

INTRODUCTION

Function Words

Function words are generally regarded as low imageability which negatively affects the speech production (Bird, Franklin & Howard, 2001).

For language acquisition, it is followed by verb production with a rise in the acquisition of grammatical morphology (Bates et al., 1991).

fMRI studies show that function words and content words recruit different brain regions during processing (Friederici, Opitz, & Von Cramon, 2000; Nobre et al., 1997)

Limited attention to paid performance of function word retrieval in PWA

Core Lexicon

Lexicon-based analysis is time-efficient and highly reliable because clinicians only have to count how many lexical items are present (McWhinney, Fromm, Holland, Forbes & Wright, 2010)

Based on previous research, the core lexicon measure was able to differentiate PWA's impaired lexical access from healthy controls (Dalton & Richardson, 2015)

The core lexicon list for function words were hierarchically created depending on word frequency

PURPOSE OF THE STUDY

- Is function word production of PWA significantly correlated with WAB-R AQ score?
- Is there an underlying relationship among the percentage of core lexical items produced (verbs, nouns, adjectives, adverbs, and function words) by PWA?
- What would be the best combination of five core lexicon items to predict WAB-R AQ score?

PARTICIPANTS

470 control participants (252 female, 218 male) & 11 aphasia participants

- Normal controls were divided into seven age groups (20s, 30s, 40s, 50s, 60s, 70s, and 80s)

PARTICIPANTS

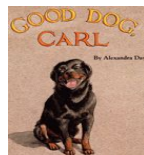
11 Aphasia Participants

	Age	Gender	Edu	AQ	Aphasia Type
01A	65	M	18	76.3	Conduction
03A	73	M	12	85.2	Anomic
04A	84	F	12	62.6	Conduction
05A	55	M	14	57.6	Broca's
06A	66	F	14	56.3	Broca's
07A	34	F	14	90.7	Anomic
09A	38	F	14	57.7	Broca's
10A	62	F	20	61.3	Broca's
11A	72	M	12	64.9	Transcortical Motor
12A	65	F	11	89.4	Anomic
13A	65	M	14	54.4	Broca's

* Edu = Education; AQ = Aphasia Quotient

METHOD

Stimuli: 2 wordless picture book



- To create the core lexicon list, the 25 most commonly used words were extracted from the transcripts of the normative samples with The Computerized Language Analysis (CLAN, MacWhinney, 2000)

- An example of the core lexicon list of 70 age group

- If PWAs produced any lemmas on any of the core lexicon lists, they would receive a point regardless of how many times the lemma form may have been used.

1 the	70	✓
2 and		
3 they		✓
4 is		✓
5 of		
6 he		
7 in		
8 be		
9 she		
10 their		
11 with		
12 it		
13 not		
14 on		
15 his		✓
16 one		
17 out		
18 all		✓
19 to		
20 him		
21 I		
22 them		
23 for		✓
24 that		
25 up		
Total		65/70

RESULTS

Percent agreement with the core lexicon for Function Words

	Age Group	GDC (%)	Picnic (%)
01A	60s	60	72
03A	70s	80	72
04A	80s	92	76
05A	50s	28	28
06A	60s	N/A	16
07A	30s	76	72
09A	30s	20	24
10A	60s	44	16
11A	70s	36	8
12A	60s	76	88
13A	60s	16	16

Stepwise Regression for GDC

		b	SE b	β
Model 1	Constant	49.355	4.987	
	Verbs	.771	.163	.859**
Model 2	Constant	60.746	3.100	
	Verbs	.854	.077	.952**
	Adverbs	-.655	.119	-.471**

- ✓ Sig. results for Model 1 & Model 2 ($p < .001$)
- ✓ $R^2 = .704 \rightarrow R^2 = .937$

Spearman's correlation coefficient between AQ scores and function words

- ✓ For GDC, Sig. positive correlation between AQ and function words, $r_s = .742, p < .05$
- ✓ For Picnic, Sig. positive correlation between AQ and function words, $r_s = .620, p < .05$

Core Lexicon Variable	Factor 1	Factor 2
Adjectives	1.032	
Adverbs	.553	
Nouns		.931
Function Words		.718
Verbs		.641

- ✓ A 2-factor solution accounts for 81% of the total variance.
- ✓ Factor 1: adjectives and adverbs
- ✓ Factor 2: verbs, nouns, and function words

Stepwise Regression for Picnic

		b	SE b	β
Model 1	Constant	49.370	3.670	
	Verbs	.821	.132	.901**

- ✓ Sig. relation b/w AQs and core verbs ($p < .001$)
- ✓ $F(1,9) = 38.614, p < .001$.
- ✓ $R^2 = .811$
- ✓ Predicted AQs = $.821 \times \text{Verb} + 49.370$

DISCUSSION

- The core lexicon list for function words were hierarchically created depending on word frequency and possibly a more reliable method for capturing aphasia severity.
- Function words may be useful for quantifying severity of aphasia.
- Although verbs, nouns, adjectives, and adverbs are linguistically considered content words, verbs and nouns were loaded on a factor together with function words, but not with adjectives and adverbs.
 - Factor 1 seems to reflect the nature of the modifier that stands alongside nouns and/or verbs.
 - Factor 2 appears that function words may lie somewhere between nouns and verbs.
- The final model including both verbs and adverbs significantly improves our ability to predict the aphasia severity.
- Treatment and evaluation of modifiers deserve to be taken into account as distinct from nouns and verbs.