PHONOLOGICAL DISRUPTION IN WORD PRODUCTION

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ABSTRACT

In naturally occurring speech, people occasionally find that they have a word "on the tip of the tongue". In this state, they may produce other words related in either sound or meaning to the targets. Are these other words instrumental in causing the TOT states, or are they merely by-products of the TOT states?

1. INTRODUCTION

In spontaneous utterances, most people occasionally experience difficulty in producing an intended word. In this state, a person may be confident that the word he or she wishes to generate is within his or her mental lexicon. The word nevertheless remains temporarily unavailable, seemingly "on the tip of the tongue" While people are in this tip-of-the-tongue (TOT) state, they often do not remain mute but instead produce words other than the target-word at which they are aiming. Such words have been termed "interlopers" [5,6]. An early example was reported by the writer George Lewes, partner of the novelist Mary Ann Evans (George Eliot), as follows.

I was one day relating a visit to the Epileptic Hospital, and intending to name the friend, Dr. Bastian, who accompanied me, I said, "Dr. Brinton;" then immediately corrected this with, "Dr. Bridges," - this also was rejected, and "Dr. Bastian" was pronounced. I was under no confusion whatever as to the persons, but having imperfectly adjusted the group of muscles necessary for the articulation of the one name, the one element which was common to that group and to the others, namely B, served to recall all three [7, p. 128].

Lewes's observation was discussed widely, for example in France by Ribot [11, p. 19] and by Binet [1, pp. 113-114]. However, greater generality was clearly to be obtained by the collection of a corpus of such observations. Early corpora were assembled by Woodworth [14] and Wenzl [12,13]. More recent corpora have been described by Reason and his colleagues [9,10], Cohen and Faulkner [4] and Burke, MacKay, Worthley, and Wade [3]. In all of these studies, a considerable number of TOT states were found to be characterised by the occurrence of interlopers that were related to their respective targets in either their sound or their meaning. The nature of the empirical stochastic contingency between relatedness in sound and relatedness in meaning of an interloper to its target is still, however, unclear. For this reason I have in a recent unpublished study collected a small corpus of naturally occurring TOT states.

2. TOT CORPUS

TOT experiences were collected from undergraduates at the University of Warwick over a period of several weeks. In this sample, the number of interlopers generated by the participants themselves (as opposed to those generated by bystanders) was 100. The interlopers were classified as being related both phonologically and semantically (PS), phonologically

alone (Ps), semantically alone (pS), or neither phonologically nor semantically (ps). The observed incidences were PS = 29, Ps = 3, pS = 67, and ps = 1.

A striking and unexpected aspect of the preceding results was that almost all (96%) of the interlopers were semantically related to their targets. At first sight, this result appears to conflict with the previous observation of many interlopers categorised as phonologically related to their targets [10, p. 124]. However, closer examination of the examples provided by Reason and Mycielska indicates that in each case their "mostle phonological pathways" display semantic relatedness also (e.g., *target* = pomander, *interloper* = pot-pourri).

3. INTERLOPER ORIGINS

What are the origins of the interlopers that commonly occur in TOT states? Two logical possibilities may be distinguished. The interlopers may arise either before or after the disruption in target word generation. In particular, the interlopers may either be instrumental in causing the disruption or be merely a consequence of the disruption. To use medical terminology, the interloper could be considered either as a pathogen (i.e., cause of disruption) or as a sequela (i.e., consequence of disruption).

In the case of words related in meaning, the Sequela hypothesis seems *a priori* plausible. Words produced in normal utterances are presumably selected largely on the basis of their meaning. Thus after a target word becomes unavailable, it might be expected that a person's attempts at word generation will yield other words which are related in meaning to the target. In contrast, the Pathogen hypothesis (that the interlopers themselves cause the disruption) seems implausible. It is obvious that other words related in meaning to intended target words are routinely generated in many normal meaningful utterances (e.g., consider the target word "water" in the sentence "The swimming pool water was chlorinated"). Since we generally have no difficulty in speaking such sentences, we may infer that target generation is not likely to be prevented by the activation of words related in meaning that act in a pathogenic manner.

In the case of interloper words related in sound to the target, it is in contrast difficult to establish their role by *a priori* reasoning. On the Sequela hypothesis, such interlopers might arise if it is the case that, for some unrelated reason, only a partial phonological specification of the target word becomes activated. Subsequently, other words sharing this partial specification might be generated as sequelae. Most would be expected to be also related in meaning to the target, since semantic factors would presumably remain important in guiding word production. On the Pathogen hypothesis, it might be possible for phonological interlopers to act as blockers. Perhaps a word which is similar in sound to the target word receives activation by chance shortly before generation of the target is completed, and acts as a phonological decoy receiving in sum more activation than the target itself. Again, this is clearly more likely to occur if the interloper and target are related in meaning as well as in sound.

4 SOME INTERLOPER EXPERIMENTS

How can one distinguish between the Pathogen and Sequela hypotheses for the origins of phonological interlopers in TOT states? Two recent studies [5,6; see also 8] developed further an experimental method of investigating the TOT state introduced by Brown and McNeil [2]. Brown and McNeill showed that reading people definitions of moderately rare words induces TOT states on the order of 10% of occasions.

In the new studies, people were again presented with definitions of moderately rare words, such as

"Something out of keeping with the times in which it exists". But now the definition was followed immediately by an interloper word also presented by the experimenter. Equal numbers of the four types of interlopers distinguished earlier (PS, Ps, pS, and ps) were used - that is, the interloper was either related both phonologically and semantically to the target, phonologically alone, semantically alone, or neither phonologically nor semantically, respectively. For the present example definition, the interloper was "abnormality". This was of the PS type since it was related in both sound (initial phoneme and number of syllables) and meaning to the target "anachronism".

It was found that interlopers which were related in sound to their targets were more likely to lead to TOT states, irrespective of whether they were related in meaning. This result is consistent with the Pathogen hypothesis since that hypothesis asserts that phonological similarity between interloper and target is instrumental in engendering TOT states, in contrast to the Sequela Hypothesis's assertion that the interloper is merely a by-product of naturally occurring TOT states. Nevertheless, considerable empirical work remains to be done to examine further the effects of artificially supplied interlopers, and in particular more extensive work with a wider range of experimental materials is needed.

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