

Transcription-less analysis of five discourse tasks in Laurentian French persons with post-stroke aphasia: adaptation and reliability

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Introduction

- Discourse analysis is key in aphasia assessment, but transcription-based methods are resource-intensive; transcription-less measures (MCA, TUs, CoRe) offer feasible alternatives targeting content, structure, and informativeness.
- This study, guided by the LUNA framework, evaluated the reliability and validity of these measures in Laurentian French across five tasks, while also examining microstructural variables and cross-level links.

Aims of the study

- Evaluate intra- and inter-rater and test-retest reliability of transcription-less measures across five discourse task.
- Evaluate test-retest reliability of microstructural (i.e., linguistic) variables and linking measures across discourse levels

Methodology

Participants

- 23 persons with aphasia
- Age : 58.4 +/- 13.4 years old
- Education : 13.8 +/- 3.4 years
- Speaking French on a daily basis

Table 1. Demographic and clinical characteristics

	Sex	Age	Education	Time post-onset (months)	Aphasia Type	Severity (BDAE Scale)
1	M	61	11	71	Broca	Moderate
2	F	57	11	71	Wernicke	Moderate
3	M	69	11	82	Broca	Moderate to severe
4	M	84	14	102	Conduction	Mild to moderate
5	M	71	11	61	Anomic	Mild
6	F	64	12	67	Transcortical sensorial	Mild to moderate
7	F	48	14	29	Anomic	Mild
8	M	54	14	8	Broca	Mild
9	F	51	11	105	Broca	Moderate
10	M	43	18	174	Broca	Moderate to severe
11	F	69	11	40	Broca	Moderate to severe
12	F	49	18	510	Anomic	Minimal
13	F	41	17	34	Anomic	Mild
14	F	63	16	24	Broca	Moderate
15	F	35	15	60	Anomic	Mild
16	F	75	13	156	Broca	Moderate
17	M	53	9	13	Transcortical mixed	Moderate to severe
18	F	79	23	120	Broca	Moderate
19	F	70	10	361	Broca	Moderate
20	F	66	16	131	Anomic	Mild
21	M	44	14	39	Broca	Moderate to severe
22	M	59	17	60	Conduction	Moderate
23	M	39	11	36	Anomic	Mild

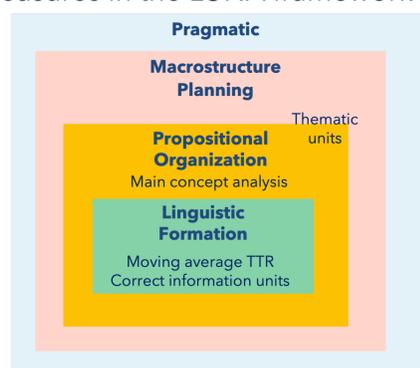
Discourse assessment

- Two assessments (Range = 7-26 days, Mean = 11.3 +/- 5.2)
- Five monologic discourse tasks: Picture description (WAB-R), Cinderella storytelling, Refused umbrella, Broken window, Cat rescue
- Three transcription less measures computed: Main concept analysis¹, thematic units², coherence/reference³
- Two transcription-based (CHAT convention)⁴ linguistic measure: MATTR and correct information units (CIUs)

Statistical analysis

- Intra- and inter-rater and test-retest reliability : Two-way mixed intraclass correlation coefficients (ICCs) with absolute agreement
- Test-retest reliability: Wilcoxon signed-rank test, Spearman's rho, minimal detectable change (MDC)
- Construct validity: Spearman's rho

Figure 1. Measures in the LUNA framework⁵



Results

Table 2. Summary of recommended transcription-less variables.

Task	Variables	Intra-rater reliability analyses	Inter-rater reliability analyses	Test-retest reliability analyses	Construct validity analyses	MDC ₉₀
WAB-R	TU	Test - good Retest - excellent	Test - Retest - excellent	Good	CIU	4.19
	CoRe	Test and Retest - good	-	Excellent	-	1.03
Cinderella	MC	Test and retest - excellent	Test and retest - excellent	Excellent	CIU and CoRe	16.90
	AC	Test and retest - excellent	Test and retest - excellent	Good	CIU, CoRe and MATTR	6.69
	CoRe	Test and retest - excellent	Test - moderate Retest - excellent	Good	MC and AC	2.07
Combined tasks of the Broken Window, the Refused Umbrella and the Cat Rescue	MC	Test - good Retest - excellent	Test - good Retest - excellent	Good	AC, CoRe and CIU	6.27
	AC	Test - good Retest - excellent	Test - moderate Retest - excellent	Good	CoRe and CIU	2.27
	CoRe	Test and retest - excellent	Test and retest - good	Excellent	MC and AC	1.60

Figure 3. Illustration of the agreement for Coherence/Reference

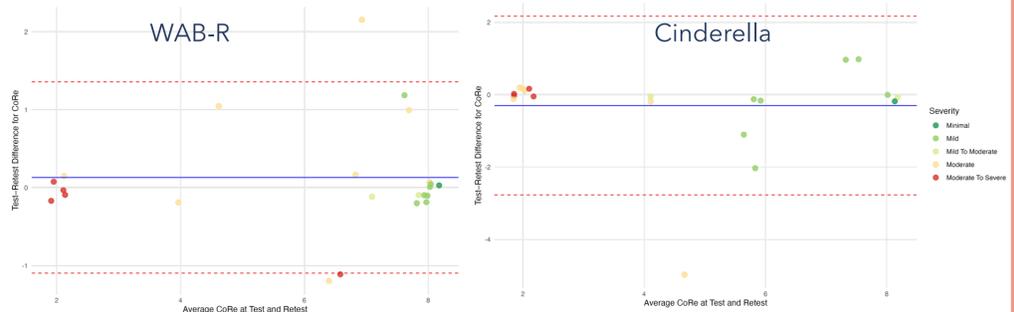
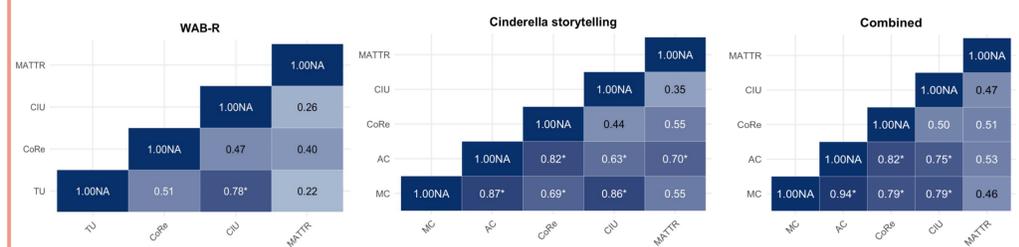


Table 3. Reliability of linguistic variables

Task	Variables	ICC (95% CI) interpretation	ICC interpretation	Spearman's (adjusted p)	Wilcoxon (adjusted p)	MDC ₉₀
WAB-R	CIU	0.941 (0.867-0.975)	Excellent (Good-Excellent)	0.879 (p = 0.000)	130.5 (p = 1.000)	70.21
	MATTR	0.645 (0.326-0.833)	Moderate (Poor-Good)	0.666 (p = 0.008)	119.0 (p = 1.000)	1.03
Cinderella	CIU	0.919 (0.806-0.967)	Excellent (Good-excellent)	0.889 (p = 0.000)	65.0 (p = 1.000)	168.90
	MATTR	0.783 (0.529-0.908)	Good (Moderate-Excellent)	0.623 (p = 0.071)	93.0 (p = 1.000)	0.07
Combined tasks	CIU	Test - good Retest - excellent	Excellent (Good-Excellent)	0.811 (p = 0.000)	219.0 (p = 0.630)	48.50
	MATTR	Test - good Retest - excellent	Moderate (Poor-Good)	0.596 (p = 0.119)	183.5 (p = 1.000)	0.08

Figure 3. Construct validity of transcription-less variables for the WAB-R, Cinderella storytelling, and combined tasks



Discussion

- MCs, TUs and CoRe demonstrated strong psychometric properties, supporting their potential for clinical routine monitoring.
- Cinderella retelling was less accessible for people with moderate-severe aphasia (lower CoRe, MC, AC), BUT was reported to be highly sensitive to subtle lexical-semantic deficits in mild cognitive impairment and latent aphasia.⁶
- MC and AC in Cinderella captured multilevel interactions (linguistic, propositional, pragmatic), supporting the LUNA framework and reinforcing transcriptionless variables as clinically meaningful markers of discourse ability.

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