Journal of Communication Disorders 61 (2016) 106–118

Contents lists available at ScienceDirect

Journal of Communication Disorders

Acquired dyslexia in Serbian speakers with Broca's and Wernicke's aphasia

Mile Vuković[a,*], Irena Vuković[a], Nick Miller[b]

[a] University of Belgrade – Faculty of Special Education and Rehabilitation, Belgrade, Serbia
[b] Institute of Health and Society, Speech Language Sciences, University of Newcastle, UK

ARTICLE INFO

Article history:
Received 6 March 2015
Received in revised form 7 April 2016
Accepted 7 April 2016
Available online 11 April 2016

Keywords:
Reading
Dyslexia
Broca's aphasia
Wernicke's aphasia
Serbian language

ABSTRACT

This study examined patterns of acquired dyslexia in Serbian aphasic speakers, comparing profiles of groups with Broca's versus Wernicke's aphasia. The study also looked at the relationship of reading and auditory comprehension and between reading comprehension and reading aloud in these groups. Participants were 20 people with Broca's and 20 with Wernicke's aphasia. They were asked to read aloud and to understand written material from the Serbian adaptation of the Boston Diagnostic Aphasia Examination. A Serbian Word Reading Aloud Test was also used. The people with Broca's aphasia achieved better results in reading aloud and in reading comprehension than those with Wernicke's aphasia. Those with Wernicke's aphasia showed significantly more semantic errors than those with Broca's aphasia who had significantly more morphological and phonological errors. From the data we inferred that lesion sites accorded with previous work on networks associated with Broca's and Wernicke's aphasia and with a posterior-anterior axis for reading processes centred on (left) parietal-temporal-frontal lobes.

© 2016 Elsevier Inc. All rights reserved.

1. Introduction

Acquired dyslexia represents a reading disorder commonly encountered alongside aphasia. However, literacy and its disruption have often been a secondary focus in the field of aphasiology, despite the fact that study of reading breakdown may give important insights into brain functioning and acquired dyslexia can have a profound impact on the social roles of people with aphasia.

Reading deficits in neurological conditions do not represent a unitary disorder any more than aphasia does. Successful single word reading depends on visual analysis of script, sensorimotor transformations of orthographic script to phonological codes and association of these with semantic representations. There have been varying conceptualizations of how exactly these processes might operate and relate to each other, including serial search models, parallel or connectionist models, or some hybrid of these (Plaut, McClelland, Seidenberg, & Patterson, 1996; Coltheart, Rastle, Perry, Langdon, & Ziegler, 2001). The so-called 'dual route model' (Coltheart et al., 2001; Levy et al., 2009) identifies a sub/nonlexical route from grapheme recognition via sublexical recoding directly to phonology/speech output; a lexical route from grapheme recognition via a visual input lexicon to the semantic system, where meaning is retrieved, and thence to phonological output; and a route via visual lexical input bypassing semantics, through to phonology.

* Corresponding author at: University of Belgrade – Faculty of Special Education and Rehabilitation, Visokog Stevana 2, 11000 Belgrade, Serbia.
E-mail address: milewolf10@gmail.com (M. Vuković).

http://dx.doi.org/10.1016/j.jcomdis.2016.04.005
0021-9924/© 2016 Elsevier Inc. All rights reserved.

Disruption of these processes developmentally, or after brain damage is said to lead to dissociable breakdowns to reading.

Within such models people with surface dyslexia are believed to experience difficulty with the lexical route and hence rely on sublexical recoding. This works well where grapheme-sound correspondences are regular but fails when there are non-transparent links. Phonological dyslexia refers to the reading disorder in which the phonological conversion unit (grapheme to phoneme conversion unit) is impaired. People impaired in this way are unable to read non-words, and function words but they are able to read both regular and irregular words (Ripamonti et al., 2014). A characteristic symptom here is visual errors – for example, 'dame' is read as 'made' or 'deal' as 'lead'. The problems with non-word reading and presence of phonological paralexias are posited to involve a selective dysfunction to the sublexical reading mechanism in the presence of normal lexical reading. Within this schema deep dyslexia is characterized by visual errors in reading and semantic paralexic misreadings suggesting breakdown in visual lexical processing and possibly damage to the semantic system itself.

However, this conceptualization has been disputed. An alternative perspective is offered by interactive Triangle Models (Friedman, 1996; Plaut et al., 1996; Woollams, 2014; Hoffman, Lambon Ralph, & Woollams, 2015). Such models do not disagree with other models regarding the types of reading errors that occur, but they do offer different explanations for why misreadings occur and the mechanisms that produce them. Specifically reading breakdown and attempts to read in the face of specific deficits are seen to emerge from interaction within a network of primary (i.e. not specifically dedicated to reading; and hence disbandment of notions such as 'visual input lexicon') processes linking visual, phonological and semantic activation. Failure in one sphere of activation can be compensated for through utilization of remaining activation in other spheres. Thus, absence of semantic activation leaves open activation of visual and phonological elements, problems in phonological activation leave still the possibility of reconstructing what the word might be from visual recognition and access to aspects of semantics (Cattinelli, Borghese, Gallucci, & Paulesu, 2013).

Within this view, given the interactive activation nature of the system, loss is not all or nothing. Rather output can be subject to gradations of variables such as visual complexity, phonotactic predictability, orthographic neighbourhood density, word frequency, and imageability, as well as differing routes to learning to read or individual differences in reading experience – e.g. phonic letter by letter versus whole word strategies and reading styles (Friedman, 1996; Ziegler & Goswami, 2005; Crisp & Lambon Ralph, 2006; Hoffman et al., 2015; Woollams, 2015). Further, 'pure' forms of dyslexia will be rare, with profiles more likely to fall on a continuum. This is congruent with views that see phonological and deep dyslexia (previously claimed as separate entities) as less versus more severe forms of phonological breakdown (Crisp & Lambon Ralph, 2006; Friedman, 1996). What is labelled deep dyslexia, with characteristic failure in non-word reading, semantic paralexias and visual and derivational misreadings, emerges when phonological activation is severely banished and only clues from visual form and semantic activation drive reading.

These dyslexia profiles have been reported across languages and across orthographies (Bolger, Perfetti, & Schneider, 2005), including those with relatively transparent orthography, such as Italian (Basso & Corno, 1994), Greek (Emmanouel, Tsapkini & Rudolph, 2005), Spanish (Iribarren, Jarema & Lecours, 1999), Japanese kana (Sasanuma, Ito, Patterson, & Ito, 1996), and Slovak (Hricová & Weekes, 2012; Markova, 2002). The brain regions associated with reading disturbance are also strongly uniform across languages (Bolger et al., 2005), with divergences confined largely to differences in early transformations of orthographic code into sound depending on logographic versus syllabic versus alphabetical spelling systems and variations such as requiring access to tone phonology as well as segmental and semantic decoding to aid in word recognition and disambiguation of homophones.

Empirical data show that some degree of reading disorder is present in almost all aphasic speakers (Vuković, 2011). Clinical data show that the reading deficits tend to be parallel to overall language disorder. In Wernicke's aphasia paralexic errors are frequent, similar to the paraphasic errors of spoken language. People with Broca's aphasia tend to read with a whole word or "Gestalt" strategy rather than a letter by letter or syllable approach (Webb, 1997). In addition, individuals with aphasia show reading comprehension deficits, with an apparent parallel between degree of reading comprehension and auditory comprehension deficits (Vuković, 2011; Webb, 1997).

Neurolinguistic investigations of reading in Serbian are sparse. Serbian is a Southern Slavic language with a writing system that has a systematic, transparent letter-sound correspondence. It uses the Cyrillic script, though a Latin/Roman orthography also exists. Serbian is considered a highly inflectional language, but with some flexibility of word order. Words are divided into a) inflected words (nouns, pronouns, verbs, adjectives, and numbers) and b) uninflected words. Uninflected words in Serbian are adverbs (here, a little . . .), prepositions (on, above), conjunctions (and, yes), particles (however), exclamations (ah). These words always retain the one form (Stanojčić & Popović, 1992).

By contrast, inflected words change their form in a sentence, as illustrated in these transliterated examples with the noun *profesor*. *Profesor ispituje* (The professor is examining), *videli smo profesora* (We saw the professor), *poslao sam mejl profesoru* (I sent an e-mail to the professor), *razgovarao sam sa profesorom* (I spoke with the professor). Depending on the function in the sentence, the inflected word may take the canonical form (nominative singular) or one of multiple dependent forms (in the examples given, the accusative, dative and instrumental singular).

For verbs, the canonical form is the infinitive, while other forms are denoted as dependent. Hence, the forms of the noun *profesoru*,*profesorom* are dependent forms for the basic form of the noun, *profesor*, while the forms *ispituje*, *razgovarao sam*, *poslao sam* (examines, I talked, I sent) are dependent forms of the verbs *ispitivati*, *razgovarati*, *poslati* (to examine, to talk, to send).

Download English Version:

https://daneshyari.com/en/article/910738

Download Persian Version:

https://daneshyari.com/article/910738

Daneshyari.com