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Clinical Application of the Slovenian Naming Test: a Pilot Study in Aphasia

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Introduction

Lexical processing is defined as manipulation of units (lexemes) in a mental dictionary. A typical example is the search for lexemes during spontaneous speech. Its complexity often becomes apparent in individuals with acquired language disorders, such as aphasia (Field, 2004), caused by neurodegenerative diseases or brain damage (Azhar, 2016). One of the most common symptoms of various types of aphasia is the inability to name things (Kirshner et al. 1984). Therefore, a naming test, such as the Boston Naming Test (Goodglass et al., 1966), is often used as part of instruments to assess language ability (see Rohde et al. 2018). Given (i) the language-specific effects of priming in lexical access, (ii) the effects of age of acquisition and lexeme frequency, and finally (iii) the effects of lexeme length, phonological and morphological structure, existing naming tests cannot be directly translated from language to language (see Chan et al., 2014) but need to be adapted.

Methods

We developed a Slovenian naming test with 60 full-colour illustrated items that were balanced according to the selected characteristics of the lexeme the were supposed to elicit, namely: the number of phonemes (5x3, 10x4, 10x5, 10x6, 10x7, 10x8, 5x9), ratio between vowels and consonants, average age of acquisition, and frequency within the corpus of spoken Slovenian "GOS". Before standardizing the test, we conducted a pilot study with 26 subjects from the clinical group who had recently suffered a cerebrovascular event of the left hemisphere (diagnosis code according to IMB-10:R47.0) and were diagnosed with aphasia. They were matched to 26 healthy subjects according to education, first language, gender and age (N= 2x14 women + 2x12 men, mean age 70 years, SD = 12).

Results

Subjects in the clinical group scored an average of 67.04 points (55%) on the test, while subjects in the comparison group scored statistically significantly ($p=0.001$) and reliably ($\alpha=0.95$) higher, at 90.62 points (76%). Analysis of demographic data showed that males were more accurate than females by 1.33 points (1.1%), but according to the t-test for independent groups, this difference was not statistically significant (compare to Zec et al., 2007 and Hall et al., 2012). In the ANOVA analysis, no statistically significant differences were found with respect to different levels of education ($p=0.056$), which is unexpected and most likely due to an unevenly distributed sample with respect to this variable. The sample was finally divided into below- and above-average groups according to mean age, and the t-

test for independent groups showed that the latter performed statistically significantly worse (p=0.006) - which is consistent with previous studies (e.g., Albert et al., 1988). Except for the length, the internal structure of lexeme did not correlate with naming performance (see Table 1).

Conclusions

In this paper, the results of the pilot study are presented in more detail and interpreted in the light of the data from the standardization of the test STIB. Data collection for the Slovenian adult speakers has been completed, while recruitment for the Slovenian children is ongoing.

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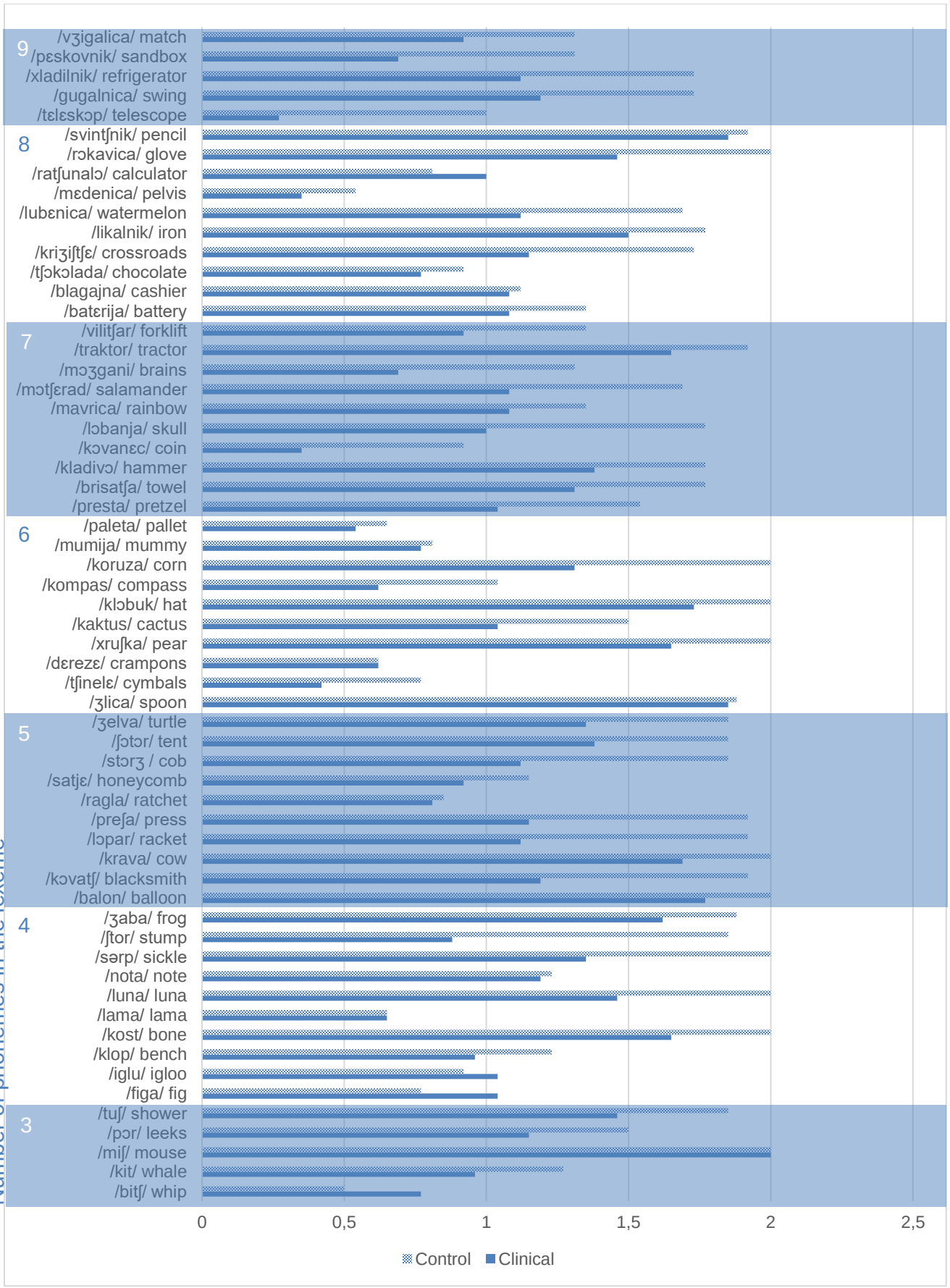
Number of phonemes in the lexeme
9
/vʒigalica/ match
/pɛskovnik/ sandbox
/xladilnik/ refrigerator
/gugalnica/ swing
/tɛlɛskɔp/ telescope
8
/svintʃnik/ pencil
/rɔkavica/ glove
/ratʃunalɔ/ calculator
/mɛdenica/ pelvis
/lubɛnica/ watermelon
/likalnik/ iron
/kriʒiʃtʃɛ/ crossroads
/tʃɔkɔlada/ chocolate
/blagajna/ cashier
/batɛrija/ battery
7
/vilitʃar/ forklift
/traktor/ tractor
/mɔʒgani/ brains
/mɔtʃɛrad/ salamander
/mavrica/ rainbow
/lɔbanja/ skull
/kɔvanɛc/ coin
/kladivɔ/ hammer
/brisatʃa/ towel
/presta/ pretzel
6
/paleta/ pallet
/mumija/ mummy
/koruza/ corn
/kompas/ compass
/klɔbuk/ hat
/kaktus/ cactus
/xruʃka/ pear
/dɛrezɛ/ crampons
/tʃinelɛ/ cymbals
/ʒlica/ spoon
5
/ʒelva/ turtle
/ʃɔtɔr/ tent
/stɔrʒ / cob
/satjɛ/ honeycomb
/ragla/ ratchet
/preʃa/ press
/lɔpar/ racket
/krava/ cow
/kɔvatʃ/ blacksmith
/balon/ balloon
4
/ʒaba/ frog
/ʃtor/ stump
/sərp/ sickle
/nota/ note
/luna/ luna
/lama/ lama
/kost/ bone
/klop/ bench
/iglu/ igloo
/figa/ fig
3
/tuʃ/ shower
/pɔr/ leeks
/miʃ/ mouse
/kit/ whale
/bitʃ/ whip
0
0,5
1
1,5
2
2,5
Control
Clinical

Figure 1. *List of phonemes with average scores according to the number of phonemes in the lexeme. Interestingly, consonants appear to marginally support naming while vowels hinder it; on the other hand there is no effect of lexeme frequency and lexeme length (number of phonemes).*

Table 1. *The correlations of naming performance with lexeme internal structure*

Variable	**Clinical**	**Healthy**	**All**
Lexeme frequency	0.22	0.18	0.21
Number of vowels	-0.33	-0.26	-0.31
Proportion of consonants	0.29	0.40	0.37
Number of phonemes	-0.22	-0.07	-0.15