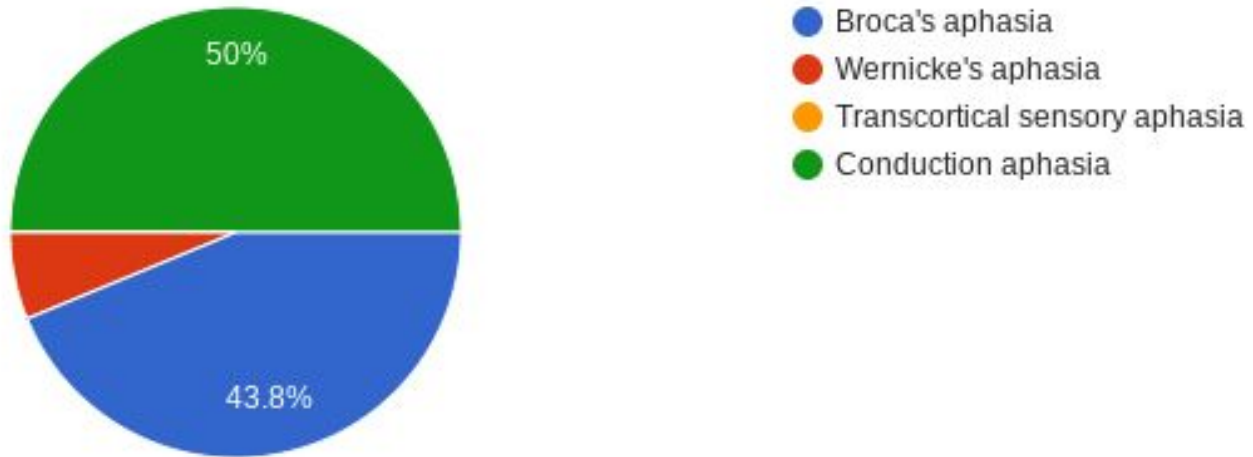
- ❖ 35% accuracy on a confrontation naming task
 - On items with verbal naming errors, able to select the correct response given four written choices in all instances except two:
 - "Capricorn" when presented with a picture of a unicorn
 - "hassock" when presented with a picture of a hammock
- ❖ 15% accuracy on a repetition task
- ❖ Errors primarily phonemic paraphasias.
- ❖ Good awareness of errors/several rapid attempts to correct them, usually unsuccessfully

What patterns do you notice?

(Stewart 2021)

Aphasia consensus poll continued

Case study continued: **given Goodglass & Kaplan classifications, what type of aphasia BEST fits this profile?**



(Stewart 2021)

Aphasia consensus poll continued

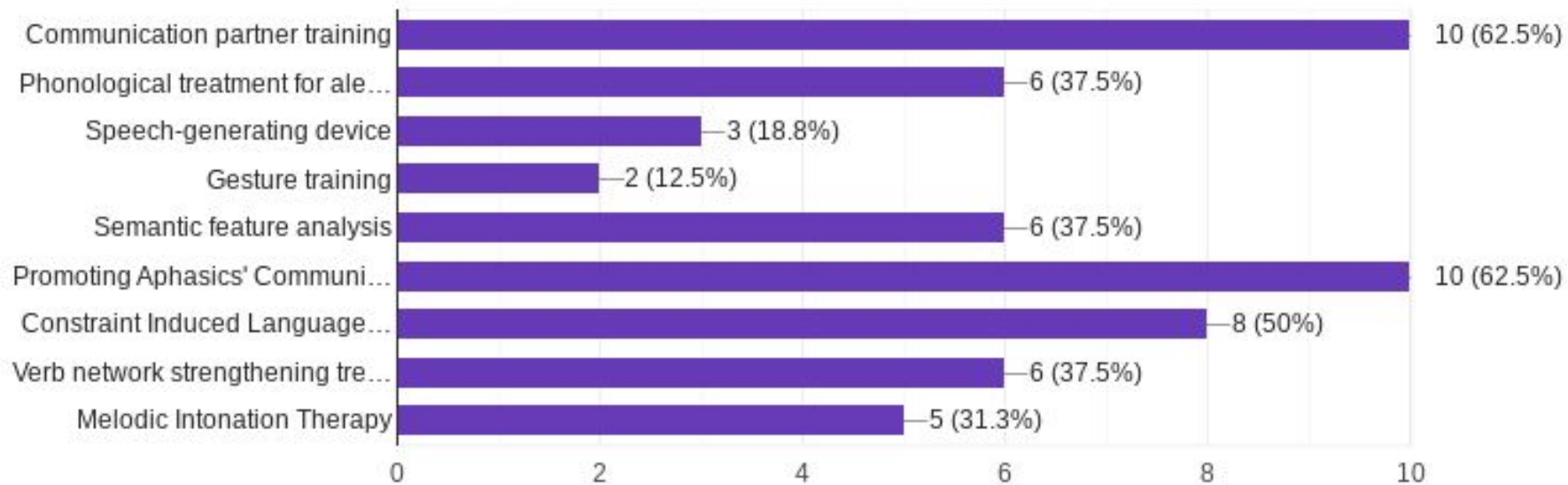
Case study continued: background info re: patient's PLOF revealed, including...

- ❖ Single/lived alone with only pets; previously and currently able to drive
- ❖ Worked as a short-order cook and wants to return to this job
 - Some days: calling out orders to other line cooks
 - Other days: cooking food on a specific station and calling out the names and numbers of the food items when ready
- ❖ Poll participants were asked to select as many treatments from a list as they thought were appropriate...

(Stewart 2021)

Aphasia consensus poll continued

Results for treatment selections:



(Stewart 2021)

Aphasia consensus poll continued

- ❖ Participants were next asked to explain why they chose one or more of the options they did
- ❖ Subsequently asked to explain why they did NOT choose one or more options that they did not
- ❖ Here is where things got interesting...

Aphasia consensus poll continued

Constraint-induced language therapy (CILT): responses

<u>FOR</u>	<u>AGAINST</u>
“to facilitate use of language as it would be used in the kitchen”	“this pt would benefit from more or a total communication approach for more successful communication exchanges”
“CILT will be able to target the patients language deficits at a functional level - by constraining the patient’s communication to only verbal mode - uses principles of errorful learning to facilitate greater success.”	

(Stewart 2021)

Aphasia consensus poll continued

Gesture/Promoting aphasics' communication effectiveness (PACE): responses

<u>FOR</u>	<u>AGAINST</u>
“PACE--multimodal-- use any means to communicate”	“Gestural training- in the food industry coworkers may be unable to stop what they are doing and look at the patient to figure out what they are trying to say via gestures”
“With gesture training I would include work towards repetition and reading abilities. A menu will be relatively set. If the PWA can work toward improving reading the items cook[ed,] a visual aid could be created to help compensate at work”	“The patient has to shout out names as part of the job - this isn't something that can be changed if the employer does not understand the patient's aphasia. Gesture training may not be as effective as the patient is busy handling food with their hands, servers depend heavily on the words they hear to serve food out after it is prepared.”

Aphasia consensus poll continued

Communication partner training: responses

<u>FOR</u>	<u>AGAINST</u>
“...pretty much helpful for all people with aphasia.”	“This person is targeting communication within community so would need to have techniques that [would] be applied to unfamiliar communication partners to best reach goals identified by PWA”
“Partner trianing [sic] with kitchen staff to increase communication success in work environment.”	“I can't even get CNAs to show for SNF residents to use their SGD, there's no way that kitchen staff will be patient enough or motivated. Plus, kitchen staff have high turnover.”

(Stewart 2021)

Aphasia therapy challenges (on the clinical side) continued

Informal poll of SLPs indicates (continued):

- ❖ SLP-reported barriers:
 - Cases all present differently and are typically not “textbook”
 - Time limitations (productivity, financial/insurance, etc.)
 - The aphasia itself makes it difficult to definitively determine strengths/weaknesses (e.g., overall cognition, comprehension)
 - Comorbidities (e.g., apraxia)
- ❖ **Limitations of poll: small sample size, heavily biased towards acute care, case study info may have been ambiguous**
- ❖ **However**, even on a small level, there’s already somewhat of a lack of consensus on diagnosis AND treatment

What can we do?

Lessons learned (after many failures and frustrations) treating PWA in an outpatient clinic at a community hospital...think like a toddler!

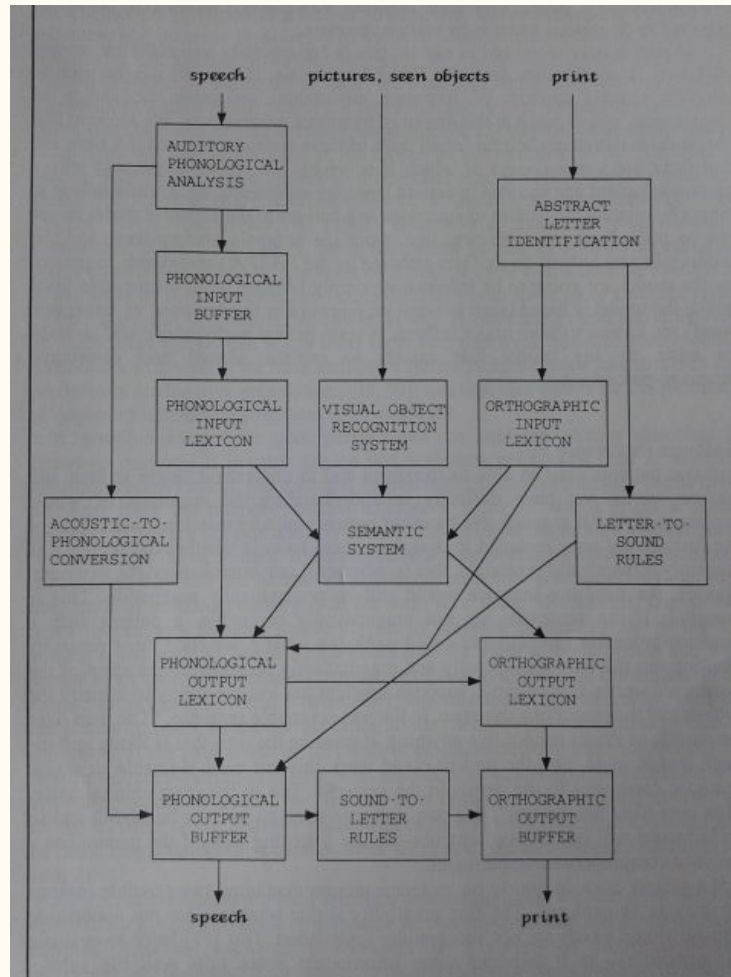


Toddler Lesson #1: Challenge the rules

- ❖ Rethink “formulas”/”textbook” categories
 - Lesion site as shortcut for diagnosis
 - “Expressive” versus “receptive”
 - “Fluent” versus “nonfluent”
 - Goodglass & Kaplan classifications (e.g., Broca’s and Wernicke’s)
- ❖ Acknowledge these, and keep them in mind in case you get “stuck” - not as default first step

Toddler Lesson #2: Look at the details - part 1

- ❖ More specific analysis of errors in:
 - Speaking
 - Auditory comprehension/repetition
 - Reading
 - Writing
- ❖ Can be informal, or use tests/subtests, such as...
 - Psycholinguistic Assessment of Language Processing in Aphasia (PALPA)
 - Philadelphia Naming Test
 - Arizona Battery of Reading and Spelling



Kay et al, 1992

Toddler Lesson #2: Look at the details - part 2

- ❖ Get a detailed picture of when/how the patient had to use skills from each language domain at PLOF
 - Work(?)
 - Hobbies
 - With family
 - In emergencies

Toddler Lesson #3: Ask “why” and “so what” - frequently

- ❖ WHY are the breakdowns happening?
 - Speaking and auditory comprehension: which level(s) of PALPA model?
 - Reading and writing: what kind of errors? See a pattern?
 - HERE is where you can go back to lesion site to confirm or get clarification
- ❖ SO WHAT is the significance of the breakdowns?
 - Which specific task demands are being hindered?
 - Determine personal goals with patient, AND target the impairment in the context of life participation
 - Choose evidence-based treatments with elements of functional/real-life task demands
 - When compensatory strategies are necessary for task participation/completion, choose them while keeping impairments in mind!

Let's practice with Patient S

- ❖ 47 yo F, married with two teenage children, worked full-time in federal law enforcement prior to CVA (3 months prior to outpatient speech therapy evaluation)
- ❖ Her primary goal is to return to work
- ❖ Initial MRI: large L MCA infarct involving predominantly the parietal and extending anteriorly and inferiorly into the insular cortex
- ❖ **“Rules” to consider and possibly break:**
 - **Parietal = possible lexical retrieval and/or comprehension deficits, likely fluent, BUT...**
 - **Insula = possible apraxia**
 - **Infarct could be large enough to be global aphasia (at least in acute phase)**

Patient S Detailed Findings

SPEAKING - 90% accuracy on confrontation naming (**some anomia**); **sound errors on multisyllabic words** - nearly always **incomplete, repeated and/or eventually abandoned attempts** with occasional **articulatory groping-like behavior**, but with frequent **anticipatory substitutions** (e.g., "locabulary" for "vocabulary") and/or **misplaced syllable stress** during fully completed attempts; **fluency mildly disrupted** by **revisions/corrections** and occasional anomia ("how should I say...")

COMPREHENSION/REPETITION - 70% accuracy on repetition; 60% accuracy on complex/sequential commands (100% given repetitions)

READING - 93% accuracy at single word level (**predominantly errors on low-frequency words**); **30% accuracy for nonwords**. **Relatively preserved reading comprehension at the sentence level**

WRITING - 80% accuracy at single word level (**errors predominantly on low-frequency and/or phonologically irregular words**); **0% accuracy for nonwords**

Patient S Life Goals

ULTIMATE GOAL: Return to work in federal law enforcement

SPEAKING - must verbally interrogate/interview several people daily (usually fairly scripted but often must generate novel utterances/conversation) and be able to report incidents verbally to supervisors and when testifying in court

COMPREHENSION/REPETITION - must decide courses of action based upon subjects' responses to screening questions, follow orders from commanding officers, and participate in debriefings

READING - must be able to verbally relay and interpret identification documents provided by subjects/suspects, and also "look them up" in the computer system and often verbally relay that information as well

WRITING - must be able to write detailed incident/case reports

Patient S - “Why?”

<u>DIFFICULTY WITH...</u>	<u>BECAUSE...</u>
<p>Speaking: Conducting highly complex interviews with subjects and providing detailed verbal reports of incidents</p>	<p>Phonological output lexicon deficits resulting in accurate lemma retrieval but significantly disrupted phonological access/assembly (+/- concurrent apraxia of speech, given insular involvement?)</p>
<p>Repetition/Auditory Comprehension: (Possibly) “processing” subjects’ responses to questions, in order to figure out how to proceed with further questioning and/or detainment; (possibly) understanding information in debriefing sessions</p>	<p>Suspect due to overall reduced automaticity when completing linguistic tasks, possibly related to increased use of cognitive resources for expression; difficulty with command following could also be related to limb apraxia rather than comprehension deficits</p>
<p>Reading: Orally relaying information gleaned from documents and computer records</p>	<p>Mild-moderate phonological alexia</p>
<p>Writing: Taking notes; writing detailed reports</p>	<p>Moderate phonological agraphia</p>

Patient S - “So what?”

<u>DIFFICULTY WITH...</u>	<u>BECAUSE...</u>	<u>SO LET’S CONSIDER...</u>
<p>Speaking: Conducting highly complex interviews with subjects and providing detailed verbal reports of incidents</p>	<p>Phonological output lexicon deficits; ?apraxia of speech</p>	<ul style="list-style-type: none"> ● Phonomotor treatment (Kendall, 2015) ● Sound production treatment? (Wambaugh et al, 1999)
<p>Repetition/Auditory Comprehension: “Processing” subjects’ answers to questions, as well as information presented in debriefings</p>	<p>Increased cognitive load/demand related to the stroke itself - not having a significant impact on functioning</p>	<ul style="list-style-type: none"> ● Compensatory strategies/external memory aids (as warranted)
<p>Reading: Oral reading of information from subjects’ documents and electronic records</p>	<p>Mild-moderate phonological alexia</p>	<ul style="list-style-type: none"> ● CART/phonological training (Beeson & Rising, 2010) ● Multiple oral rereading (Kim & Russo, 2010)
<p>Writing: Efficiently taking notes and writing detailed incident reports</p>	<p>Moderate phonological agraphia</p>	<ul style="list-style-type: none"> ● CART/phonological training ● ?Phonomotor treatment

What actually happened...

- ❖ Initiated Beeson phonological treatment, along with elements of phonomotor treatment
 - Explicit training in letter-sound and sound-letter correspondence
 - Also discussed articulatory shape, tactile-kinesthetic properties, voicing, etc. of each phoneme in detail
 - Used phoneme mouth position videos in Lingraphica SmallTalk apps for home practice
- ❖ When the patient met goals for phoneme-grapheme and grapheme-phoneme correspondence, she was tasked with decoding and encoding nonwords for practice
 - Patient expressed feeling “bothered” by this session, stating that she felt that it did not bring her closer to her personal goal of returning to work
 - Modified plan a bit...

What actually happened (cont'd)...

- ❖ Patient was tasked with orally reading and discussing highly complex news articles pertaining to her career field, which were specifically selected based on use of functional vocabulary. This improved engagement/motivation.
 - Integral stimulation/sound production treatment hierarchy implemented on words causing errors (as they arose)
 - Eventually patient only required minimal verbal cues (e.g., “think about how your mouth will say that sound”) to self-correct all errors at the word/phrase level; subsequently, paragraph and conversation level
 - Finally, multiple oral re-reading treatment implemented to improve fluency of reading and efficiency of real-time self-monitoring of sound errors; carryover to conversation was emerging at end of treatment
- ❖ Patient was cleared to return to work on light duty after 8 weeks of outpatient therapy at our clinic; opted to continue at a different clinic more convenient to work.

Let's practice with Patient B

- ❖ 40 yo M, divorced with joint custody of preteen son, currently has a girlfriend, worked full-time as a delivery driver for a medical supply company prior to CVA (3 weeks prior to outpatient speech therapy evaluation)
- ❖ Wants to return to work in some capacity (not necessarily this job); caregiver expresses concerns re: social isolation (less extroverted)
- ❖ Initial MRI: left MCA distribution infarct involving the left basal ganglia, anterior insular cortex, frontal operculum, anterior temporal lobe, and parietal lobe
- ❖ **“Rules” to consider and possibly break:**
 - **Insula/operculum = possible apraxia**
 - **Basal ganglia = motor control, motor learning, executive function, emotion, behavior**
 - **Anterior temporal/parietal = semantic memory**

Patient B Detailed Findings

SPEAKING - 56% accuracy on confrontation naming (**perseverations and semantic paraphasias** in naming and conversation); some **anomia in conversation** leading to **deficits in efficiency and information content** at the discourse level; **aware of paraphasias and anomia**, but most often would utter interjections/expletives and **abandon utterances** after only a brief period of attempting to repair breakdowns; utterances are **grammatically correct and of appropriate length**, but patient **rarely initiates communication** (caregiver frequently speaking “for” him).

COMPREHENSION/REPETITION - 82% accuracy on repetition; **frequently repeating** communication partners’ utterances/recasting questions; 55% accuracy on complex/sequential commands; WAB auditory verbal comprehension score was 73.5 (however, perseverations noted in “yes”/”no” verbalizations and pointing - may not necessarily indicate reduced comprehension)

READING - 88% accuracy at single word level (**predominantly phonologically plausible and/or visually similar errors on phonologically irregular words**); evidence of tracking errors/impulsivity at the sentence/paragraph level (improved with use of a finger or pen running along the words)

WRITING - 70% accuracy at single word level (**predominantly phonologically plausible errors on low-frequency and phonologically irregular words**)

Patient B Life Goals

ULTIMATE GOALS: Return to work in some capacity; reduce social isolation

SPEAKING - must give accurate verbal directions to people driving him places (until driving restrictions lifted by physician), say correct names/weekdays when discussing schedule for his son, correctly explain how to set up medical equipment, and wants to increase overall participation in conversations

COMPREHENSION/REPETITION - must comprehend verbal directives at work and “follow” social conversations with friends

READING - wants to continue using social media and text messaging to keep up with friends

WRITING - wants to continue using social media and text messaging to keep up with friends, and may need to use external written memory aids for names/difficult words

Patient B - “Why?”

<u>DIFFICULTY WITH...</u>	<u>BECAUSE...</u>
Speaking: Giving accurate verbal directions, explanations, and discussing custody schedule for his son (specific difficulty with “yes”/”no”, “left”/”right,” and saying ex-wife’s name versus current girlfriend)	Perseverations. May be post-semantic impairment due to recently activated words not being sufficiently “suppressed”; suspected to be at least partially related to executive dysfunction and being “stuck in set” (given frontal lobe/basal ganglia involvement)
Repetition/Auditory Comprehension: Efficiently following multiple-step/sequential commands	Higher-level syntactic (vs. sentence-level semantic) comprehension deficits, and/or reduced attention/working memory related to frontal lobe involvement
Reading: Comprehending lengthy social media posts and/or text messages	Mild-moderate surface alexia and/or reduced attention/working memory related to frontal lobe involvement
Writing: Efficiently writing social media posts and text messages	Mild-moderate surface agraphia (i.e., relying upon sublexical route rather than lexical; reduced access to stored representations of phonologically irregular words)

Patient B - “So what?”

<u>DIFFICULTY WITH...</u>	<u>BECAUSE...</u>	<u>SO LET’S CONSIDER...</u>
<p>Speaking: Giving accurate verbal directions, explanations, and discussing custody schedule for his son (specific difficulty with “yes”/”no”, “left”/”right,” and saying ex-wife’s name versus current girlfriend)</p>	<p>Perseverations/post-semantic impairment; executive dysfunction and being “stuck in set”</p>	<ul style="list-style-type: none"> ● Spaced retrieval (Fridriksson et al 2011) ● Constraint-induced language therapy (Pulvermuller et al, 2001) ● Treatment of aphasic perseveration (TAP) (Helm-Estabrooks et al, 1987) ● Low-tech AAC/communication book ● Metacognitive (self-monitoring) treatment
<p>Repetition/Auditory Comprehension: Efficiently following multiple-step /sequential commands</p>	<p>Higher-level syntactic (vs. sentence-level semantic) comprehension deficits; reduced attention/working memory</p>	<ul style="list-style-type: none"> ● Treatment of underlying forms (TUF) (Thompson & Shapiro, 2010) ● Mapping therapy (Schwartz et al, 1994) ● External written memory aids
<p>Reading: Comprehending lengthy social media posts and/or text messages</p>	<p>Mild-moderate surface alexia</p>	<ul style="list-style-type: none"> ● Interactive treatment ● Assistive technology
<p>Writing: Efficiently writing social media posts and text messages</p>	<p>Moderate phonological agraphia</p>	<ul style="list-style-type: none"> ● Interactive treatment ● Assistive technology

What actually happened...

- ❖ Initiated external memory aids/low-tech AAC (to cue natural speech) for known areas of difficulty (e.g., “yes”/”no,” “left/right,” and specific names)
 - Began with SLP and/or caregiver writing aids, transitioning into patient using assistive technology (see below)
- ❖ Metacognitive/self-monitoring (mental rehearsal) practice in trials of responsive naming, sentence completion, generative naming, and synonym/antonym/other word association tasks
 - Transitioned into using metacognitive strategies in CILT-style “barrier” tasks (e.g., giving verbal directions while SLP traced the given route on a map)
- ❖ For reading/writing, since patient only wanted to improve these skills as they pertained to texting/other smart phone tasks, he was agreeable to using assistive technology (e.g., text-to-speech, speech-to-text, autocomplete, predictive text, etc.).

What actually happened...

- ❖ Patient was discharged after 8 weeks due to meeting all current communication task demands (had not yet been medically cleared for driving/return to work).
 - Did admit to still being more introverted, but “okay” with this because he felt more laid-back and less anxious than prior to CVA.
 - When medically cleared to drive and return to work ~2 months later, was re-referred by neurology due to scoring 26/30 on MOCA (deficits only on verbal tasks; e.g., generative naming and delayed recall of 5 words); concerns specifically related to work had also arisen.
 - Seen for 6 more weeks for residual anomic discourse-level aphasia, wherein patient did return to work and was able to use total communication approach to meet all needs.

Some final words

- ❖ Start small! You will get more efficient the more you use these tips.
 - Get comfortable with using one in-depth assessment tool at a time (e.g., PALPA subtests, Arizona, etc.) - **chances are, every aphasia patient will benefit in some way**
 - Try to hone in on the **most significant deficit(s)** (most apparent from your initial meeting/conversation), as long as it is aligned with the patient's personal goals
- ❖ **“WHY”** and **“SO WHAT”** are most important.
 - ALWAYS ask “why” the deficits are happening, and investigate, before choosing a treatment (even if it's only for one language domain)
 - If you cannot explain how your chosen treatment is relevant to their personal goals, it's probably not the right one!