

What does recovery from anomia tell us about the underlying impairment: The case of similar anomic patterns and different recovery

Marina Laganaro^{*}, Marie Di Pietro, Armin Schnider

Service de Rééducation, Neuropsychologie, Hôpitaux Universitaires de Genève, Av. Beau-Séjour 26, CH-1211 Geneva 14, Switzerland

Received 22 November 2004; received in revised form 6 July 2005; accepted 7 July 2005

Available online 19 August 2005

Abstract

Although word-finding difficulties have been largely studied from a theoretical and a rehabilitation point of view, recovery mechanisms and especially the fact that patients with similar anomic patterns may exhibit different recovery, are still not fully understood. In the first part of the present study we investigated the word retrieval curve during therapy and the psycholinguistic variables affecting word-finding recovery patterns in three anomic subjects (PG, AH and TM). Despite the fact that all patients had similar anomia at baseline, they presented different recovery patterns during an identical therapy program. The progress during therapy and the number of sessions necessary to reach satisfactory improvement was similar in two patients (AH and TM), but differed in the third patient (PG), who needed more treatment sessions. Moreover, these two different patterns were affected by different psycholinguistic variables: words age of acquisition predicted improvement in AH and TM, whereas phonological neighbourhood predicted improvement in PG. Following the observation that phonological neighbourhood density affected the slower progress during therapy, in the second study we analysed whether this variable also predicts pseudo-word learning in healthy controls and in anomic subjects. Indeed, phonological neighbourhood predicted pseudo-word learning speed in controls and in some anomic patients.

We suggest that the analysis of progress during therapy for anomia and the comparison of the variables affecting learning and recovery may provide information about the underlying nature of the anomic deficit that is not available through the simple assessment of performance.

© 2005 Elsevier Ltd. All rights reserved.

Keywords: Aphasia; Variability; Recovery; Anomia; Age of acquisition; Phonological neighbourhood

1. Introduction

Anomia has given rise to many published studies, both from a theoretical and a therapeutic point of view. On the one hand, theoretical studies analysed the patterns of errors and the psycholinguistic variables affecting naming accuracy in aphasic speakers (Cuetos, Aguado, Izura, & Ellis, 2002; Ellis, Lum, & Lambon Ralph, 1996; Nickels & Howard, 1995). On the other hand, reports on rehabilitation described therapy effects depending on anomia type, and suggested that word finding can be improved, especially when therapy is adjusted to subject's specific naming disorder (Best & Nickels, 2000;

Nickels, 2002). However, whereas certain predictions can be made about the kind of therapy that will be effective for a particular type of anomia, the same is not true for the speed and the processes of recovery in an individual anomic patient. It is particularly difficult to understand why the same treatments are sometimes effective with different anomic patterns and why similar anomic patterns do not recover in the same way. Part of this variation in recovery from anomia is certainly explained by biographical and neurological factors (Basso, 1992); however, psycholinguistic factors may also affect the nature and speed of recovery from anomia. In what follows we will first review empirical evidence on the variables affecting word production accuracy and word production impairment, then we turn to the purpose of this study, which is to propose a way to investigate the processes underlying recovery

^{*} Corresponding author. Tel.: +41 22 3823643; fax: +41 22 3828338.
E-mail address: marina.laganaro@hcuge.ch (M. Laganaro).

through the analysis of the psycholinguistic variables that correlate with the word finding increase curves.

The psycholinguistic variables affecting the production of single words have been investigated through picture naming studies in healthy subjects. Several variables corresponding to picture, concept or word properties have been shown to affect picture naming speed in a number of studies carried out in different languages (English: Ellis & Morrison, 1998; Snodgrass & Yuditsky, 1996; Welsh: Barry, Morrison, & Ellis, 1997; Spanish: Cuetos, Ellis, & Alvarez, 1999; Italian: Dell'Acqua, Lotto, & Job, 2000; French: Alario et al., 2004; Bonin, Peerman, Maladier, Méot, & Chalard, 2003). The effects of the psycholinguistic variables on picture naming speed were interpreted within the assumptions of current models of speech production by relating them to particular levels of processing (e.g., Glaser, 1992; Levelt, Roelofs, & Meyer, 1999). Indeed, the production of words in response to a picture stimulus implies at least the following processes before articulation starts: the activation of stored structural knowledge about the object's appearance, the activation of semantic information, lexical retrieval, and phonological encoding. The variables taken into account are more or less the same across the different studies: visual complexity and image agreement are linked to picture properties and are thought to affect the picture recognition processes; concept familiarity, imageability (or image variability) are expected to affect latencies of the activation of the concept and semantic representation. Name agreement, frequency and age of acquisition affect the stages of lexical access; finally phonological factors such as number of phonemes and number of syllables are thought to affect phonological encoding (for a more detailed discussion on these variables, see Alario et al., 2004).

The same variables have been considered in studies analysing the effect of psycholinguistic factors on naming accuracy in anomic patients. Although the variables affecting anomia may vary with regard of type of anomia, words' age of acquisition is the most reliable predictor of naming performance in most studies (Bell, Davies, Hermann, & Walters, 2000; Cuetos et al., 2002; Ellis et al., 1996; Hirsh & Ellis, 1994; Nickels & Howard, 1995). Other lexical (lexical frequency) and prelexical variables (familiarity to concept and visual complexity) predict naming performance only in some studies on anomia (Cuetos et al., 2002). Besides the classically considered factors, some other variables have raised interest essentially in the psycholinguistic literature on speech production and marginally in neurolinguistic studies. These variables are phonological neighbourhood and syllable frequency. Phonological neighbourhood density has been shown to affect errors and lexical retrieval in normals (Vitevitch, 1997, 2002; Vitevitch & Sommers, 2003) as well as naming performance in aphasic speakers (Gordon, 2002). A syllable frequency effect has been reported on healthy subjects' naming time in different languages (Spanish: Carreiras & Perea, 2004; Dutch: Cholin, Levelt, & Schiller, in press; French: Laganaro, Alario, & Schwitter, submitted for publication) as well as on errors of aphasic subjects presenting

apraxia of speech (Aichert & Ziegler, 2004) and in aphasics' phonological errors (Laganaro, 2005).

In sum, studies on aphasic naming performance suggest that the same psycholinguistic variables that affect naming speed in normals also affect anomia. It seems therefore reasonable to analyse whether these psycholinguistic factors correlate with different recovery patterns from anomia. In fact, there are at least two dimensions of variability in recovery from anomia: inter- and intra-subject variability. Firstly, it is well known that recovery from anomia varies across patients; this prevents us from making precise predictions on recovery even in patients with similar anomic patterns. Secondly, recovery from anomia varies across treated words. Indeed, improvement during therapy for anomia is rarely homogeneous across treated items: access to some words is achieved faster during therapy, while others need additional presentations in order to reach recovery (Laganaro, Di Pietro, & Schnider, in press). These heterogeneous patterns of recovery may depend on the one hand on the type of anomia and, on the other hand, on the psycholinguistic characteristics of the treated words. The study of variables predicting recovery from anomia may therefore be central to the understanding of the processes implied in recovery from word-finding difficulties.

In order to clarify the effect of psycholinguistic variables on recovery from anomia we conducted two exploratory studies. First (study 1), we compared the recovery curves of three anomic subjects selected on the basis of similar anomic patterns and analysed the effects of psycholinguistic variables on their improvement in word retrieval during therapy. The second study was carried out in order to disentangle some results of study 1; we investigated whether phonological neighbourhood affects pseudo-word learning in healthy controls and in three anomic subjects.

2. Case reports

2.1. Patient PG

PG is a 30-year-old French-speaking man with high school education, who suffered a traumatic brain injury 4 months before the beginning of this study. A CT scan showed diffuse axonal injury with predominant left fronto-parietal lesions. A neuropsychological evaluation at the time of the study revealed anomia and retrograde amnesia of several months. Language assessment was carried out with some of the subtests from the Montréal–Toulouse 86 Aphasia Test (Nespoulous et al., 1992) and the French version of the Boston Diagnostic Aphasia Examination (Mazaux & Orgogozo, 1981). PG's spontaneous speech was fluent, but moderately anomic. Oral and written naming was impaired on the Boston Naming test (respectively, 19/34 and 21/34 on two parallel lists of the short version). Errors were mainly no responses or long latencies. Word generation task (Cardebat, Doyon, Puel, Goulet, & Joannette, 1990) was poor. Oral read-

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات