Russian Aphasia Test (RAT)
- Addresses the lack of quantitative psychometrically valid and reliable language assessment tests in Russian.
- Integrates neuropsychological and psychometric traditions.
- Includes four language domains: auditory comprehension, oral production, reading, and writing.
- Assesses specific levels of linguistic processing in each domain.
- Aims to specify the type and severity of linguistic deficits in individuals with different aphasia profiles.

**Auditory comprehension subtests**
- Phonological – Minimal pair discrimination
- Lexical – Lexical decision
- Lexical-syntactic – Single-word comprehension
- Syntactic – Comprehension of sentences
- Discourse – Comprehension of oral stories

Two stages in development: 1) piloting a large item set; 2) standardization of a refined item pool on a large sample of individuals with aphasia and healthy controls.

First stage – we provide preliminary data from individuals with and without aphasia on these subtests.

**MINIMAL PAIR DISCRIMINATION**
Judgment of whether pairs of nouns (n=100) and words (n=72) are different or the same.

**Manipulated factors:**
- Phonological features (e.g., manner (mon-ban) and place (tin-pin) of articulation, VOT (pun-bum), palatalization);
- Syllabic structure (CV, CVC, CVCC, CCVC),
- Word position (onset, offset, transformation);
- Frequency and imageability (for words).

**Participants**
- Aphasia: 12 (Mavg = 45.25)
- Controls: 20 (Mavg = 53.7)

**Results**
- No significant differences between groups. Lack of sensitivity?
- Nonwords are more difficult to discriminate for both groups (controls p = .001; aphasia p = .013).
- Factors impacting performance: syllabic structure and position, phoneme manner (control: palatalization, aphasia: VOT).
- Discrimination of nonwords correlates with a standard test of language comprehension (rho = .756, p = .007).

**LEXICAL DECISION**
Classify stimuli as word or nonword (n=120).

**Manipulated factors:**
- Lexical frequency: high and low;
- Word length: 2 and 3 syllable;
- Degree of similarity of non-words to real words.

**Participants**
- Aphasia: 12 (Mavg = 45.25)
- Controls: 20 (Mavg = 52.15)

**Results**
- Significant differences between groups (p < .05, **p < .001).
- Classification of nonwords is particularly difficult for individuals with aphasia.
- Performance on the lexical decision task correlates with discrimination of nonwords (rho = .61, p = .046).

**SINGLE-WORD COMPREHENSION**
- Word to picture matching for objects (n=67) and actions (n=68).
- Visual array of 4 pictures (target, phonological, semantic, unrelated foils).
- Items were selected based on high naming and image agreement. Images and words taken from standardized databases (Verbs: www.neuroling.ru; Nouns: www.nounobject.ru)

**Participants**
- Aphasia: 30 for noun comprehension and 45 for verb comprehension (Mavg = 45.4)
- Controls: 30 (Mavg = 44.2)

**Results**
- Significant differences between groups (**p < .001).
- Comprehension of verbs worse than nouns for both groups.

**COMPREHENSION OF SENTENCES**
- Sentence to picture matching for various syntactic constructions (n=68):
  - SVO, OVS, subject relative, object relative, prepositional phrases.
  - Intransitive and transitive verbs.
  - Reversible and non-reversible sentences.
  - Each visual array consists of 2 pictures.
  - High-frequency lexical items used.
  - Short sentences, no additional descriptors.

**Participants**
- Aphasia: 20 (Mavg = 49.9)
- Controls: 20 (Mavg = 51.55)

**Results**
- Significant differences between groups: overall and in reversible and non-canonical constructions, as well as prepositional phrases (**p < .05, **p < .001).
- Overall sentence comprehension score correlates with language comprehension score from a standardized language test (rho = .625, p = .004).

**COMPREHENSION OF ORAL STORIES**
  - Length: 151/150 words and 22 sentences. Average length of sentences: 6.8 words.
  - Lexical complexity: 1-3rd grade level text. Average frequency of lexical items: 175.8/164.7.
  - Syntactic complexity: 29/30 clauses and 1.3 clauses per sentence.
  - Comprehension indexed by response accuracy to a set of 16 yes-no questions on explicitImplicit and main/detail story content.

**Participants**
- Aphasia: 10 (Mavg = 51.9)
- Controls: 20 (Mavg = 48.7)

**Results**
- Significant differences between groups only for the ‘Book’ story (**p < .05).
- Implicit information and details are more difficult for aphasia than controls.
- Overall ‘The Car’ story is more difficult for the control group (p < .02).
- Details are more difficult than the main storyline in the ‘Cat’ story for both groups.

**NEXT STAGE**
Maximize validity and reliability of each subtest by removing “poor” items:
- Remove items that were answered erroneously by two or more healthy participants;
- Retain items with good corrected-item-total correlation;
- Ensure varying item difficulty based on performance of individuals with aphasia;
- Ensure that each influential psychometric property is represented by a wide range of values.

Standardize the refined and shortened set of items for each subtest in a large control and clinical sample (n=100).

---

**For more information or reprints, contact mvivorio@gmail.com**