

Stem- Spraak- en Taalpathologie

18th International Science of Aphasia Conference
Geneva, 11-14 September 2017

Monday, September 11

09.15 – 12.15 Invited talks 1 & 2 fMRI, DTI, VLSM

14:00 – 15:40 Contributed papers oral session 1 1

16.15 – 17.45 Poster Session I 16

Tuesday, September 12

09.00 – 12.00 Invited talks 3 & 4 : tDCS

13.30 – 15:30 Contributed papers oral session 2 44

16.00 – 17.30 Poster Session 2 65

Wednesday, September 13

09.00 – 12.00 Invited talks 5 & 6: ERP's, MEG & EEG

12.15 – 14.00 Poster Session 3 91

14.00 – 15.40 Contributed papers oral session 3 118

15:45 – 16:30: Jürg Schwyter presents : [jürg]

Thursday, September 14

09.00 – 12.00 Invited talks 7 & 8: TMS

12.15 – 14.00 Poster Session 4 134

14.00 – 17.15 Parallel Workshops

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Supplement

18th International Science of Aphasia
Conference



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Organization

The 18th International Science of Aphasia Conference is held at the University of Geneva, Switzerland, September 11-14, 2017.

Chair:

Local Chair: Marina Laganaro, University of Geneva, Switzerland

The scientific committee is composed of:

Local Committee:

Psycholinguistics and Speech and Language Pathology Group, FPSE, University of Geneva

Marina Laganaro (chair)

Pauline Pellet

Grégoire Python

Carole Bigler (secretary)

SoA Scientific Committee

Roelien Bastiaanse (chair)

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Carlo Semenza

The abstract selection committee is composed of:

Roel Jonkers (chair)

David Howard

Lyndsey Nickels

Silvia Martínez-Ferreiro

Carlo Semenza

Abstract Booklet

Alice Pomstra

Lexical Diversity in Different Types of Aphasia

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Introduction

Analysis of lexical devices is an important part of assessment of discourse production skills in various clinical populations. Lexical diversity (LD) is the most widely used measure to investigate verbal skills of any specific population or individual, measuring the number of different lexemes used in a speech sample. In this study we apply several measures of LD to narratives by speakers with different types of aphasia and neurologically healthy speakers from the Russian CiPS corpus (Khudyakova et al., 2016).

Previous studies of discourse in aphasia has shown that diversity of all lexical devices is lower in texts by people with aphasia (PWA) compared to neurologically healthy speakers (Fergadiotis & Wright, 2011), as well as diversity of nouns and verbs (Bastiaanse, 2011; Bastiaanse & Jonkers, 1998; MacWhinney, Fromm, Holland, Forbes, & Wright, 2010). We calculate LD using methods that have been proven to be a valid measure for narrative discourse in aphasia (Fergadiotis, Wright, & West, 2013): MTLD (measure of textual lexical diversity) and MATTR (moving average type-token ratio) with two different window sizes.

Methods

Material

Russian CiPS is a collection of Pear film (Chafe, 1980) retellings by people with aphasia and right hemisphere damage, as well as neurologically healthy speakers of Russian. The types of aphasia of the brain-damaged speakers were established using Luria's classification (Akhutina, 2015; Luria, 1966). The four aphasia types present in the corpus include two with non-fluent speech output (efferent motor and dynamic aphasias) and two with fluent speech output (sensory and acoustic-mnemonic aphasias). For this study we have analyzed 59 texts from the Russia CiPS corpus: 21 narratives by healthy speakers and 38 stories by PWA (10 speakers with efferent motor aphasia, 9 – dynamic aphasia, 10 – acoustic-mnemonic aphasia, and 9 – sensory aphasia).

The narratives are transcribed in ELAN Annotation tool (Wittenburg, Brugman, Russel, Klassmann, & Sloetjes, 2006), and the analysis of LD was applied to the lemma tier. False-starts (unsuccessful attempts to produce a word) and filled pauses are not reflected on the lemma tier and were not included in the analysis.

Lexical Diversity Measures

As shown by Fergadiotis et al. (2013), MTLD and MATTR are valid measures of LD and reflect little of any other text parameters. However, the size of the window of MATTR is a parameter that can influence the results and interpretations of the output: small window size can detect such properties of the text, as frequent repetitions, while a greater window size is not sensitive to such features (Covington & McFall, 2010). In this study we run MATTR with two different window sizes : 10 and 100, hypothesizing that MATTR with the smaller window might be sensitive enough to detect the differences between fluent and non-fluent types of aphasia.

Lexical diversity analysis was performed in R with koRpus package (Michalke, 2017).

Results

The results of the LD analysis are summarized in Table 1. One-way ANOVAs and posthoc Tukey HSD tests were run separately for every LD measure, and a significant difference was found between texts by healthy speakers and all PWA groups ($p < 0,05$), with PWA having lower LD than healthy speakers. Also for MATTR

with a short window (=10) we have found a significantly ($p < 0,05$) lower LD score of people with dynamic aphasia as compared to people with fluent types (acoustic-mnemonic and sensory aphasia).

Discussion

The results of the study go in line with the previous findings, showing that people with different types of aphasia have lower LD scores than healthy speakers. We have also shown that applying a specific measure of LD – MATTR with a smaller window size can detect differences between texts by speakers with dynamic aphasia and fluent aphasia types.

Table 1. Results of the LD analysis

Group	Tokens		Types		MTLD		MATTR (window = 100)		MATTR (window = 10)	
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
Speakers with acoustic- mnestic aphasia (N = 10)	268,0	118,8	111,8	33,1	38,0	7,6	0,6	0,0	0,9	0,0
Speakers with dynamic aphasia (N = 9)	192,1	74,0	74,4	14,0	23,5	14,5	0,5	0,1	0,8	0,1
Speakers with efferent motor aphasia (N = 10)	225,3	119,8	93,9	39,2	28,9	9,7	0,5	0,1	0,9	0,0
Speakers with sensory aphasia (N = 9)	287,3	130,3	107,1	37,2	32,7	11,0	0,6	0,1	0,9	0,0
Healthy speakers (N = 21)	258,6	108,1	129,8	39,8	66,3	20,8	0,7	0,0	0,9	0,0

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