Evidence-to-Practice in Aphasia Rehabilitation: A Framework for Balancing Real-World and Research Considerations

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Disclosures

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Learning Outcomes

- Compare routine practices in your clinical setting with recent advances in aphasia management

- Outline impairment, patient-centered, and intervention factors using a clinical decision-making framework for treating individuals with aphasia

Agenda

- Common assessment practices in rehabilitation settings

- Limitations of those practices in light of advances in aphasia research

- A proposed framework to help guide clinical decision-making

- Intervention research: nuts and bolts for application to clinical practice

Background

- Common assessment practices in rehabilitation settings

- Limitations of those practices in light of advances in aphasia research
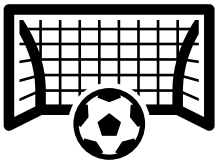
Common Assessment Practices and Goal Writing

Assessment tasks

- Standardized language assessments
- Informal evaluation tasks

Strengths/ limitations

+ expression via yes/no
- naming
- automatic speech
- comprehension of yes/no
+ repetition of words
- reading at word level
- writing bio info

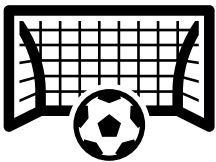### Goal setting

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Common Assessment Practices and Goal Writing

Assessment tasks

Strengths/ limitations

Goal setting

Patient will:
1. Name pictured items in 80% of trials given semantic and phonemic cues as needed

2. Demo comprehension of biographical yes/no questions in 80% of trials

3. Express automatic speech sequences in 80% of trials given MOD cues (e.g. DOW, months, numbers)

4. ID word to match picture with 80% accuracy in a field of 4 choices

5. Express basic wants and needs via total communication in 80% of trials given MOD support

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Will That Treatment Be…?

- Delivered with sufficient intensity?

  (Kleim & Jones, 2008; Baker 2012; Cherney et al, 2011; Cavanagh et al., 2021; RELEASE, 2022)

- Reflective of researched protocols?

  (Cherney & Carpenter, 2022)

- Targeted toward linguistic impairment?

  (Baddeley, 1993; Digman et al., 2016)

- Designed to help the patient participate meaningfully?

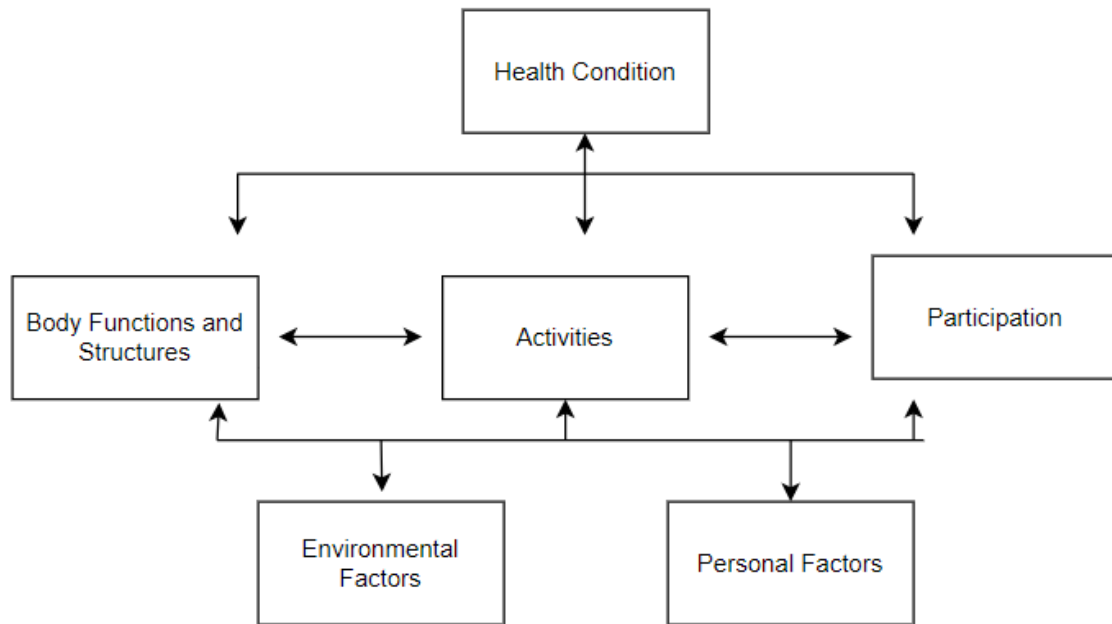 (Kagan et al., 2008; Elman, 2016)

Framework for Decision-Making

- A proposed framework to help guide clinical decision-making
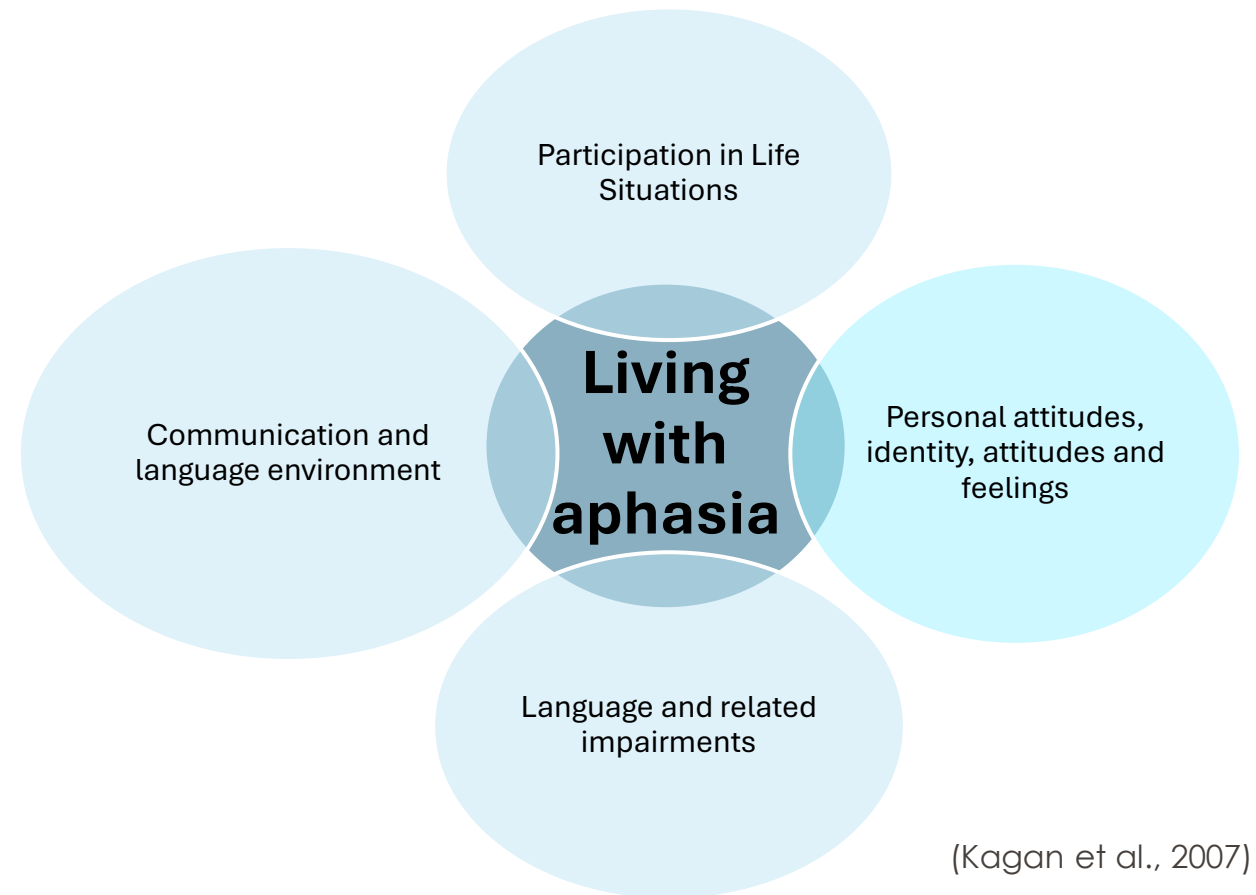
Biopsychsocial Models

WHO-International Classification of Functioning, Disability, and Health (ICF)

(WHO, 2001)

Aphasia: A Framework for Outcome Measurement (A-FROM)

(Kagan et al., 2007)

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What Is Missing From These Models?

Treatment Evidence!

Tip: Most protocols/materials are published through AJSLP/SIG Tutorials, ASHA Journals, or author websites—all freely accessible to SLPs

- Semantic Feature Training
- Verb Network Strengthening Treatment
- Copy and Recall Treatment
- Anagram and Copy Treatment
- Communication Partner Training
- Sound Production Treatment
- Phonological Components Analysis
- Phonomotor Treatment
- Response Elaboration Therapy
- Melodic Intonation Therapy
- Script Training
- Multiple Oral Re-reading
- Oral Reading for Language in Aphasia
- Promoting Aphasic's Communication Effectiveness
- Constraint Induced Language Therapy/Intensive Language Action Therapy
- Multi-Modality Aphasia Therapy
- Intensive Comprehensive Aphasia Programs

- Attentive Reading and Constrained Summarization
- Abstract Semantic Associative Network Training
- Narrative and Discourse Intervention in Aphasia
- Treatment of Underling Forms
- Texting Approach to Copy and Recall Treatment
- Aphasia Group Therapy
- Intensive Auditory Comprehension Treatment for Severe Aphasia
- Mapping Therapy
- Language Underpins Narrative In Aphasia
- Biographic Narrative Therapy
- Speech Entrainment Therapy

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Interpretation of Evaluation

- Strengths/weaknesses in each language modality
- Error types
- Deficits in relation to models of language production and processing
- Aphasia differential diagnosis and severity

Patient/Family Considerations and Preferences

- Participation in life situations
- Communication and language environment
- Personal identity, attitudes, feelings
- Interests to direct stimuli selection
- Prognostic factors

Knowledge of Treatment Protocols

- Theoretical framework and rationale
- Protocol components and sequence
- Appropriate patients
- Language modalities and linguistic targets
- Modifications to complexity or cueing for optimal challenge

Evidenced based protocol(s) with various goals

Participation based goals

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(Figure 2. Cherney and Carpenter, 2022)

Interpretation

Interpretation of Evaluation

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Standardized Aphasia Assessments

Auditory Comprehension:

-Yes/No Questions

-Commands

-Single Word Matching (Picture/Object)

Reading Comprehension:

- Single Word Matching

- Sentence level

-Short paragraph level

Oral expression:

-Confrontation naming

-Responsive naming

-Oral reading

-Repetition

-Fluency

Written Expression:

-Biographical information

-Naming

-Dictation

Differential Aphasia Diagnosis

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Models of Language Production and Processing

Interpretation of Evaluation

- Strengths/weaknesses in each language modality
- Error types
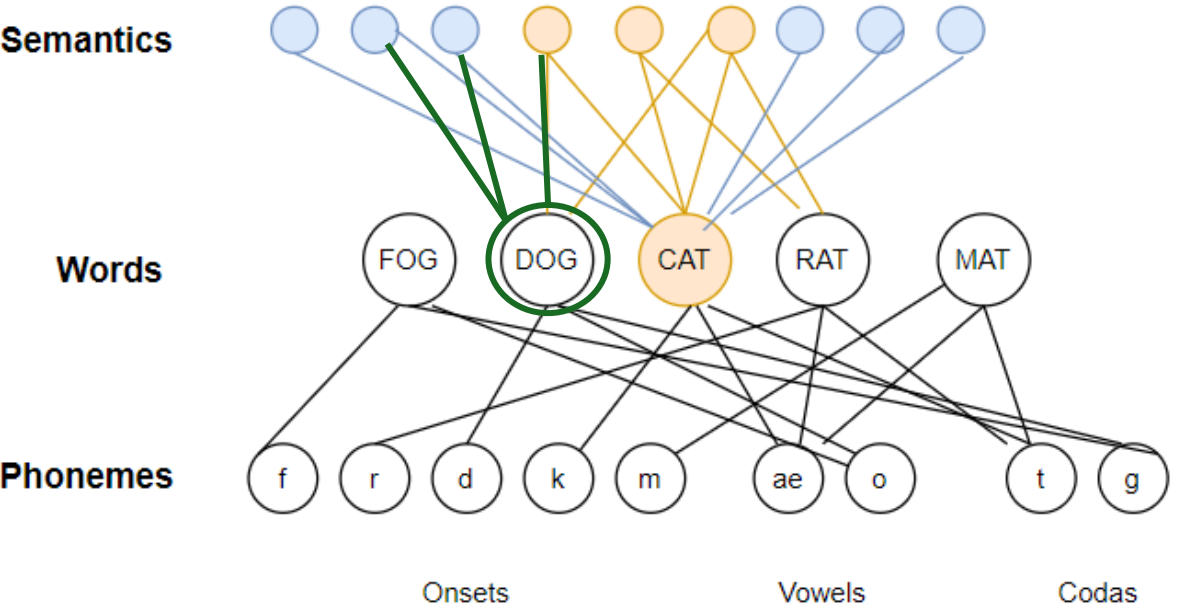- Deficits in relation to models of language production and processing
- Aphasia differential diagnosis and severity

- Help clinicians characterize error types
- Identify locus of breakdown in the language system
- Select interventions that are designed to address those breakdowns

Recommended models:

1) Two-step interactive model (Dell et al., 2007)
2) Dual-route model of lexical processing (Beeson et al., 2011)

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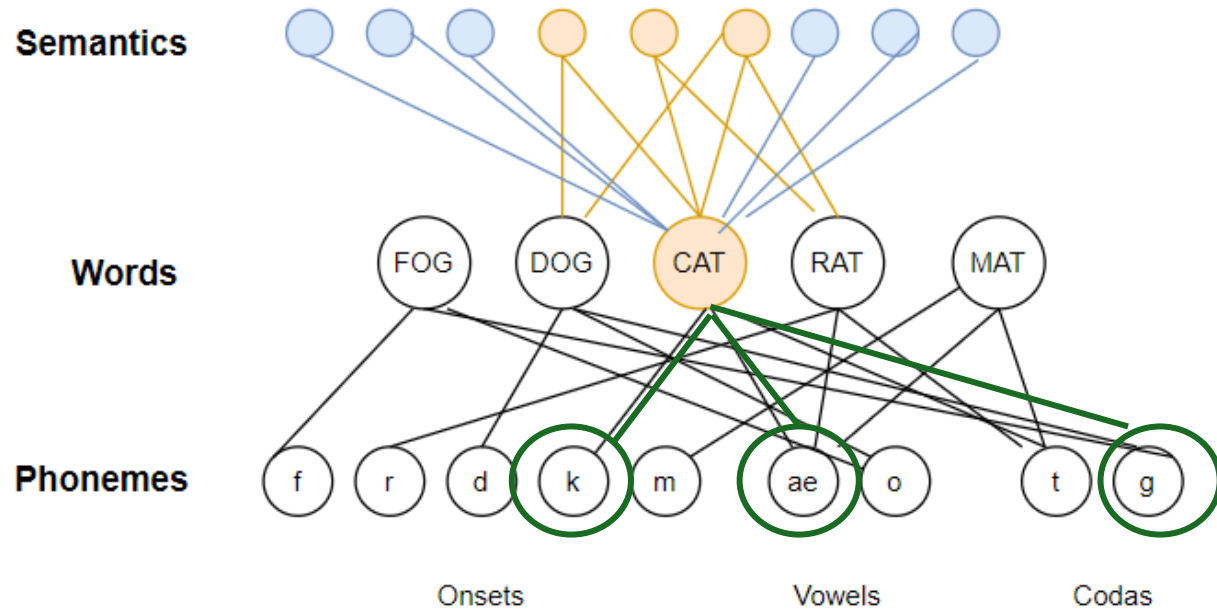# Two-Step Interactive MODEL

Semantics

Words

FOG   DOG   CAT   RAT   MAT

Phonemes

f   r   d   k   m   ae   o   t   g

Onsets   Vowels   Codas

Adapted from Figure 1. Dell et al., 2007

semantic paraphasia

"dog"

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Two-Step Interactive MODEL

phonemic paraphasia

"cag"

Adapted from Figure 1. Dell et al., 2007

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Dual Route Model of Lexical Processing

Figure 1. Beeson et al., 2002
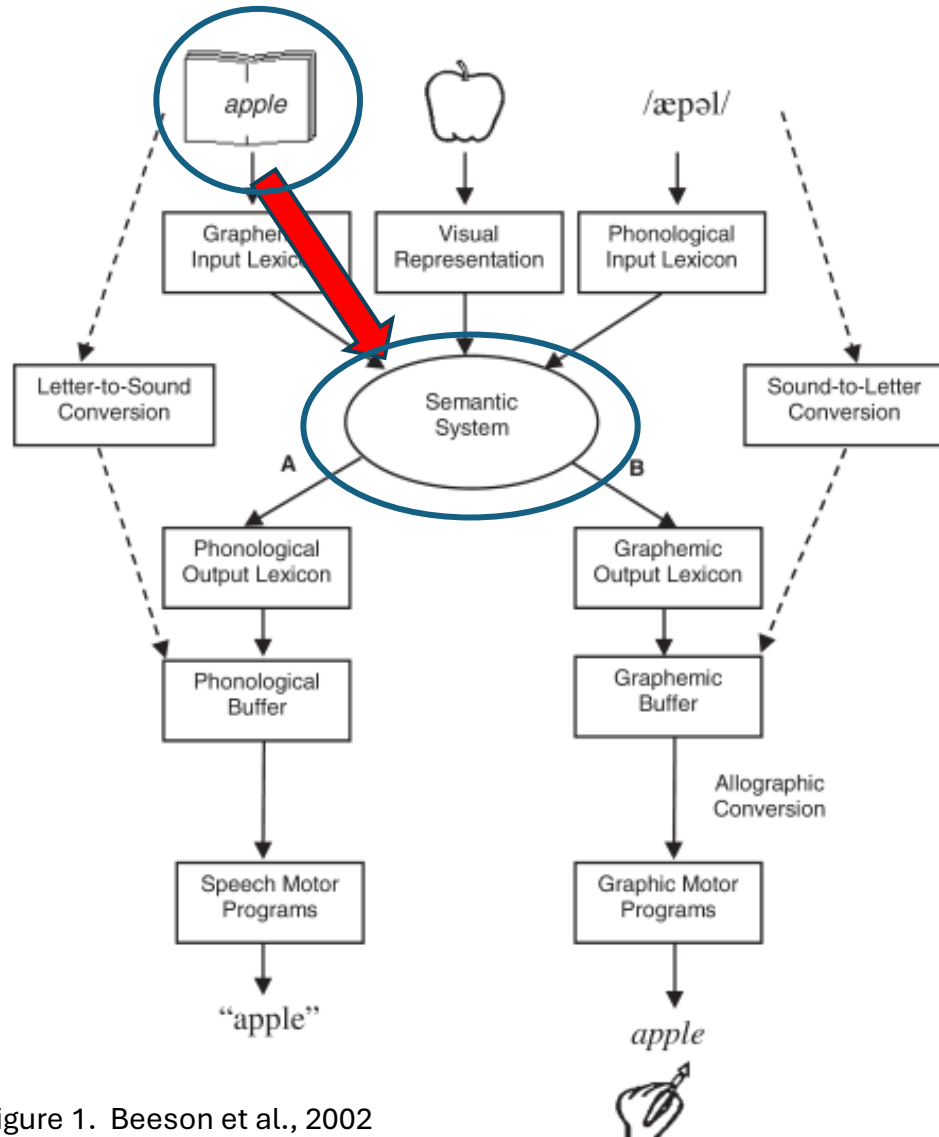
Lexical-semantic route

cat

restaurant

conscious

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Dual Route Model of Lexical Processing

Figure 1. Beeson et al., 2002
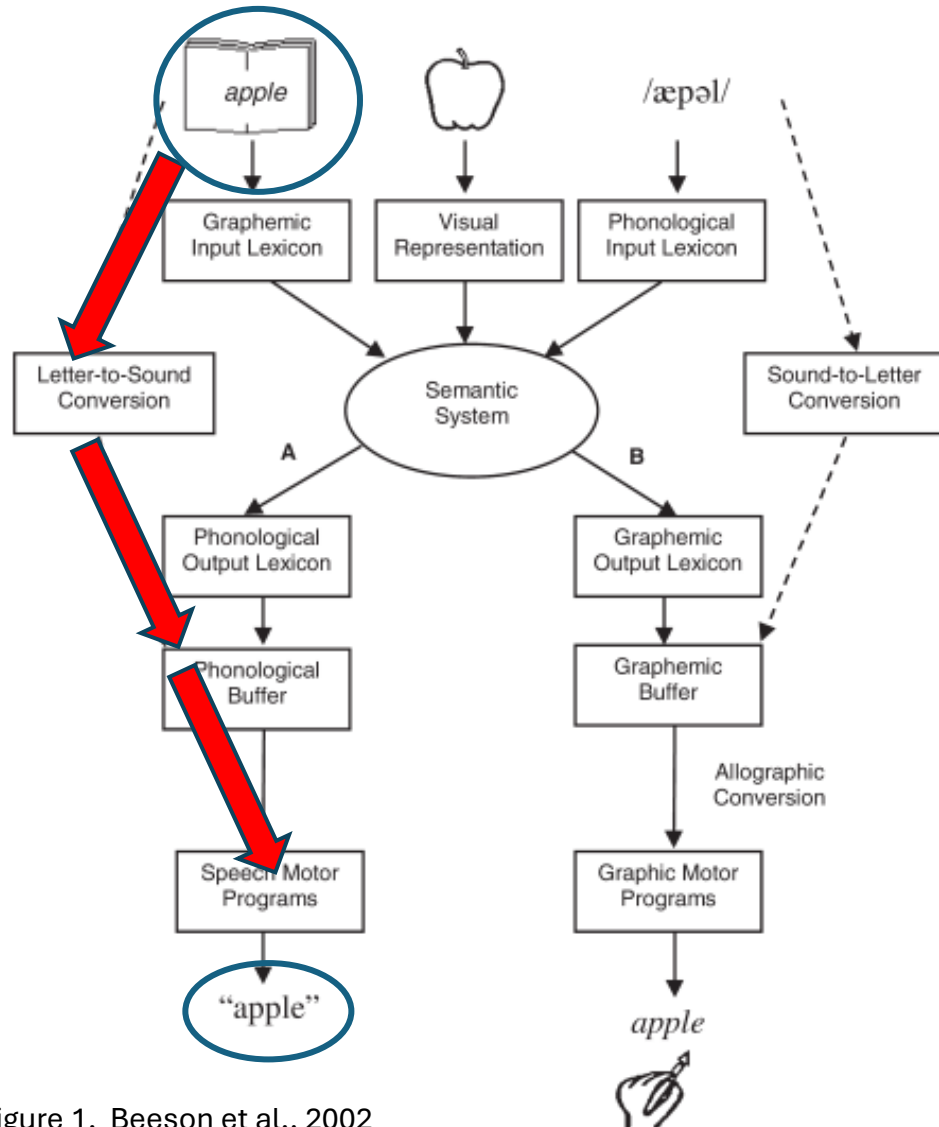
Sublexical (phonological) route

plig
flooster
abercathy

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Dual Route Model of Lexical Processing

Figure 1. Beeson et al., 2002
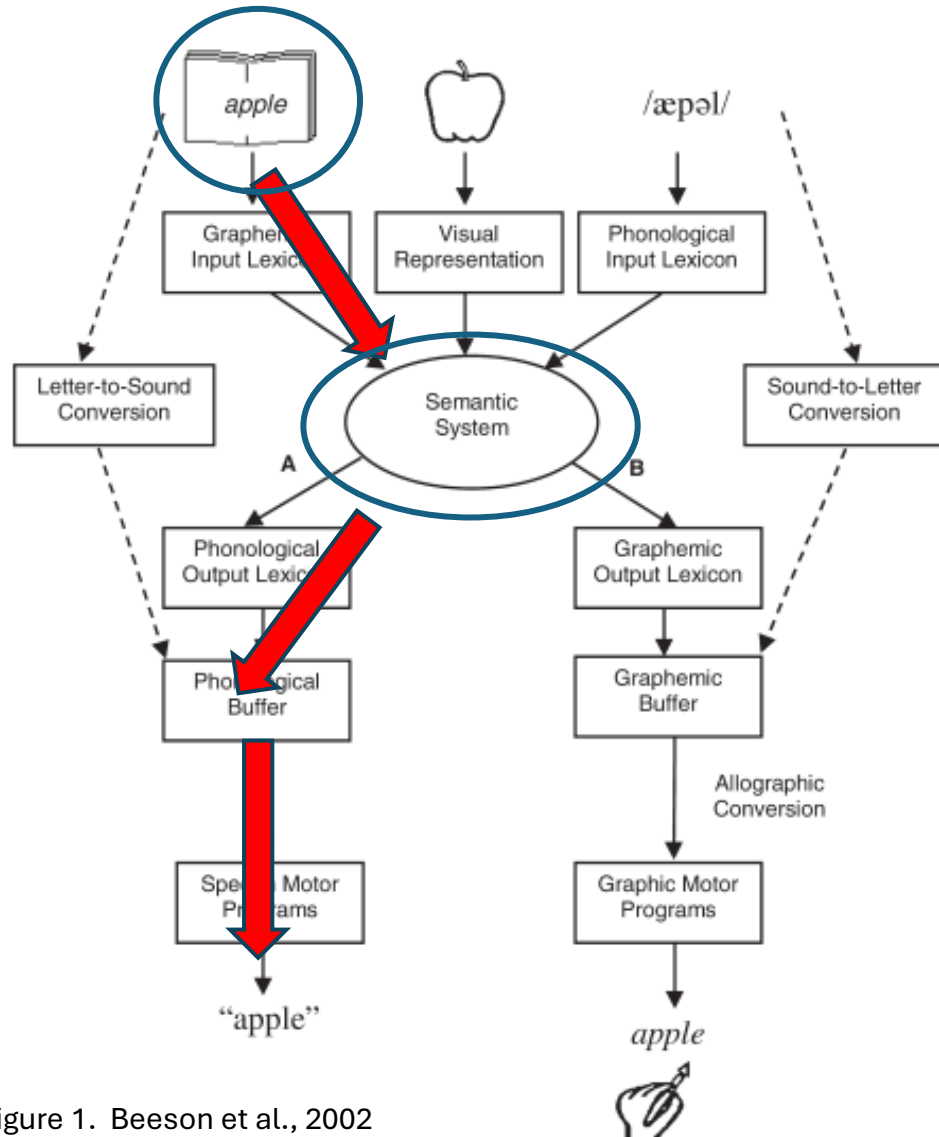
Lexical-semantic route

yacht
though
doubt

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Patient/Family Considerations

Patient/Family Considerations and Preferences

- Participation in life situations
- Communication and language environment
- Personal identity, attitudes, feelings
- Interests to direct stimuli selection
- Prognostic factors
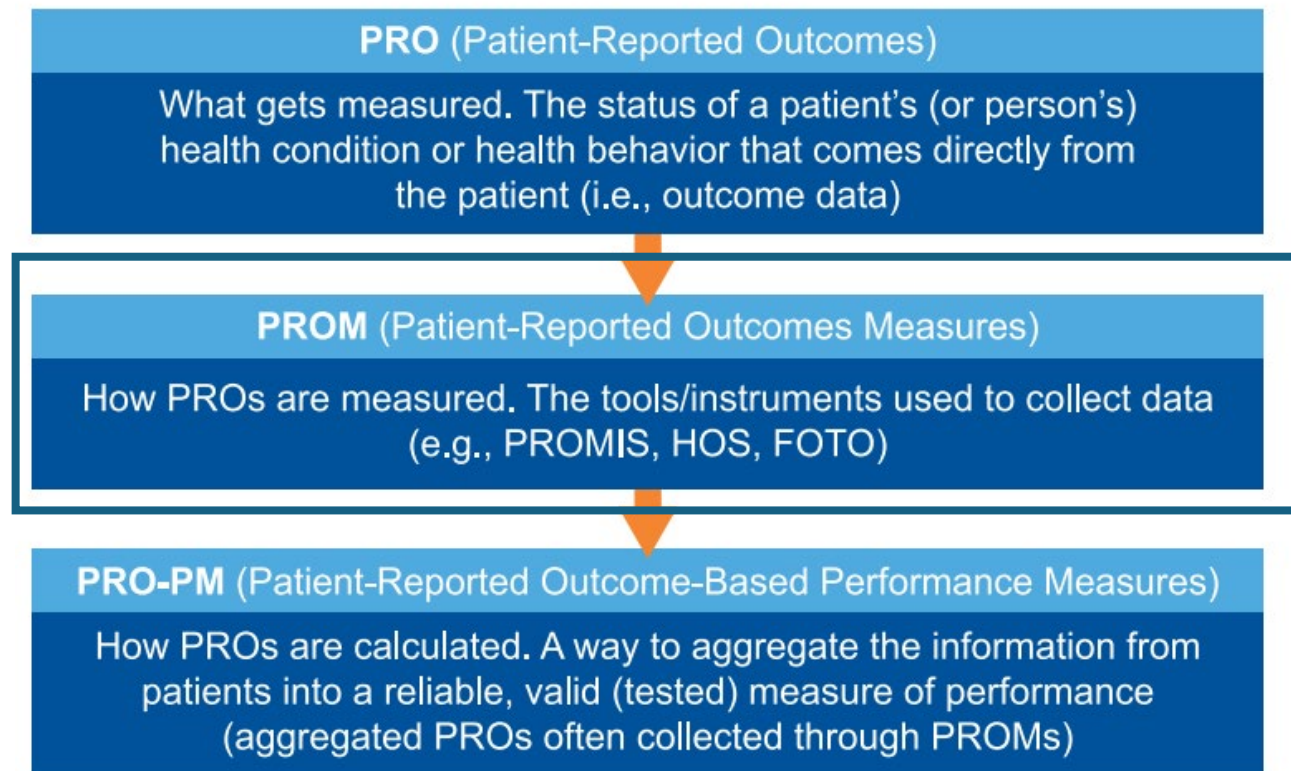
Patient/family interview

- Patient-reported measures
- Life roles and responsibilities
- Preferred activities and interests
- Activity and participation limitations
- Factors that may contribute to prognosis for this plan: etiology, family involvement, time post onset, insurance, social determinants of health

Priorities for Plan of Care

Patient-centered goal setting

Patient Reported Outcomes (PROs)

PRO (Patient-Reported Outcomes)
What gets measured. The status of a patient's (or person's) health condition or health behavior that comes directly from the patient (i.e., outcome data)

PROM (Patient-Reported Outcomes Measures)
How PROs are measured. The tools/instruments used to collect data (e.g., PROMIS, HOS, FOTO)

PRO-PM (Patient-Reported Outcome-Based Performance Measures)
How PROs are calculated. A way to aggregate the information from patients into a reliable, valid (tested) measure of performance (aggregated PROs often collected through PROMs)

Patient Reported Outcome Measures, Centers for Medicare and Medicaid Services, December 2023

Health related quality of life

Symptoms/symptom burden

Experience with care

Health behaviors

Patient Reported Outcomes in Performance Measurement, National Quality Forum, 2013

Examples and Common Themes

9. Does your condition interfere with...
...getting your turn in a fast-moving conversation?

○   ○   ○   ○

2. My swallowing problem interferes with my ability to go out for meals.	0	1	2	3	4

3. How confident do you feel about your ability to follow news and sports on TV?

0   10   20   30   40   50   60   70   80   90   100

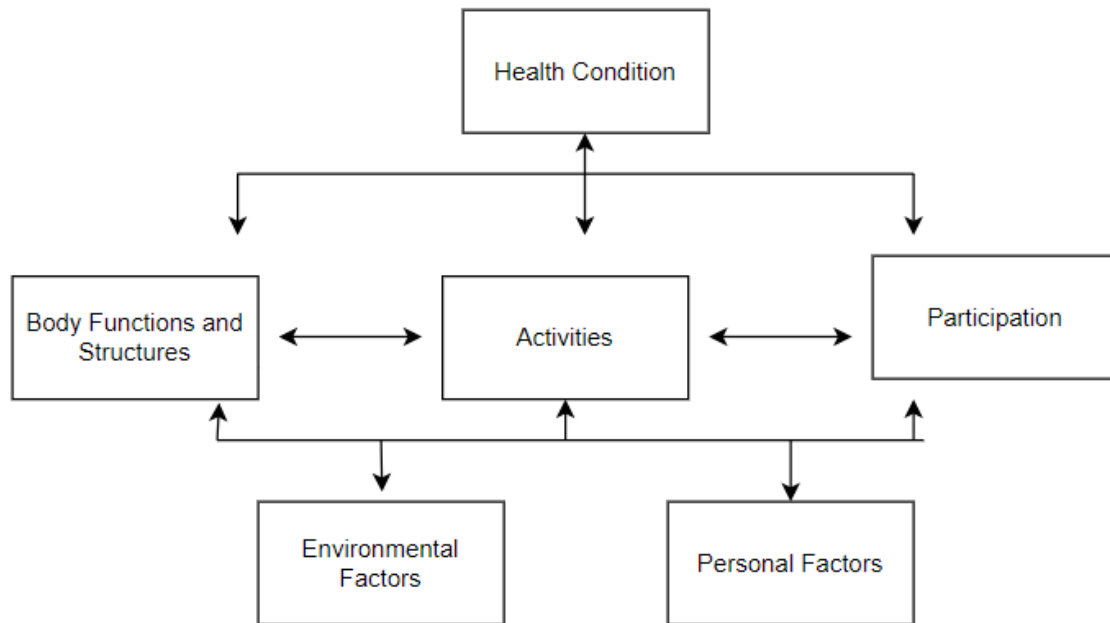Not Confident   Moderately Confident   Very Confident

How much DIFFICULTY do you currently have...

	None	A little	Somewhat	A lot	Cannot do
NQCOG22r1 reading and following complex instructions (e.g., directions for a new medication)?.....	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1

Benefits in Clinical Care

WHO-International Classification of Functioning, Disability, and Health (ICF)

(WHO, 2001)

"captures **generalization of the therapy** to multiple representative behaviors of the health construct and **not just to the target behavior**"

Cohen et al. 2021

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Application to Decision-Making

- Identification of patient-centered activity or participation limitations

    o   Monitor for change as function changes
    o   Directly incorporate into treatment plan to support generalization of self-management
    o   Rapidly screen for challenges; some populations report more limitations on PROs than are detected on standardized assessments

- Build awareness of errors or impact on function

- Discuss discrepancies between patient and care partner perspectives

- Incorporate in clinical documentation to justify plan of care

Accessibility for patients with language or cognitive impairments

- Superficial changes to the appearance of form (Cohen at al., 2021)
  - the font size
  - Spacing on the page
  - excluding distracting information, like the item ID

- Allow multiple response methods (circling, pointing, etc)

- Hierarchy for PROM supports for individuals with aphasia (Tucker et al., 2012)
  1. repeating the question and choices
  2. simplifying and restating the question and reviewing the choice scale
  3. re-explaining the entire choice scale and repeating the question
  4. combining a yes-no question with the scale and response options
  5. presenting the next question

Intervention Research: Nuts and Bolts for Application to Clinical Practice
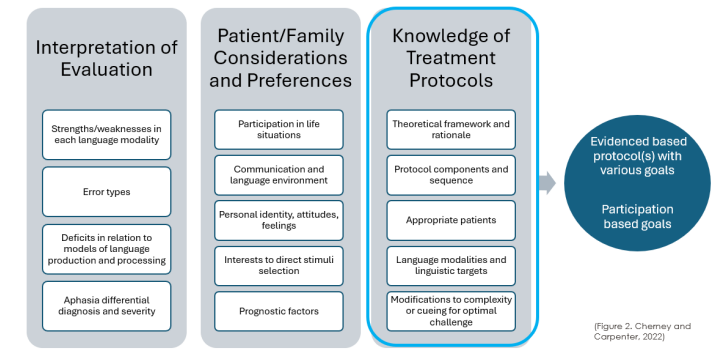
(Figure 2, Cherney and Carpenter, 2022)

An Updated Systematic Review of Stroke Clinical Practice Guidelines to Inform Aphasia Management (Burton et al., 2023)

From Table 3. Treatment approaches.
"Where a stroke patient is found to have aphasia, the clinician should: Use **alternative means of communication** (such as gesture, drawing, writing, use of augmentative and alternative communication devices) as appropriate." AUS Stroke Foundation
"People with communication problems after stroke should be considered for **assistive technology and communication aids** by an appropriately trained, experienced clinician." UK: Acute and Rehab
"**A variety of different treatment approaches for aphasia may be useful, but their relative effectiveness is not known.**" US: Rehab and Recovery
"**Group treatment** may be useful across the continuum of care, including the use of community-based aphasia groups." US: Rehab and Recovery
"Treatment for aphasia may include group therapy and conversation groups. **Groups can be used to supplement the intensity of therapy during hospitalization and/or as continuing therapy following discharge**." Canada: Rehab & Recovery
"Treatment to improve functional communication can include language therapy focusing on: **Production and/or comprehension of words, sentences, and discourse (including reading and writing)."** Canada: Rehab & Recovery
"Treatment to improve functional communication can include language therapy focusing on: **Use of computerized language** therapy to enhance benefits of other therapies." Canada: Rehab & Recovery
"Treatment to improve functional communication can include language therapy focusing on: **constraint-induced language therapy**." Canada: Rehab & Recovery

Knowing Your Interventions

Many aphasia interventions:

- Contain multiple steps that address a variety of modalities

- Have a proposed rationale or mechanism by which the treatment theoretically improves the language system or functional ability

- Demonstrate improvements across modalities

- Can be adapted to personally salient materials/stimuli

Bottom line: You can use a single approach to achieve multiple goals

"High-mileage"

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Knowledge of Treatment Protocols

Knowledge of Treatment Protocols

- Theoretical framework and rationale
- Protocol components and sequence
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- Modifications to complexity or cueing for optimal challenge

Example: Oral Reading for Language in Aphasia (ORLA) ™

- Oral reading is systematically applied in programmed format

- Focuses on connected discourse

- Permits modeling of more natural speech

- Allows practice on a variety of grammatical structures

- Graded levels based on stimuli length and reading level

- Based on neuropsychological models of normal reading processes

(Cherney, 1995; Cherney, 2004; Cherney, 2010)

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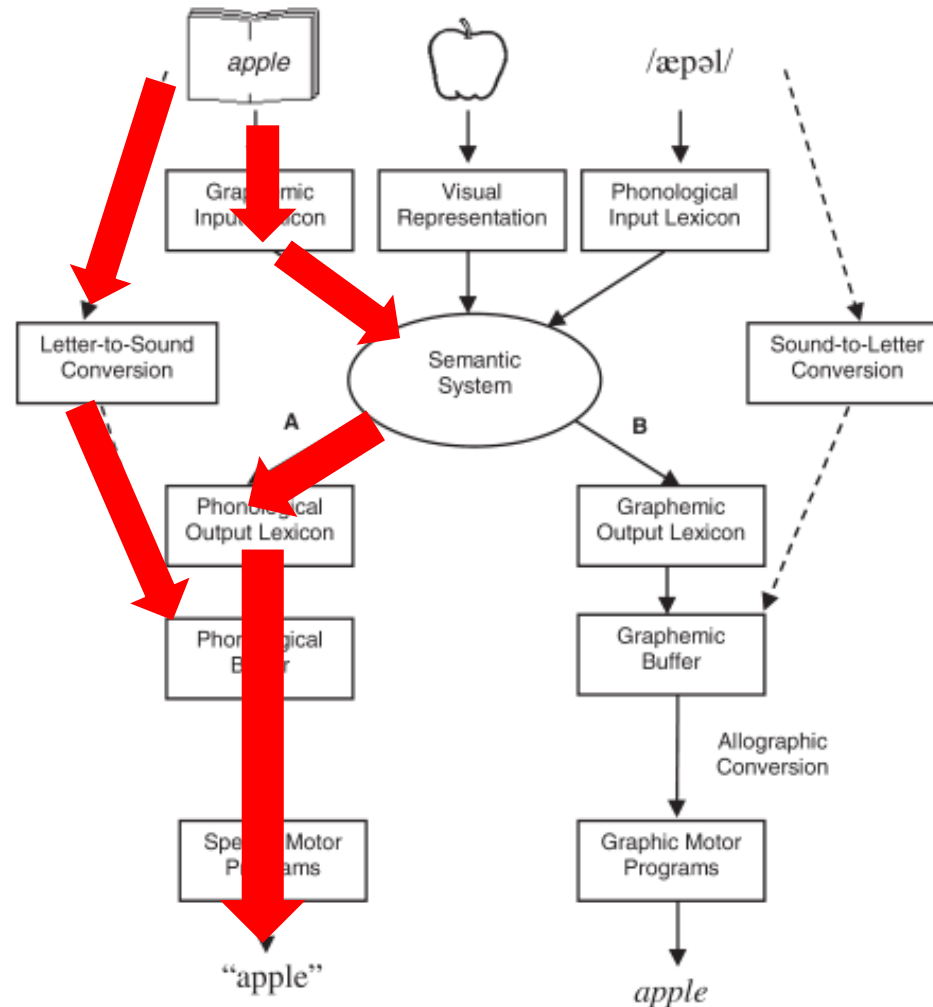# Dual Route Model of Lexical Processing

Figure 1. Beeson et al., 2002

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Example: Oral Reading for Language in Aphasia (ORLA) (TM)

Knowledge of Treatment Protocols

- Theoretical framework and rationale
- **Protocol components and sequence**
- Appropriate patients
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ORLA Procedure (from appendix; Cherney, 2010)
SLP sits **opposite** the patient
SLP **reads stimulus aloud** to the patient
SLP **reads stimulus aloud** to the patient, with **SLP and patient pointing to each word**

SLP and patient **read aloud together**, with **patient continuing to point to each word**
    SLP adjusts rate/volume to fade cueing
    Repeat above step 2 more times

For each line of sentence, SLP states word for patient to **identify**
For each line or sentence, SLP points to a word for patient to **read aloud**   Includes content or functor words
Patient reads sentence aloud   SLP reads aloud with patient as needed

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Broad range of aphasia types and severities:

Severe aphasia
> Greatest improvements in reading comprehension

Moderate aphasia
> Greatest improvements in discourse production

Mild-moderate aphasia
> Greatest improvements in written expression and discourse production

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Example: Oral Reading for Language in Aphasia (ORLA) (TM)

Knowledge of Treatment Protocols

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- Protocol components and sequence
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- **Language modalities and linguistic targets**
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Improvements noted in research:
Reading comprehension
Auditory comprehension
Oral expression
Written expression

Example: Oral Reading for Language in Aphasia (ORLA) (TM)

Knowledge of Treatment Protocols

- Theoretical framework and rationale
- Protocol components and sequence
- Appropriate patients
- Language modalities and linguistic targets
- **Modifications to complexity or cueing for optimal challenge**

Length and complexity of sentences
    Based on length and reading level
        Level 1: 3-5 word sentences; 1st grade
        Level 2: 8-12 words; 1-2 sentences; 3rd grade
        Level 3: 15-30 words; 2-3 sentences; 6th grade
        Level 4: 50-100 word paragraph; 6th grade

Identification of content vs. functor words
Fading of model
Rate

Clinician vs. computer delivered
Addition of writing (e.g. ORLA + Writing protocol)

Interpretation of Evaluation

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Evidenced based protocol(s) with various goals

Participation based goals

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(Figure 2. Cherney and Carpenter, 2022)

Where Can I Start to Learn More about These Components of Treatments?

https://aphasiatherapyfinder.com/

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Thank you!

Questions?

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