Semantic and phonological naming therapy:  
new criteria of therapy effects assessment

Yulia Akinina¹ and Olga Dragoy¹.².³

¹National Research University “Higher School of Economics” (Russia),  
²Moscow Research Institute of Psychiatry (Russia),  
³University of Groningen (the Netherlands)

Introduction

Studies that compare the effects of semantic and phonological naming therapies often demonstrate positive response to both treatment techniques, irrespective of underlying locus of naming deficit (¹⁴; ¹⁵). This can be explained by the fact that both tasks include semantic (a picture) as well as phonological (word repetition) information. The therapy effect may, therefore, be just a result of their co-activation, the therapy method itself being irrelevant (¹⁴). However, a typical measure of therapy efficiency assessment is accuracy (¹²; ¹⁴; ¹⁵; ¹⁶). We proposed that the difference between therapies may be, nevertheless, revealed by using some additional assessment parameters: activation rate, activation latency and correct response latency.

Methods

Participants

The comparison of the therapy effects required participants with the same underlying naming disorder. To identify aphasic individuals with the deficient access to the phonological output lexicon (POL), a series of diagnostic tests in Russian was elaborated, with orientation on the distinguishing features of this deficit described in [³]. It included the elimination of the conceptual and semantic impairment, and evaluation of the frequency and imageability effects.

Two patients who demonstrated the deficit of the access to the POL were chosen for the participation in the treatment study: IS, 47 y.o. woman, two years and three months post-onset, and SK, 57 y.o. man, one year and seven months post-onset; both had been diagnosed at the Center of Speech Pathology and Neurorehabilitation (Moscow, Russia) as having dynamic and mixed motor (efferent and afferent) aphasia according to Luria’s classification.
Treatment: materials and procedures

Stimuli. All stimuli sets were composed using the psycholinguistic database of 400 Russian verbs and black-and-white pictures of the correspondent actions [1], with the information on the parameters that are ascertained to influence naming performance, such as frequency, imageability, length, number of arguments, instrumentality and reflexivity.

Design. 6 individual sets of 22 pictures for each patient were composed. They included one control set and one treated set for each kind of therapy (picked from the items that had been named incorrectly in the naming deficit assessment) and two sets of fillers (named correctly in the assessment). The control sets were supposed to demonstrate a possible generalization to the untreated items. All the treated and control sets for both therapies were matched on the number of arguments, reflexivity, instrumentality, lemma frequency and length. Each patient participated in both semantic and phonological therapies, but in different order.

Baselines. Before and after each therapy a baseline was taken using E-Prime (Psychology Software Tools, Inc.): the patient had to name the pictures (that is, to describe in one single verb in the 3SG/3PL form, what an actor was doing in the picture) without cues of any kind. Audio responses were automatically recorded. The baselines included control and treated sets. The changes in the baseline performance after therapy were analyzed as therapy effects.

Therapy procedure. During the therapies the patient had to perform cued naming task. If the picture was not named correctly, the cues appeared in hierarchical order. The fillers were cued as well the treated items. If after all the cues the patient was not able to produce the target verb, the experimenter asked the patient to repeat it after her. The repetition stage was present both in the phonological and the semantic therapy. The phonological therapy included following cues: a rhyming verb, the first phoneme of the target verb, the first syllable, the first two syllables etc. The cues in the semantic therapy were presented as follows: a typical setting of an action, an instrument or an attribute, a direct object, a hyperonyme and a cohyponyme of a verb.

Analysis. The results were assessed using several parameters. Accuracy was the rate reflecting the number of correctly named items, irrespective of preceding paraphasic attempts. The activation rate was the number of items with any kind of verb namings, both correct and paraphasic. The

---

1 The database creation was supported by the Russian Foundation for Humanities (RGNF), grant 11-06-12033v.
correct response latency was the time before the correct response. The activation latency was the time before any nomination was made.

**Results**

Accuracy improved in all treated sets in both patients. Besides that, after the phonological therapy SK demonstrated a decrease of the activation latency in the treated set, and IS – a higher number of activated items in the control set and an increased correct response latency in the treated set. After the semantic therapy no effects besides accuracy improvement were found.

**Discussion**

Although the accuracy increases in the treated sets both after semantic and phonological therapy, some other effects are seen only after the phonological therapy. We hypothesize that the phonological therapy specifically influenced the patients’ naming strategy while the semantic therapy resulted in memorizing picture-verb pairs. This is also confirmed by the patients that estimated the phonological cues as more helpful. Since the patients with the deficient access to the POL are supposed to have an intact semantic system (see [3]), the activation rate and latency may pertain to the semantic system-to-POL mapping which can change during the elaboration of a naming strategy in consequence of therapy procedures.

**References**


