



Contents lists available at ScienceDirect

Journal of Memory and Language

journal homepage: www.elsevier.com/locate/jml

More on lexical bias: How efficient can a “lexical editor” be?

Nazbanou Nozari*, Gary S. Dell

Beckman Institute, University of Illinois at Urbana-Champaign, 405 N. Matthews Ave., Urbana, IL 61801, USA

ARTICLE INFO

Article history:

Received 12 February 2008

Revision received 18 August 2008

Available online 26 November 2008

Keywords:

Lexical bias
Self-monitoring
Speech errors
Feedback

ABSTRACT

The lexical bias effect (the tendency for phonological speech errors to create words more often than nonwords) has been debated for over 30 years. One account attributes the effect to a lexical editor, a strategic component of the production system that examines each planned phonological string, and suppresses it if it is a nonword. The alternative explanation is that the effect occurs automatically as a result of phonological–lexical feedback. Using a new paradigm, we explicitly asked participants to do lexical editing on their planned speech and compared performance on this inner lexical decision task to results obtained from the standard lexical decision task in three subsequent experiments. Our experimentally created “lexical editor” needed 300 ms to recognize and suppress nonwords, as determined by comparing reaction times when editing was and was not required. Therefore, we concluded that even though strategic lexical editing can be done, any such editing that occurs in daily speech occurs sporadically, if at all.

© 2008 Elsevier Inc. All rights reserved.

Introduction

The lexical bias effect

More than three decades have elapsed since the *lexical bias effect* was first shown in speech errors, but after all these years it is still in the spotlight for the crucial role it plays in molding language production models. By definition, the lexical bias effect is the tendency for phonological speech errors to result in real words rather than nonwords at a higher rate than chance would predict (e.g., Baars, Motley, & MacKay, 1975; Dell & Reich, 1981; Hartsuiker, Corley, & Martensen, 2005; Humphreys, 2002; Nootboom, 2005). For example, lexical bias should increase the chance of *barn door* slipping to *darn bore* relative to that of *barn porch* slipping to *parn borch*.

The initial interest in the lexical bias effect was mostly to determine its existence and robustness. Two groups of studies looked into this issue. Experimental studies all used the SLIP (Spoonerism of Laboratory Induced Predisposition) procedure, first developed by Baars et al. (1975).

This method creates initial-consonant exchanges during the production of word pairs. In the SLIP task participants would see word pairs on the screen following each other with short inter-trial intervals. Randomly a signal prompts the participants to speak the last word pair they saw on the screen. Word-outcome target pairs (e.g., *deep cot*) could potentially slip into words (i.e., *keep dot*) while nonword-outcome targets (e.g., *deed cop*) would create nonwords if slipped (i.e., *keed dop*). The lexical bias effect is demonstrated if lexical-outcome slips exceed non-lexical-outcome slips. All the published experimental studies confirmed that this is indeed the case (Baars et al., 1975; Dell, 1986, 1990; Hartsuiker, Anton-Mendez, Roelstraete, & Costa, 2006; Hartsuiker et al., 2005; Nootboom & Quené, 2008; Oppenheim & Dell, 2008). The second group of studies used natural speech-error corpora. The effect was initially discovered in studies of English, Dutch, and German (e.g., Berg, 1983; Dell & Reich, 1981; Nootboom, 2005; Stemberger, 1984) but not in Spanish (Del Viso, Igoa, & García-Albea, 1991). MacKay (1992), however, brings up the issue of statistical power for detecting lexical bias in the Spanish study because of the relative scarcity of errors in that study (182 errors as opposed to, e.g., 363 errors in Dell & Reich, 1981). Moreover, the existence of lexical bias

* Corresponding author. Fax: +1 217 333 2922.

E-mail address: nnozari2@illinois.edu (N. Nozari).

in Spanish was recently confirmed by both analysis of the natural error data and experimental use of the SLIP procedure (Hartsuiker et al., 2006). Overall, the existence of the lexical bias effect, as a robust effect in speech errors, is no longer disputed. But as this debate is put to rest a new chapter opens: how is the effect created?

The lexical bias effect as a key concept in language production theories

Any language production model has to be able to explain, among other things, the error patterns in speech. Following the principle of parsimony, it is to a model's advantage if it provides a natural mechanism to account for such patterns rather than appealing to post-hoc explanations. The lexical bias effect happens to be one of the most intriguing speech-error effects in this respect, one that according to Hartsuiker (2006) has "divided the language production literature for decades."

Language production models, for the most part, fall under one of two categories with regard to their account of the underlying mechanism that creates lexical bias. The first group, who see production as a sequence of independent and serially ordered stages (e.g., Garrett, 1975; Laver, 1980; Levelt, Roelofs, & Meyer, 1999; Roelofs, 2004), look at lexical bias not as an effect arising during the speech formulation phase but as one resulting from monitoring the output of the formulation phase for its lexical status. That is, speech that is formulated, but not yet spoken, is assessed for whether it forms words or nonwords. This prearticulatory monitoring for lexical status—sometimes called "lexical editing"—was the first proposed mechanism for lexical bias (Baars et al., 1975) and this explanation for the effect continues to be influential (e.g., see Nooteboom & Quené, 2008, for a review). The second group, who believe in interactive rather than independent production stages, identify lexical bias as an automatic property of the production system, stemming from feedback between phonemic and lexical levels. In other words, they see the effect arising during speech formulation instead of in a post-formulation monitoring stage (e.g., Dell, 1986). More recently a mixed account of the lexical bias effect was proposed combining both interactive feedback and monitoring (Hartsuiker et al., 2005). Fig. 1 summarizes these three accounts by presenting hypothetical error rates for word and nonword outcomes and attributing their differences to influences occurring during either formulation or editing. Notice that the assumed number of observed errors is the same in all cases and the differences lie in the number of formulated errors. In the interactive feedback account, there is no need for a monitoring process to explain the effect and thus what is formulated is what is observed. The influence of editing is maximal in the pure monitoring account, because all the difference in the number of lexical and non-lexical observed errors is ascribed to the monitoring process rather than to formulation.

In the research reported in this paper, we create an experimental analog of a monitor that performs lexical editing, in order to evaluate how easy it is to make speech production contingent on lexical status. If this can be done

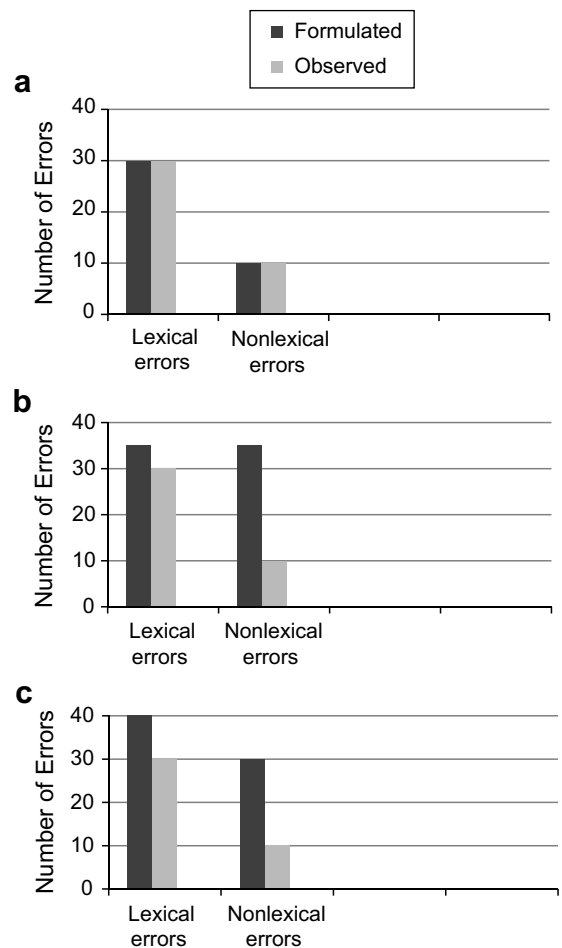


Fig. 1. Illustration of lexical bias as explained by the three different accounts: (a) feedback account, (b) monitoring account and (c) mixed account. Dark bars represent formulated errors and light bars the observed ones. The difference between each two adjacent bars represents the degree of editing by the monitor. Error counts are hypothetical and do not reflect actual data.

quickly and accurately, then monitoring explanations can be considered plausible. If not, then alternative, automatic accounts such as feedback gain in credibility. Specifically, in our main experiment participants are asked to produce single-syllable utterances. In one condition, they speak only if the prepared syllable is a word, that is, they do explicit lexical editing. In another, they speak only if the syllable is a nonword and, in a third condition, they produce the syllable regardless of its lexical status. By comparing response times when lexical editing (or its counterpart, "non-lexical editing") is required to when it is not required, we can measure the difficulty associated with incorporating a lexical-status sensitive monitor into the speech production process. To prepare the ground for comparing different aspects of the above accounts, we first give an overview of the general monitoring accounts and then focus specifically on monitoring for lexical status and how this process differs from the interactive explanation of lexical bias.

Download English Version:

<https://daneshyari.com/en/article/932152>

Download Persian Version:

<https://daneshyari.com/article/932152>

[Daneshyari.com](https://daneshyari.com)