Introduction

What are pronounal words (pronouns)?
- Linguistic items used to refer to contextual information and rely on intact syntactic and semantic processing ability for successful interpretation
- Are crucial in functional expressive and receptive communication
- Do not naturally occur on their own without a contextual antecedent (i.e. a girl → she/her)

Why pronouns?
- Demonstrable difficulty for people with aphasia (PWA)
- Knowledge gaps and asymmetry of investigation in the current literature re: pronoun comprehension in PWA
- Insufficient knowledge at word and discourse levels
- Inconsistent findings at sentence level using online and offline methodologies with both simple transitive sentences and complex sentences.

In sentences: PWA show inconsistent performance of pronoun comprehension during sentence processing (Varlokosta & Edwards, 2003)
- Representational account
  - Interpretation failure attributed to an underlying syntactic impairment in which PWA are unable to extract and resolve grammatical information (Edwards & Varlokosta, 2007; Love et al., 1998)
- Processing account
  - Interpretation failure attributed to extra-linguistic impairments e.g. general depressed aptitude for syntactic and/or semantic computations, delayed processing, restricted working memory, or lexical integration difficulties (Caplan et al., 2007; Choy & Thompson, 2005, 2010; Grodzinsky et al., 1993; Pifano & Burkhardt, 2001; Ruigendijk & Aruvit, 2003).

In discourse: PWA demonstrate a select difficulty when processing discourse-linked information compared to processing non-discourse-linked information (Avrutin, 2000, 2006; Bos et al., 2014; Peristeri & Tsimpiri, 2013; Pesetksy et al., 1987).
- Implicit discourse-linked pronoun processing: pronouns and their contextual antecedent must be bound locally within the same sentential clause.
- Explicit discourse-linked pronoun processing: pronouns are coindexed with a contextual referent, or set of referents, in a different location within the discourse matrix.

Methodology

Participants:
- Study group: 20 people with aphasia (13 fluent, 7 nonfluent) (12 males, 8 females; aged 50 to 80 years; X = 66.25)
- Control group: 10 healthy adult speakers was used, and matched appropriately

Methodology:
- Experiment Measure Task Paradigm Data analysis
- Pronoun comprehension in sentences Auditory sentence-picture matching task GLMM
- Pronoun comprehension in discourse Auditory comprehension task + who-comprehension probes GLMM

In sentences:
- 1-2, 3-argument sentences with nouns and pronouns
- Sentence content tested: active, passive, nonreversible, reversible + pronoun competition

In discourse:
- 2-3, 4-argument sentence discourse structures with nouns and pronouns
- Discourse conditions tested: length (number of sentences in discourse), pronoun competition (inter- and intradiscursively).

Data Analysis:
- Generalized Linear mixed model (GLMM) fit by maximum likelihood (Laplace Approximation)

Sentence Comprehension Results

Discourse Comprehension Results

Discussion

- Pronoun processing difficulties arise when pronouns are processed as explicitly discourse-linked elements rather than when processed as implicitly-discourse-linked elements.
- PWA process pronouns similarly to healthy controls when the pronoun and its contextual antecedent occurs within the same sentence.
- Processing multiple pronouns (pronoun competition) does not appear to negatively impact pronoun processing.
- Working memory ability does not appear to be negatively impacted by pronoun processing in PWA.
- People with fluent and nonfluent aphasia process pronouns similarly within sentences.
- People with nonfluent aphasia process pronouns with significantly more difficulty in discourse when compared to people with fluent aphasia.

Study Aim

Aim: To systematically investigate comprehension of personal pronouns (e.g. he, she, they, him, her, them) and reflexives (i.e. themselves, himself, herself) in PWA to better understand under what conditions these difficulties arise.

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<th>Impaired pronouns</th>
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