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Lexical bias revisited: Detecting, rejecting and repairing speech errors in inner speech ☆

Sieb G. Nooteboom *

UiL OTS, Utrecht University, Trans 10, 3512 JK UTRECHT, The Netherlands

Abstract

This paper confirms and exploits the observation that early overt self-interruptions and repairs of phonological speech errors very likely are reactions to inner speech, not to overt speech. In an experiment eliciting word–word and nonword–nonword phonological spoonerisms it is found that self-interruptions and repairs come in two classes, one class of reactions to inner speech, another with reactions to overt speech. It is also found that in inner speech non-word–nonword spoonerisms are more often rejected than word–word spoonerisms. This is mirrored in the set of completed spoonerisms where word–word spoonerisms are more frequent than nonword–nonword ones. This finding supports a classical but controversial explanation of the well-known lexical bias effect from nonwords being rejected more frequently than real words in inner speech. This explanation is further supported by an increasing number of overt rejections of nonword–nonword spoonerisms with phonetic distance between error and target, and increasing lexical bias with phonetic distance. It is concluded that the most likely cause of lexical bias in phonological speech errors is that nonword errors are more often detected, rejected, and repaired than real-word errors in self-monitoring of inner speech.
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☆ Louis Pols (2004) recently drew attention to the multi-disciplinary, many-sided character of phonetics, already apparent in the topics supposed to be covered at the first International Congress of Phonetic Sciences in 1928, ranging from the physiology of speech and voice, via the development, evolution and anthropology of speech and voice, phonology, linguistic psychology, pathology of speech and voice, comparative physiology of the sounds of animals, even to musicology. In this contribution to a special issue at the occasion of his retirement, I cordially invite Louis to change perspective for a moment, and to allow the possibility that the questions we ask may at times be more uniting than the disciplines and subdisciplines that make up our field. The main question in this paper is "what causes segmental speech errors, other things being equal, to make up real words more often than nonwords?" If it is necessary, in order to answer this question, temporarily to behave like an experimental psychologist, so be it.

* Tel.: +31 302536006/6060; fax: +31 302536000.
  E-mail address: sieb.nooteboom@let.uu.nl

1. Introduction

Speakers every now and then make an error of speech. Speech errors may be phonological, lexical, or grammatical, or they may be errors against social appropriateness. In this paper the focus will be on phonological errors, in particular spoonerisms such as DARN BORE for BARN DOOR. Speakers also monitor their own speech for speech errors, and often detect and repair such errors. There are good reasons to believe that speakers not only monitor their own overt speech, but also their own inner speech, in order to detect and repair errors before they are spoken. Levelt (1989) and Levelt et al. (1999) assume that self-monitoring of inner and overt speech for speech errors is basically the same mechanism, employing the same global, easy-to-use criteria for detecting speech errors. These global criteria are of the form "Is this a word?", "Is this syntactically correct?", "Is this socially appropriate"?

This view of self-monitoring provides a long-standing but still controversial explanation for the phenomenon of lexical bias in phonological speech errors. Lexical bias refers to the fact that phonological speech errors tend to make more real words than nonwords. This has been demonstrated to be a robust phenomenon in laboratory-induced spoonerisms (Baars et al., 1975; Dell, 1986; Motley, 1980; Motley et al., 1982; Humphreys, 2002; Nooteboom, 2003; Hartsuiker et al., 2005a). Lexical bias has, despite some failures to do so (Garrett, 1976; Del Viso et al., 1991), also been convincingly demonstrated in spontaneous speech errors (Dell and Reich, 1981; Nooteboom, 2005). Baars et al. (1975) explained lexical bias from "pre-articulatory editing of inner speech", notably by the assumption that nonword errors are more frequently detected and corrected pre-articulatorily than real-word errors. This explanation presupposes that speech errors in inner speech can be detected, rejected and repaired very rapidly and subconsciously, often leaving no or hardly any trace in overt speech, whereas, of course, repair of speech errors in overt speech is there for all of us to observe. This explanation by Baars et al. of the phenomenon of lexical bias is basically supported by Levelt (1989) and Levelt

et al. (1999), who prefer to speak of "self-monitoring" instead of "pre-articulatory editing", and assume that self-monitoring of both inner and overt speech employs the same speech comprehension system that is also used for listening to other-produced speech. For the purpose of self-monitoring, there are supposed to be two forms of input to the speech comprehension system, inner speech, before articulation, closing the inner perceptual loop, and overt speech, via the hearing system, closing the outer perceptual loop. These authors also assume that the self-monitoring system, both in monitoring inner and in monitoring overt speech for phonological speech errors, has no access to the intended word forms, but employs a global criterion of the form "Is this a word?" in detecting speech errors. Detecting and rejecting nonwords more frequently than real words in inner speech would explain the existence of lexical bias.

This perception-based self-monitoring account of lexical bias has not been generally accepted. Lexical bias could potentially also be explained by assuming a production-based monitor (MacKay, 1992; Nickels and Howard, 1995; Postma, 2000; Postma and Oomen, 2005). Both perception-based and production-based self-monitoring would easily account for the fact that lexical bias is sensitive to contextual and situational information, and social appropriateness (Motley, 1980; Motley and Baars, 1979; Motley et al., 1982; Hartsuiker et al., 2005a). However, the major controversy in this area does not seem to be between perception-based and production-based monitoring, but between a monitoring account of lexical bias and a feedback account. Notably those who believe that in the mental preparation of speech there is immediate feedback of activation between phonemes and lexical representations, explain lexical bias (and some other well-attested properties of speech errors) from this feedback (Dell and Reich, 1980; Stemberger, 1985; Dell, 1986; Schade, 1999).

To complicate matters, recently Hartsuiker et al. (2005a) found experimental evidence that led them to assume that the relative frequencies of real-word and nonword speech errors are affected both by Dell-like immediate feedback and by self-monitoring of inner speech. Their basic finding