

Introduction

Verb difficulties are among the most common manifestations of aphasia. They can be present at both production and comprehension levels irrespective of aphasia type (e.g., Bastiaanse et al., 2003). Nevertheless, a tool for comprehensive assessment of verb deficits in Russian is presently unavailable.

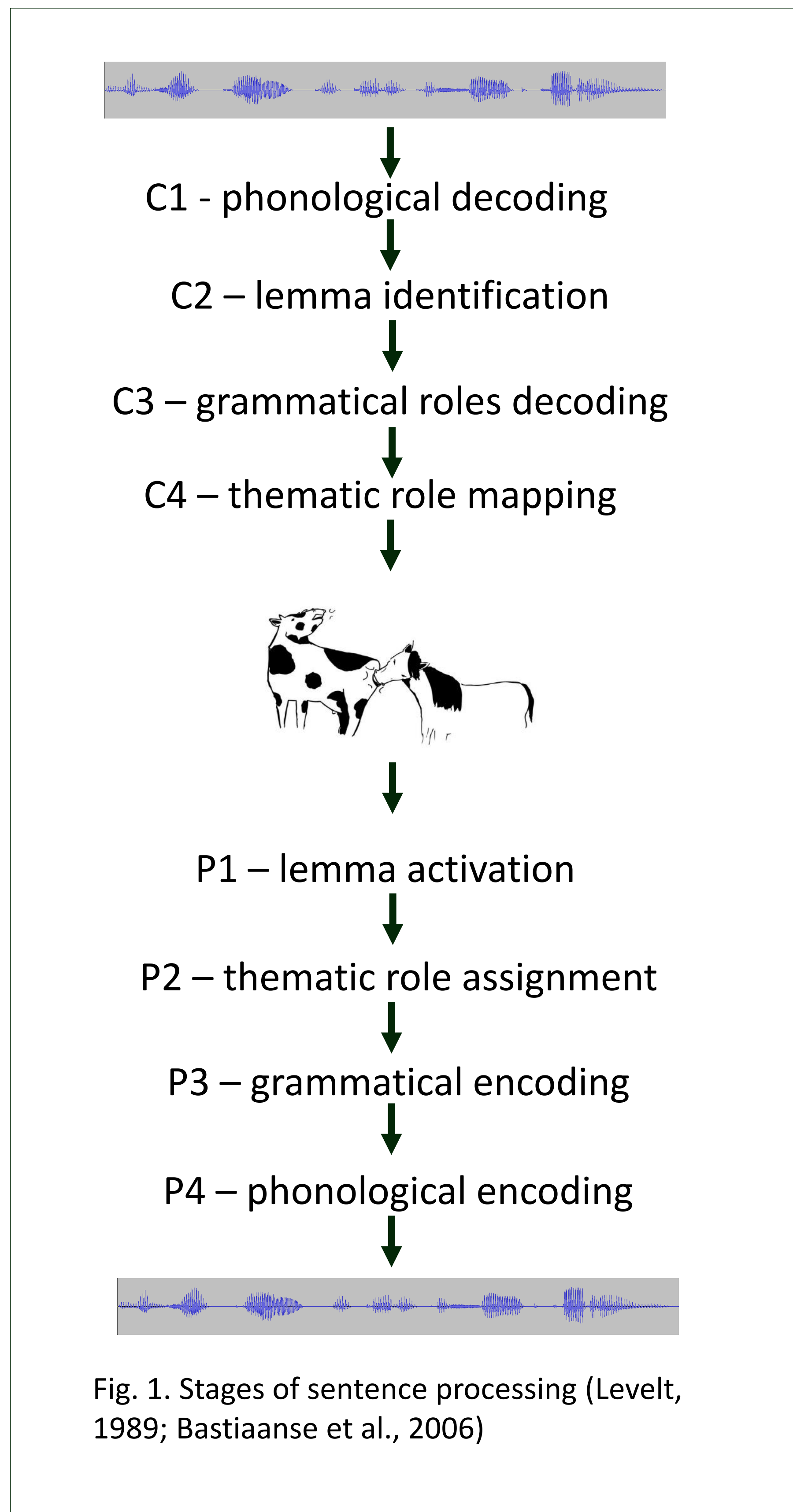
We present an adaptation of the Verb and Sentence Test (VAST; Bastiaanse et al., 2000; 2003; 2015) to Russian. The original VAST consists of production and comprehension subtests that are based upon a detailed neurolinguistic model of sentence processing (Levelt, 1989; Bastiaanse et al., 2006; see Fig.1). **We describe the design of the adapted VAST-RU and demonstrate how comprehension subtests discriminate between two fluent patients that are expected to perform differently according to Luria's (1970) view on aphasia syndromes.**

Production Subtests

- ❖ **Action Naming** (50 items): retrieval of the verb lemmas. The participant is asked to name the action in the picture with one word. **Targets P1.**
- ❖ **Filling in Infinitives** (20 items): retrieval of the verb lemmas in sentence context. The action picture is presented along with a printed sentence where the verb is missing. The sentence is also presented orally, where in the place of the verb 5 syllables are hummed. **Targets P1.**
- ❖ **Filling in Finite Forms** (20 items): retrieval of the verb lemmas in sentence context and verb inflection. The task is similar to Filling in Infinitives. **Targets P1 and P3.**
- ❖ **Object Naming** (50 items): retrieval of the noun lemmas. Assesses word class effects, difference in the impact of psycholinguistics variables (lemma frequency, imageability, age of acquisition, and length) on a patient's performance in nouns and verbs.
- ❖ **Sentence Construction** (20 items): production of grammatically correct sentences in response to picture presentation. The target picture is presented; the participant has to tell in one short sentence what is going on in the picture. **Targets P1, P2, and P3.**

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Comprehension Subtests

- ❖ **Non-Verbal Association** (20 items): non-verbal action concepts processing in a picture-to-picture matching task. The participants are presented with a target picture and choose the most closely semantically related picture from three alternatives. **Targets non-verbal semantics.**
- ❖ **Minimal Pairs** (28 items): vowel discrimination at the end of the word. The task was added because morpho-syntactic parsing in Russian relies mostly upon the processing of noun inflections which are sometimes closely phonologically related. Pairs of two-syllabic non-words are orally presented. The participant has to judge if they are same or different. **Targets C1.**
- ❖ **Verb Comprehension** (40 items): comprehension in a word-to-picture matching task. The verb is presented orally along with four pictures: the target, a semantically related distractor, and two distractors with the objects related to the depicted actions. **Targets C2.**
- ❖ **Sentence Comprehension** (40 items): comprehension of reversible sentences in a sentence-to-picture matching task. Two pairs of semantically reversible actions with the same actors are presented orally: the target, a distractor with the thematic roles reversed, and two semantic distractors with direct and reversed roles. **Targets C3 and C4.**
- ❖ **Plausibility Judgment** (60 items): morpho-syntactic parsing of semantically irreversible sentences. A grammatical sentence with either semantically plausible or implausible role assignment is orally presented, and the participant has to say whether the sentence sounds normal or weird. **Targets C3.**

VAST-RU: Procedure

All the subtests are presented via the AutoRAT app (Ivanova et al., 2016) on a tablet. All the aurally presented stimuli are pre-recorded, and the responses (choices or verbal output) are automatically registered.

ALL THE SUBTESTS ARE AVAILABLE FOR THE DEMONSTRATION ON THE TABLET!



VAST-RU: a showcase

Participants

- All (premorbidly) right-handed native speakers of Russian.
- 9 non-brain-damaged speakers (6 females; mean age 53 y.o., $SD = 5$, range = 46–58).
- Patient 1: a 68 year-old male (education = 15 years) with mild-to-moderate acoustic-mnemonic aphasia.
- Patient 2: a 68 year-old female (education = 10 years) with severe-to-moderate sensory aphasia (comparable to Wernicke's aphasia).
- Patients recruited at the Center for Speech Pathology and Neurorehabilitation (Moscow) and administered a standard neuropsychological and language assessment.

Luria's classification (Akhutina, 2016; Luria, 1970):

Acoustic-mnemonic aphasia: instability of auditory images of words which can lead to the alienation of word meaning. Comparable to anomia aphasia.

Sensory aphasia: impaired comprehension based on the primary impairment of phonemic perception. Comparable to Wernicke's aphasia.

Conclusions

Both patients complied with their diagnosis in Luria's classification, thus extending the notion of the syndromes into the domain of verb and sentence processing.

We were able to contrast the verb and sentence comprehension deficits in two people with fluent aphasia by revealing their different neurolinguistic basis.

The current study is ongoing and will be expanded by collecting data on production subtests and from people with other aphasia types.

Results

Patient 1:

- impaired non-verbal association
- semantic errors in sentence comprehension
- ceiling performance in the Plausibility Judgment subtest.
- choice of related objects in verb comprehension

=> purely semantic nature of the deficit.

Patient 2:

- choice of the reversed and not the semantically related pictures in sentence comprehension
- => impairment to assignment of thematic roles.
- at-chance performance in plausibility judgment
- => deficit of the morpho-syntactic processing.
- BUT
- Poor results in the Minimal Pairs subtest
- => inability to process noun inflections at the phonological level.
- Hence, probably phonological nature of the deficit.

Comprehension Subtest	Patient 1	Patient 2	NBDs, median	NBDs, range
Minimal Pairs	100	7.14	100	96.43-100
Non-Verbal Association	75	95	90	85-100
Verb Comprehension	92.5	92.5	100	95-100
Sentence Comprehension	87.5	40	97.5	95-100
Plausibility Judgment	100	49.15	100	91.67-100

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