

SLIPS OF THE EAR DEMONSTRATE PHONOLOGY IN ACTION

Linda Shockey, University of Reading, UK
Z. S. Bond, Ohio University

ABSTRACT

In casual conversation, listeners occasionally report hearing something which differs from what the talker has intended. A large proportion of such ‘slips of the ear’ involves casual speech phonological alternations. The error patterns suggest that listeners employ casual speech phonology to map phonetic forms into lexical entries.

Keywords: speech perception, misperception, casual speech, reduction.

1. INTRODUCTION

We contend that speakers of English use knowledge of casual speech variants in forming a percept and that the mapping between variants and the lexical entry is part of phonological competence. Skillful listeners reconstruct sounds which have been modified or omitted in pronunciation without knowing they are doing it. They can also fail to recognize forms as reduced and take them at face value.

In the following section, we give evidence of erroneous applications of these decisions. Examples are taken from Bond’s *Slips of the Ear* [1], which includes a corpus of approximately 1000 misperceptions. Our assumptions about spoken forms are based on variants which are expected to occur in casual speech, from extensive observation of several native accents of English [4].

2. OUR INTERPRETATION OF SLIPS CAUSED BY CASUAL PHONOLOGY

nd# ~ n#

Experienced speakers of casual English show alternations between word-final *nd* and the nasal by itself. A misperception can

be caused by erroneously assuming a *d* should be present:

<i>Intended</i>	<i>Perceived</i>
ENT	E and T
ham bone	hand bone

Alternatively, if the speaker does not produce a recognisable final *d* where one is found in citation form, the perceivers can take what they hear at face value and assume that a *d* was never intended. This produces a second class of ‘slips of the ear.’

<i>Intended</i>	<i>Perceived</i>
Hrothgar and Heorot	Hrothgar in
Heorot	
nose and eyes	Molson Ice

Only the first of these actually demonstrates the positive use of knowledge of casual speech variants as a perceptual strategy. The second case shows a failure to reconstruct. But this evidence does suggest that there are two options either of which can lead to error. We could think of these options in the following way:

	<i>Perceived as reduction</i>	<i>Not perceived as reduction</i>
<i>Produced as reduction</i>	<i>Miss</i>	Hit (correct)
<i>Not produced as reduction</i>	<i>Hit</i>	False alarm

We shall refer to the ‘miss’ as a Type 1 (‘what you hear is what you get’) error and the ‘false alarm’ (or false positive) as a Type 2 error.

3. MORE PERCEPTUAL ERRORS BASED ON PHONOLOGICAL ALTERNATIONS

Based on this categorisation, let us look at other perceptual errors which can be traced to casual speech phonology.

3.1 d# ~ 0#

/d/ is not observable word-finally or before a consonant as in ‘hard ball’ pronounced [hɑːbɔːl]. The perceivers assume that a final /d/ has been deleted so reconstruct it. (See Table 1 (a) for examples).

3.2 VNC ~ ṼC

A pre-consonantal nasal is realised as nasalization, as in ‘can’t’ pronounced [kɑ̃ːt]. (See Table 1 (b) for examples).

3.3 st # C ~ s #C

Lexical word-final ‘st’ cluster pronounced as ‘s’, as in ‘first place’ pronounced [fɜːspleɪs]. (See Table 1 (c) for examples) (a subset of the following group).

3.4 t# ~ 0# (C)

Lexical word-final /t/ does not appear phonetically, as in ‘right person’ pronounced [raɪtpɜːnsən] (Table 1 (c)).

3.5 #ð ~ dental C after C

/ð/ assimilates to a preceding consonant, as in ‘win the race’ pronounced [wɪnθeɪs]. (Table 1 (d)).

3.6 v, f# ~ 0#

The weak fricatives /f, v/ are not perceptible word finally as in ‘lots of’ pronounced [lɒtsə] or ‘five’, six’ pronounced [faɪvks] (Table 1 (e)).

3.7 ɹ ~ V / C or silence

Final velarized /ɹ/ is pronounced as a vowel: ‘bottle’ as [bɒtɹ] or [bɒtʊ] (Table 1 (f)).

3.8 final glottalling

That is, pronouncing ‘pit’ as [pɪʔ] or ‘tap, tack’ as [tæʔp, tæʔk]. Final voiceless stops can all have glottal components, but for t, contact is not made elsewhere. There are no Type 1 errors because it is not clear what taking glottal stop at its face value would mean for speakers of English. Table 1 (g).

3.9 schwa reduction

Another sonorant segment takes on the syllabicity of schwa, which does not then appear as a separate vowel, e.g. pronouncing ‘police’ as [p lɪs]. (Table 1 (h)).

4. PHONOLOGY IN SPEECH PERCEPTION

We suggest that knowledge of casual speech phonology, regardless of how it is coded linguistically, constitutes an active part of human speech perception: anything which can be shown to function independently and to lead (in a minority of cases) to wrong decisions must be seen as a functional component of such systems and represented as such in speech perception models.

The place of phonology in speech perception is not often addressed. Most models suggest that phonetic sounds are mapped directly onto the lexicon, with no intermediate linguistic processing. But Frauenfelder and Lahiri [2] stress that the phonology of the hearer’s language does influence how their own and others’ languages are heard Gaskell and Marslen-Wilson (p. 388) [3] conclude, "when listeners make judgments about the identity of segments embedded in continuous speech, they are operating on a highly analyzed phonological representation."

In agreement with this position, we argue that access to meaning is **mediated** by phonology: phonology gives us more than one way to interpret input because a given phonetic form could have come from a

number of phonological forms. We develop language-specific algorithms for inter-pretation of phonetic input which are congruent with production algorithms in our language(s). The fact that we can misapply these algorithms is strong evidence of their existence.

While this may seem inconsistent with the 'episodic' approach which argues that variants are stored rather than generated (c.f. Johnson and Mullinix:, Pisoni and Levi [4,6]). We argue that all human experience is subject to generalisation into categories and assume that the regularity with which these full/reduced variants occurs leads to the subconscious invention of algorithms which justify the relationship. In other words, the mental lexicon could easily start out being episodic but will naturally become more algorithmic as variants are detected, as intimated by Jusczyk [5]. The fact that perceptual slips of the type discussed here apply equally to unfamiliar vocabulary and nonce forms, strongly suggests that abstraction is taking place.

- 1) Bond. Z. (1999). *Slips of the Ear: Errors in the Perception of Casual Conversation*. New York: Academic Press.
- 2) Frauenfelder, U., Lahiri, A. (1989) Understanding words and word recognition. In W. Marslen-Wilson (ed.), *Lexical Representation and Process*, Cambridge, MA: MIT Press, 319--339.
- 3) Gaskell, M. G. , Marslen-Wilson, W. D. (1998) Mechanisms of phonological inference in speech perception. *Journal of Experimental Psychology, Human Perception and Performance*, 24, 380--396.
- 4) Johnson, K. ,Mullinix J.W. eds. (1997) *Talker Variability in Speech Perception*. San Diego: Academic Press.
- 5) Jusczyk, P. (1999) *The Discovery of Spoken Language*. Cambridge, MA: MIT Press.
- 6) Pisoni, D.B., Levi, S.V. (2005), Some observations on representations and representational specificity in speech perception and spoken word recognition, *Research on Spoken Language Processing*, Progress Report No 27, Indiana University.
- 7) Shockey, L, (2003) *Sound Patterns of Spoken English*. Malden, MA: Blackwell.

5. REFERENCES

TABLE 1: EXAMPLES OF MISPERCEPTION

<u>TYPE 1</u>		<u>TYPE 2</u>	
a) Perceiver fails to detect nasality		Hearer erroneously reconstructs nasal	
intended	heard as	intended	heard as
tent pole	tadpole	task course	tennis court
slant board	sled board	apples	amples
Wrangler	regular	drop their Gs	drop their jeans
hot iron	hot air	Bickerton	Pinkerton

b)		Hearer erroneously reconstructs d	
		intended	heard as
		Dierker	Diergood
		news	snoozed
		myofunctional	mild functional
c) <u>t# ~ 0# (C)</u>		Hearer erroneously reconstructs t	
Hearer misses reduced t			
in Amherst together	enamorous together	honors political	honest ..
I just like it	I dislike it	Goes, like	ghostlike
cart	car	ripe	raped
a pill out	a pillow	Coke and a Danish	coconut Danish
d) Hearer misses 'ð'		Hearer erroneously reconstructs 'ð'	
Missed the news	must a snoozed	for him	for them (presumably pronounced 'for 'em').
worse than that	where's Annette		
when their condition	when air condition		
e) Hearer misses v/f		Hearer erroneously reconstructs v/f	
valves	vowels	Rudal	Rudolf
a leaf's end	loose end	parachute	pair of shoes
double life	double lie	moos	moves
f) Hearer misses 'vocalisation' of l		Hearer interprets V as l	
glottal wave	auto wave	Wardhaugh	Wardhol
Nielson	Neusa	savour	sable
that's an L	an A-O	meadow muffin	metal muffin
g)		Hearer interprets glottalling as t	
		cap	cat
		ship can't	shit can't
		Grape Nuts	great nuts
h) Hearer misses syllabic C		Hearer interprets ordinary consonant as syllabic	
Sunoco	snorkel	the urn is finished	the urine is ...
Arabs	herbs	Dec writer	decorator
beings on	beans on	fiscal	physical