

Validation of the Aphasia Rapid Test in the Russian-speaking post-stroke population

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Acute post-stroke period

- The first days post stroke onset (up to 1 month)
- Fast diagnostics is necessary
- SLTs often are not available in the acute settings

Aphasia screening tests

- Short
- Easy to administer
- Give a direction for future diagnostics and treatment
- Should be accurate, reliable and feasible

• (El Hachioui et al., 2016)

Aphasia screening in Russia

- Only complex tools for speech/language assessment (Vasserman et al., 1997)
- There are no standardized instruments
- Most of the instruments are long and effortful for patients

Aphasia Rapid Test

- Original version for French and English (Azuar et al., 2013)
- 26-point scale
- Takes 3-5 minutes
- Can be used by each member of medical staff
- May be used for prediction of aphasia outcome (Benghanem et al., 2019)
- Has been adapted for:
 - Portuguese (Tabuas-Pereira et al., 2018)
 - Italian (Panebianco et al., 2019)

Aphasia Rapid Test for Russian (ART-RU)

- Adaptation of the test materials for Russian
- Standardization in the chronic population :
 - 1) concurrent validity with the Token Test (Akinina et al., 2017)
 - 2) sensitivity, specificity
 - 3) test-retest and inter-rater reliability, internal consistency
- Verification of results in the acute post-stroke period

ART – Ru: stimuli and scoring system

- 1. Following two simple and one complex instructions
- 2. Repetition of 3 words
- 3. Repetition of a simple sentence
- 4. Object naming
- 5. Scoring of articulation problems
- 6. Semantic fluency

ART – Ru: stimuli and scoring system

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ART – Ru: stimuli and scoring system

1. Following two simple and one complex instructions

1 a. Close and open your eyes

1 b. Give me your left hand

1 c. Put your left hand on your right ear

Parameters

Instructions with one or two components

ART – Ru: stimuli and scoring system

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ART – Ru: stimuli and scoring system

2. Repetition of words

2 a. kit ‘whale’

2 b. groza ‘thunderstorm’

3 c. vorotnik ‘collar’

Parameters

Number of articulatory switches and consonant clusters

Length in phonemes

Frequency

ART – Ru: stimuli and scoring system

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- **3. Repetition of a simple sentence**
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ART – Ru: stimuli and scoring system

3. Repetition of a sentence

Mama kupila dva zelenykh yabloka

‘Mother bought two green apples’

Parameters

Simple sentence

SVO + 2 prenominal modifiers

ART – Ru: stimuli and scoring system

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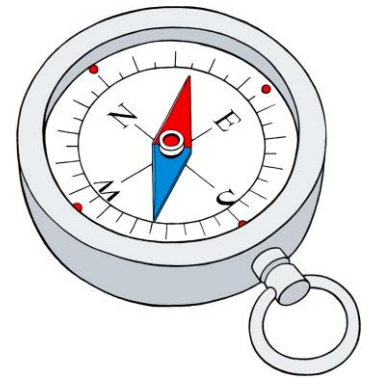
ART – Ru: stimuli and scoring system

4. Object naming

4a. Myach 'ball'

4b. Zvezda 'star'

4c. Kompas 'compass'



Parameters

Length in phonemes

Frequency

Object familiarity

Age of acquisition

ART – Ru: stimuli and scoring system

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- **5. Scoring of articulation problems**
- 6. Semantic fluency

ART – Ru: stimuli and scoring system

5. Scoring of articulation problems

- Estimates presence of articulation problems, such as:
- Slurred speech
- Slow speech
- Nasal, raspy or strained voice
- Difficulty moving of tongue and face muscles etc.

ART – Ru: stimuli and scoring system

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- 5. Scoring of articulation problems
- **6. Semantic fluency**

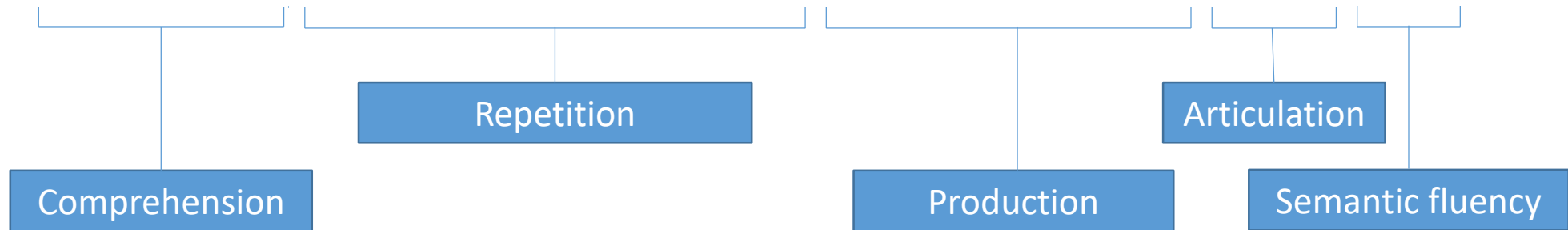
ART – Ru: stimuli and scoring system

6. Semantic fluency

Name as many animals as possible in 1 min

Scoring system and interpretation of the results

ID	1a	1b	2a	2b	2c	3	4a	4b	4c	5	6	sum
P1	0	1	0	0	0	1	0	2	2	2	3	11
P2	1	1	1	1	1	1	0	0	0	3	1	10



ART-RU: Standardization

Participants

- **Clinical group:** N= 27; 10 females; mean age = 56.8 years (SD = 9.7, range 40-72). The mean time post stroke was 17.3 months (SD = 19.5, range 2-84)
- **Control group:** N= 16, 11 females, mean age = 56 years (SD = 9.2, range 40-79)

Performed ART-Ru and Token Test

Clinical group

ART-RU: mean = 6 (SD = 4.2, range 1-15)

Token Test: mean = 19.9 (SD = 8.1, range 6-30)

Control group

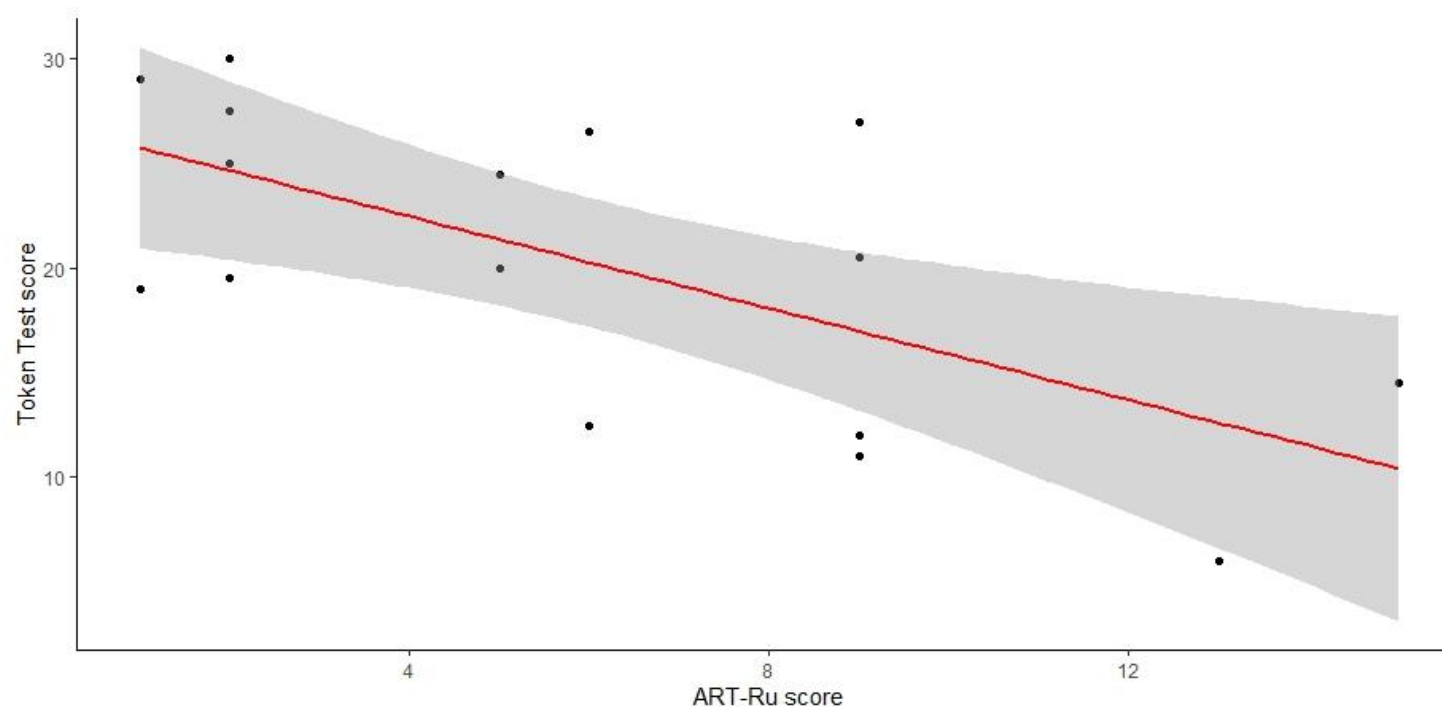
ART-RU: mean = 0
1.8, range 29.5-35)

Token Test: mean = 32.7 (SD =

ART-RU: Standardization

Concurrent validity

Significant negative association between performance on the ART-Ru and the Token Test in clinical group ($r = -.649$, $p < .001$).

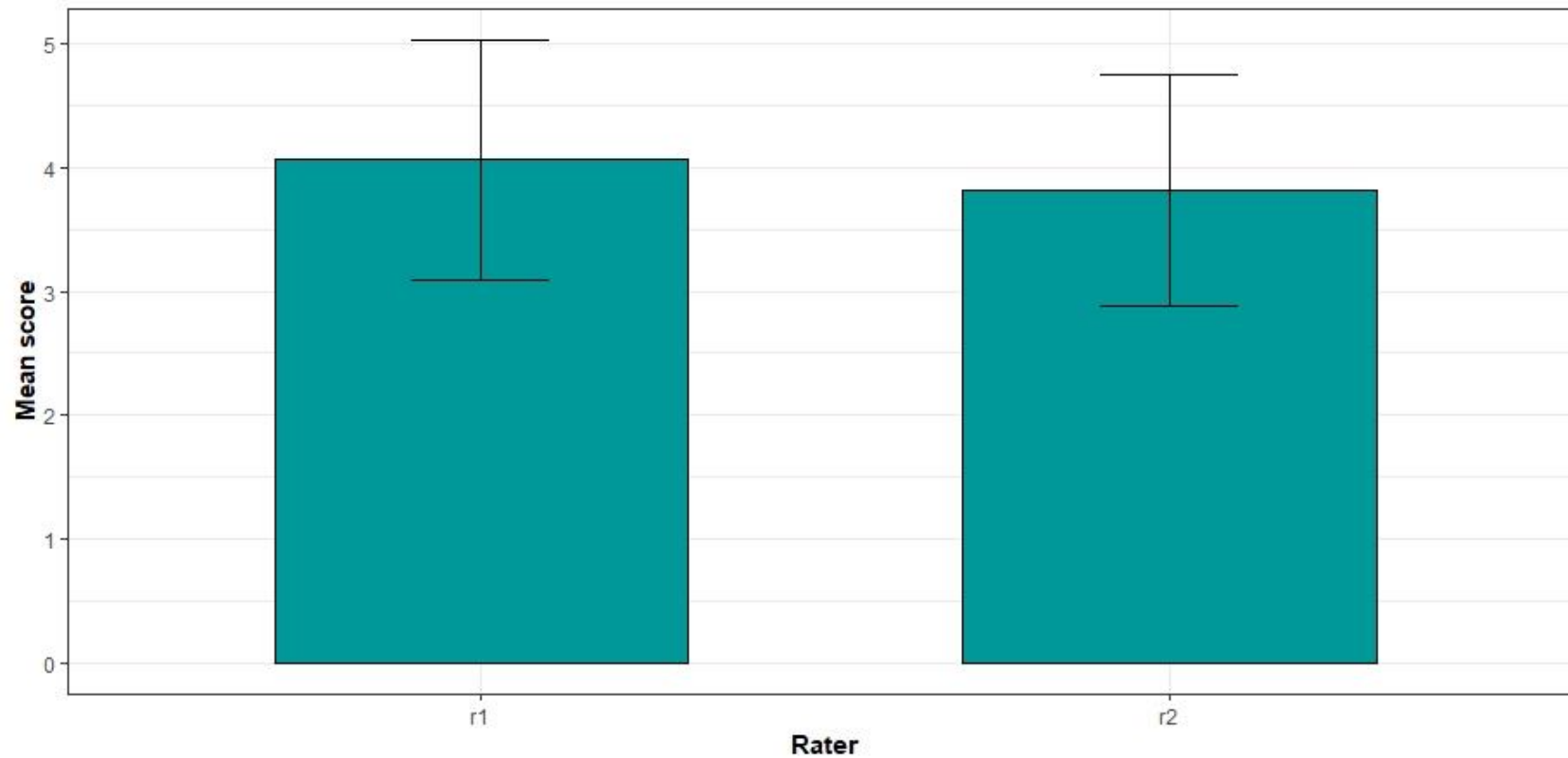


ART-RU: Standardization

	TT (<29)	TT (≥ 29)
ART (>0)	A True positive (14)	B False positive (2)
ART (=0)	C False negative (0)	D True negative (16)
	Sensitivity $A/(A+C)$	1
	Specificity $D/(B+D)$	0.89
	Positive predictive value $A/(A+B)$	0.88
	Negative predictive value $D/(C+D)$	1
	Accuracy $(A+D)/(A+B+C+D)$	0.94

ART-RU: Standardization

Inter-rater reliability



ART-RU: Standardization

Test-retest reliability (chronic aphasia)

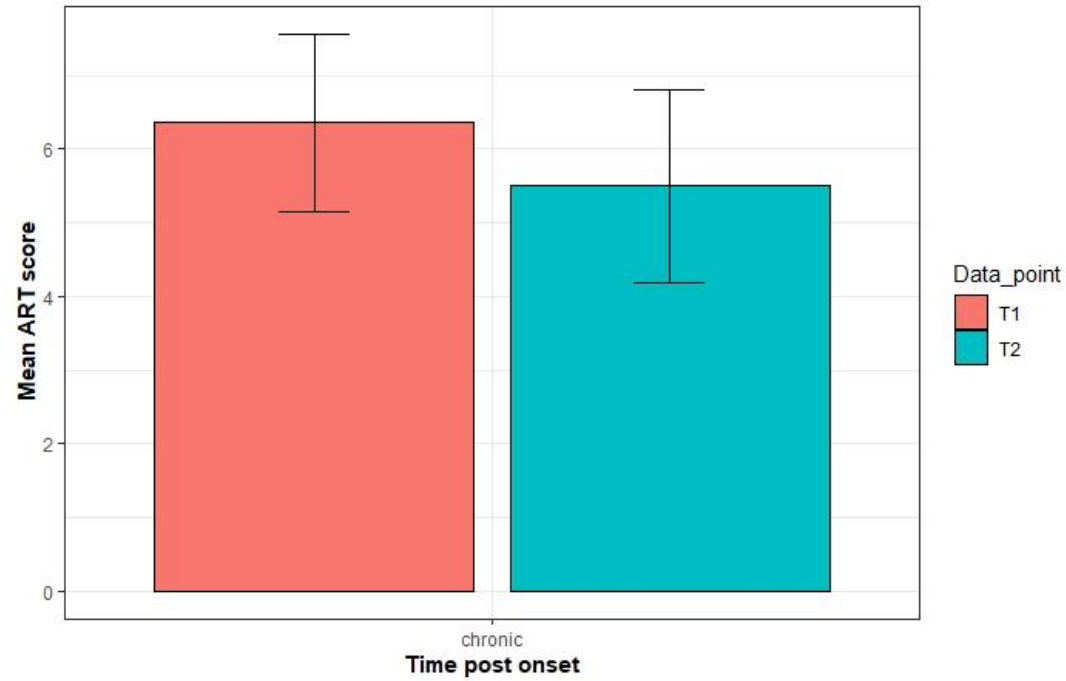
14 participants:

5 females; mean age = 52.2 (SD = 8.9,
range 40-71), mean months post
onset 26.8 (SD = 27.6))

Tested twice with an average interval
of 23 days (range 16-38)

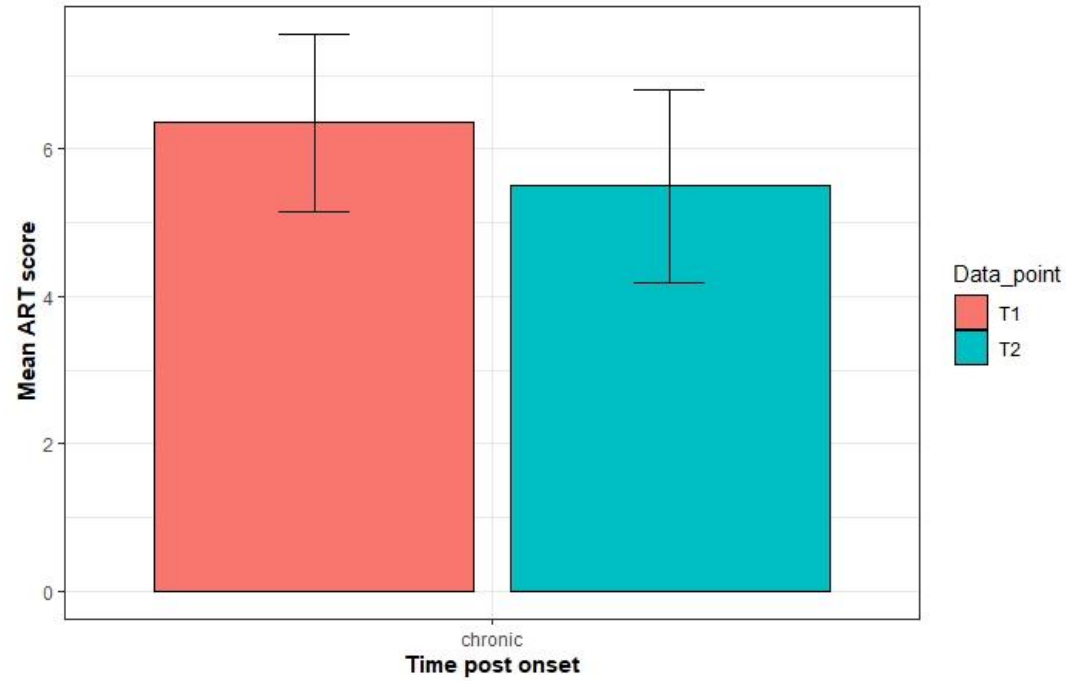
ART-RU: Standardization

Test-retest reliability (chronic aphasia)



ART-RU: Standardization

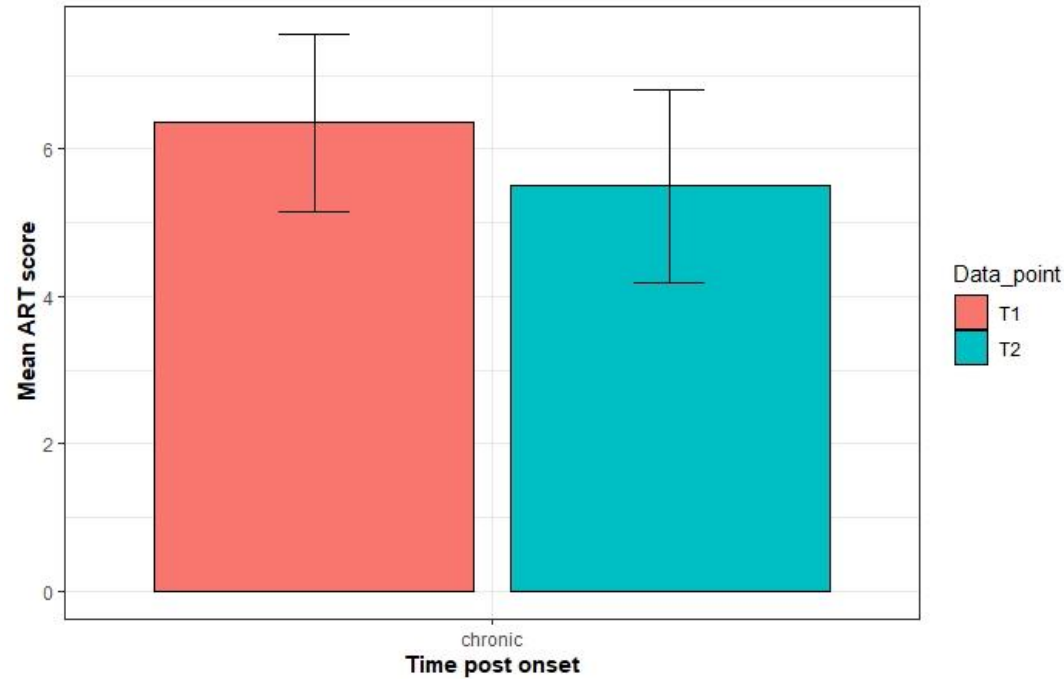
Test-retest reliability (chronic aphasia)



Spontaneous recovery (acute aphasia)

ART-RU: Standardization

Test-retest reliability (chronic aphasia)



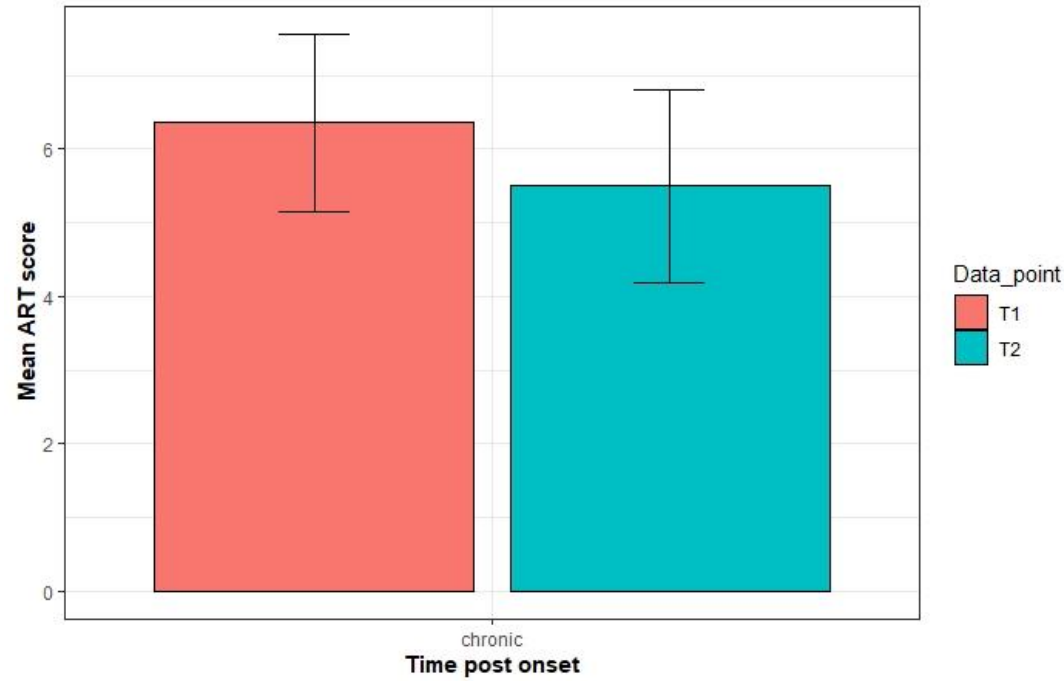
Spontaneous recovery (acute aphasia)

16 participants:
9 females; mean age = 71.4 (SD = 9.6,
range 49-87), mean days post onset
7.6 (SD = 3.7))

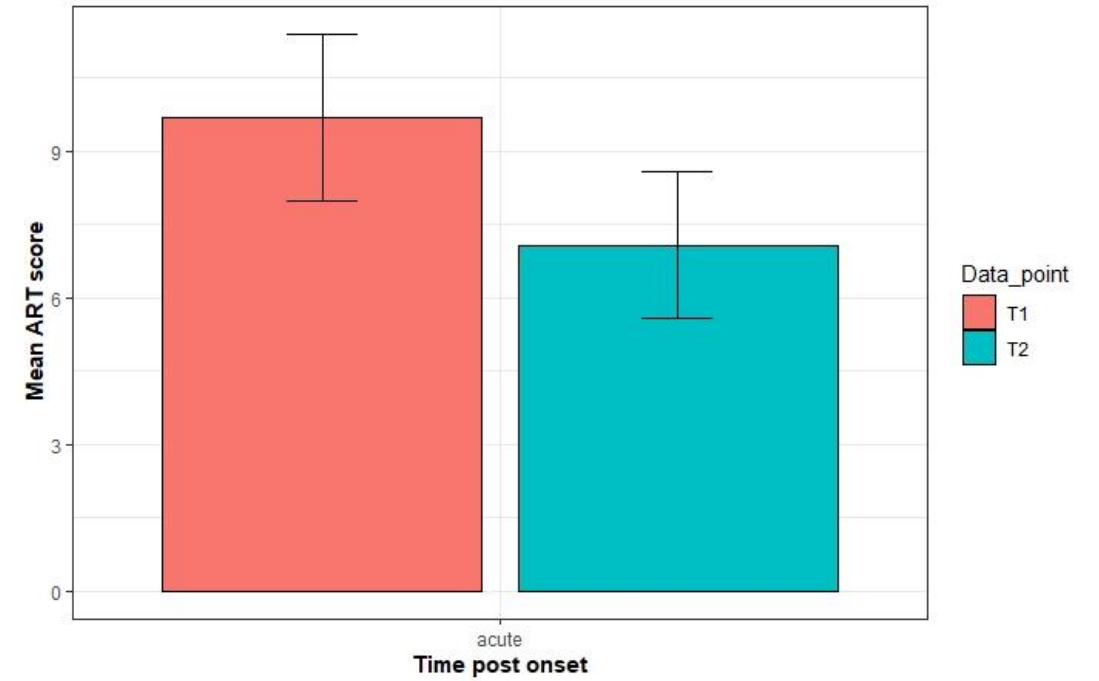
On average, 4 days between sessions

ART-RU: Standardization

Test-retest reliability (chronic aphasia)

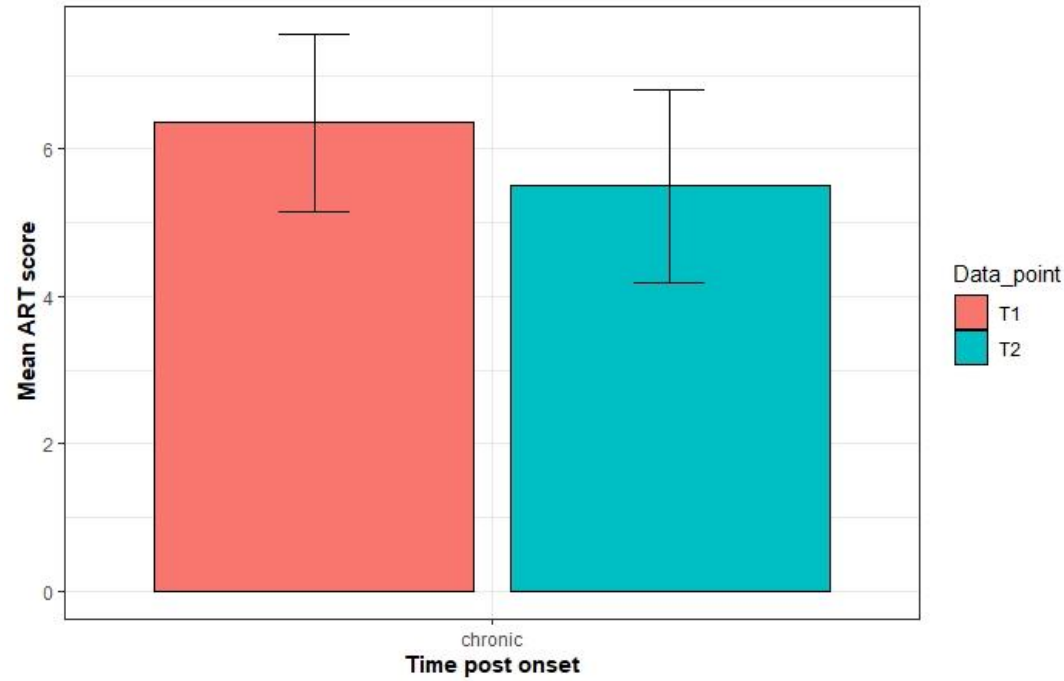


Spontaneous recovery (acute aphasia)

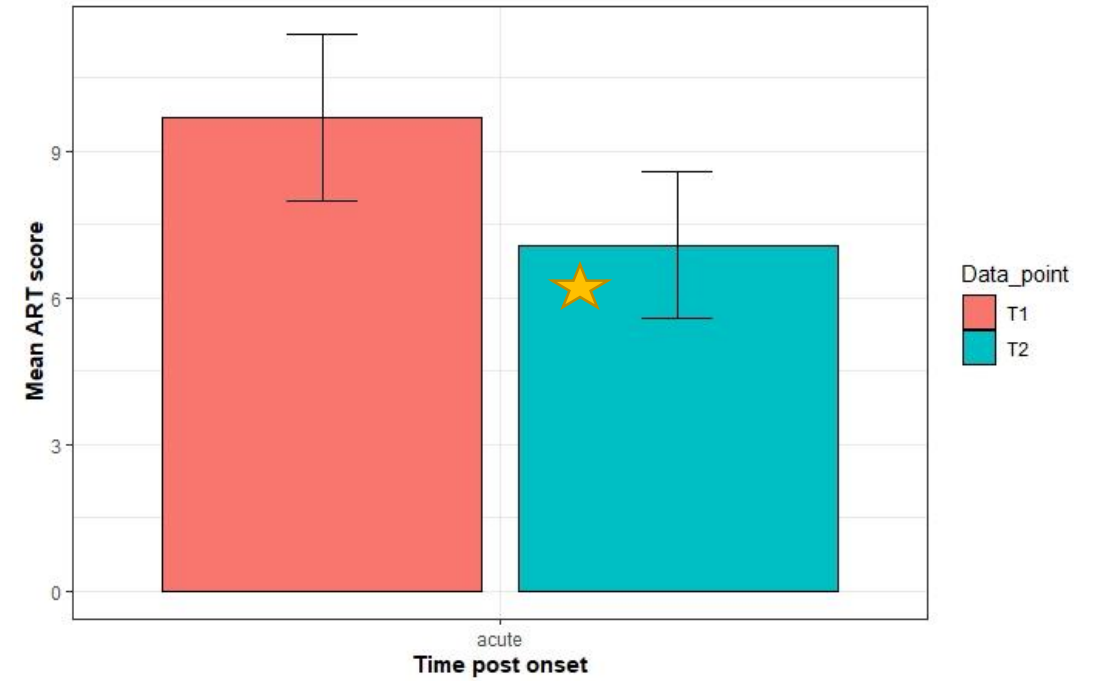


ART-RU: Standardization

Test-retest reliability (chronic aphasia)

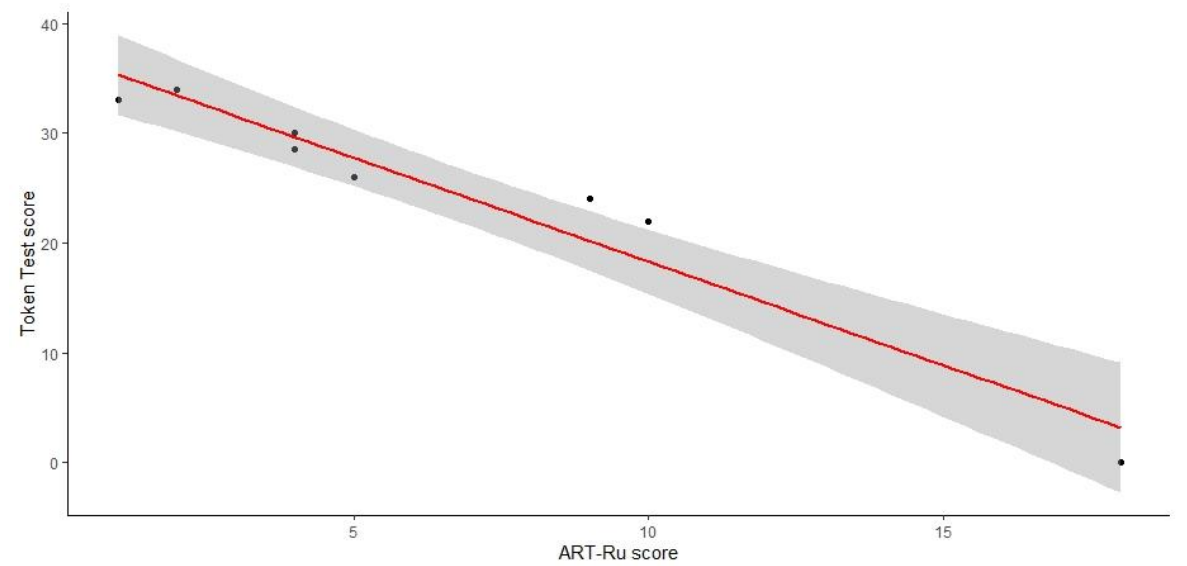
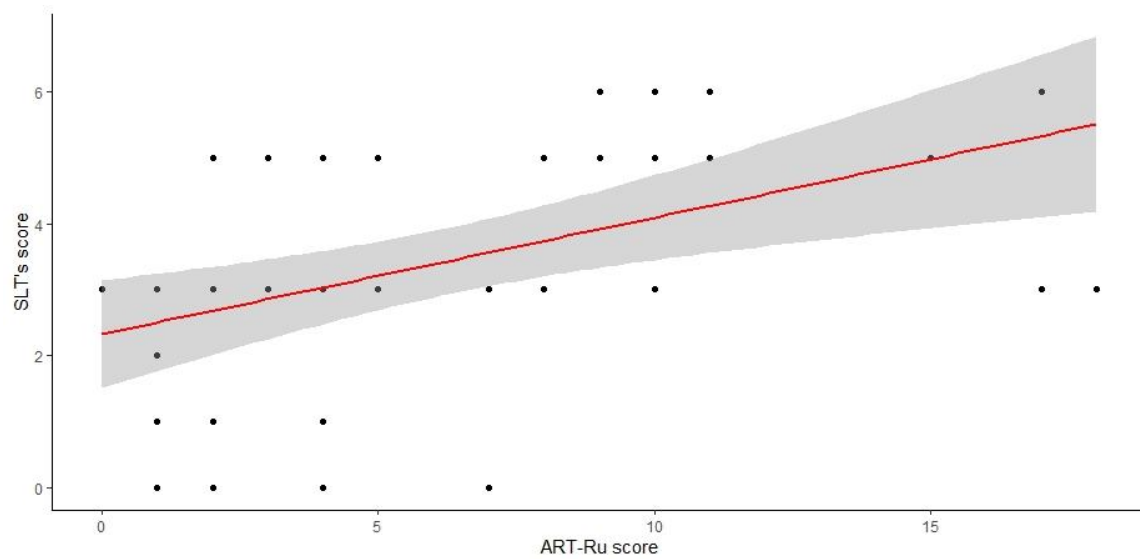


Spontaneous recovery (acute aphasia)



ART-RU: Standardization

Verification results in the acute population



Conclusion

- The ART-Ru is a standardized screening test
- The set of stimuli is balanced according to the properties of Russian
- The ART-Ru is suitable for clinical usage in a Russian-speaking population

THANK YOU FOR YOUR ATTENTION!