

Consonant cluster simplification and intelligibility

David Deterding

It is well-known that most speakers of English tend to simplify some word-final consonant clusters. Schreier (2005: 27) suggests that consonant cluster reduction is a shared property of all varieties of spoken English, and furthermore that it is a process of simplification which characterises the historical development of the language.

Cruttenden (2008: 303–304) offers a long list of phrases in which speakers of RP British English tend to omit the /t/ or /d/ at the end of a word when the next word begins with a consonant, including *first light*, *soft centres*, *pushed them*, *mashed potatoes*, *old man*, *bold face*, *moved back* and *loved flowers*; and Deterding (2006a) shows that broadcasters on the BBC World Service similarly often omit word-final /t/ and /d/ in phrases such as *last night*, *first morning*, *most people*, *looked back* and *trapped by a fire*. Note that the omission of the /t/ or /d/ occurs whether it is part of the root word (e.g. *first light*, *bold face*) or it constitutes an -ed suffix (e.g. *pushed them*, *loved flowers*).

Despite this evidence that it is normal to omit final /t/ and /d/ under some circumstances, teachers of pronunciation often focus on word-final consonant clusters, insisting that retention of all the underlying sounds is essential for intelligibility, especially if the sound represents a past-tense suffix; and Deterding (2006b) reports that speakers in China are reluctant to omit word-final sounds, even when it is demonstrated to them that such omission routinely occurs in native speech, as they are convinced that it represents lazy pronunciation.

So, the question arises: how important is the retention of word-final /t/ and /d/ in consonant clusters for maintaining intelligibility? Should learners of English be encouraged to produce these sounds even in cases in which native speakers omit them? Jenkins (2000) argues that retention of all the sounds in word-final consonant clusters is not important for speakers of English who are using the language in an international setting, and she excludes final consonant clusters from the Lingua Franca Core (LFC), the features of pronunciation that she suggests are essential for maintaining international intelligibility. However, Seidlhofer (2011) contends that speakers of English as a Lingua Franca (ELF) should not be bound by the same rules as native speakers of English, so it could be argued that if

retention of all the sounds in word-final consonant clusters enhances intelligibility for listeners around the world, then learners of English might be discouraged from omitting any of the sounds.

Here I will consider research that investigates misunderstandings in conversations between a range of ELF speakers. Classifying the speakers according to the Three Circles model proposed by Kachru (1985), they come from Outer-Circle places like Brunei, Hong Kong, Malaysia and Nigeria as well as Expanding-Circle places such as Indonesia, Taiwan and Laos, and my investigation attempts to determine what features of pronunciation, grammar and word usage cause misunderstandings to occur. Here I will analyse the impact of the omission of /t/ and /d/ from the end of word-final consonant clusters. A full report of the research can be found in Deterding (2013).

Data

Recordings were made of interactions between two participants. Nine people were involved, five females and four males. Here I refer to them using F or M to indicate their gender and a two-letter code for their country of origin. The five females are from Brunei (FBr), China (FCh), Japan (FJp), Malaysia (FMa) and Taiwan (FTw), and the four males are from Hong Kong (MHk), Indonesia (MIn), Laos (MLs) and Nigeria (MNg). At the time of the recording, most of the speakers were between 22 and 28 years old, though MLs was 34, both FTw and FHk were 56, and MIn was 58.

There are nine recordings, totaling about six and a half hours. The interactions took place in a classroom or a quiet office at the University of Brunei Darussalam (UBD). Each recording lasted between 20 minutes and one hour. Full details of the data can be found in Deterding (2013: 21–23).

Analysis

All the conversations were fully transcribed. In all cases, the participants gave invaluable help in clarifying what they had said and also what they had not understood, and from this feedback I can identify a wide range of incidences of misunderstanding that would not have emerged by simply listening to the data. In total, I collated 183 tokens of misunderstanding, and they are made available in the CMACE corpus on-line at:

<http://www.ubd.edu.bn/academic/faculty/FASS/research/CMACE/home/index.html>

After collecting these 183 tokens of misunderstanding, I tried to determine what had caused each one. In many cases, more than one factor can be identified, so these tokens are cross-classified. Five broad classes were identified: pronunciation, lexis, grammar, code-switching and miscellaneous, and the number of tokens classified under each category is shown in Table 1. (The percentages add up to more than 100% because of cross-classification.)

Classification	Number	Percent
Pronunciation	158	86.3 %
Lexis	41	22.4 %
Grammar	25	13.7 %
Code-Switching	4	2.2 %
Miscellaneous	2	1.1 %

Table 1. Classification of the 183 tokens of misunderstanding

Clearly, the overwhelming majority of the tokens, over 86% of them, involve pronunciation, either on its own or in conjunction with some other factor, which confirms the importance of pronunciation teaching. Here I will focus just on these 158 tokens.

Of these tokens of misunderstanding involving pronunciation, eleven involve a word that has a word-final consonant cluster ending with /t/ being heard as one with no /t/, and six involve final /d/ at the end of a cluster. Here, I will first analyse /t/ and then /d/.

Final /t/

The eleven tokens in which a word with final /t/ was heard as a word with no final /t/ or the listener was unable to come up with a suggestion (Tokens 5 and 11) are shown in Table 2. In the 'Context' column, (.) indicates a short pause. For Token 8, when FBr transcribed the data, she included *pisen* in brackets to shown that she knew it was incorrect. We might also assume that *that long* in Token 4 is just a wild guess by FTw.

The first four of these tokens involve MHk. In three of them, other phonetic factors seem to be crucial, and the absence of the final /t/ is a minor factor: in Token 1, the vowel in the first syllable of *communist* is /ʌ/ rather than /ɒ/, perhaps influenced by the American pronunciation of the word (though MHk has /ɒ/ in many other words); in Token 2, the main problem seems to be the absence of // at the end of *wall*, resulting in the word being heard as *war*, and then it is hardly surprising that the phrase is heard as *won the war*, and in Token 4, the main issue is probably the use of /w/ rather than /v/ in *environment*. Only in Token 3 does the absence of the final /t/ seem to be the main factor.

No.	Speaker	Listener	Word(s)	Heard as	Context
1	MHk	FMa	communist	companies	and then the communist you know
2	MHk	FMa	want the wall	won the war	then (.) i want the wall (.) this is i
3	MHk	FTw	west	where's	you know er (.) west you know part
4	MHk	FTw	environment	that long	we control the environment you know
5	MIn	FMa	i went to cairo	??	i went to cairo a little bit frustrated
6	MIn	FMa	joint	changing	i have a joint supervision between a
7	MIn	FTw	fact	like	my parents despite the fact that they
8	MLs	FBr	present	(pisen)	i saw: some present from er: my former
9	MLs	FBr	just	their	i think (.) just meat. is nothing (.) but
10	MLs	FBr	their accent	the option	er: their accent (.) er like the first time
11	MNg	FBr	board test	??	and matriculation board test i pass it

Table 2. Misunderstandings involving /t/ at the end of a word-final consonant cluster

We might consider Token 1 a little further. The assumption that the quality of the vowel in the first syllable of *communist* may be the main cause of the misunderstanding is not consistent with the proposals of Jenkins (2000), which suggests that the quality of vowels (except for the NURSE vowel) be excluded from the LFC. However, vowel quality in fact rarely seems to cause problems elsewhere in the data, so Token 1 is exceptional in this respect.

Tokens 5, 6 and 7 all involve MIn. In Token 5, *i went to cairo* is pronounced as [awentəkæɹɔ]. One problem is that *Cairo* is said quite fast and not very loudly as [kæɹɔ], and the five syllables in the sequence *i went to cairo* take a total of just 0.7 seconds. Although there is no separate /t/ at the end of *went*, in fact pronouncing *went to* as [wentə] is perfectly standard, and producing an extra /t/ for *went* might be regarded as hyper-articulation. Similarly, both Tokens 6 and 7 are spoken quite fast and not very loudly, but there does not seem to be anything non-standard in the pronunciation. We might note that omission of the /t/ at the end of *fact* in *despite the fact that* would be expected in British English (Cruttenden 2008: 304). It seems that MIn's fast speaking rate, and also his tendency to fade away at times, is what causes the problem.

Tokens 8, 9 and 10 all involve MLs, and in each case there is another substantial issue in the pronunciation that has caused the problem: in Token 8, there is no /r/ in *present*, which confirms the importance of maintaining all the sounds in initial consonant clusters, as indeed is proposed for the LFC (Jenkins 2000); in Token 9, there is no /s/ in *just*; and in Token 10, /k/ is missing in the middle of *accent*.

Token 11 is by MNg, and the wider context is shown in Extract 1. (The number 894 in the title line indicates the time in seconds from the start of the recording.)

Extract 1. MNg + FBr : 894 (Token 11)

Context: MNg is talking about the education system in his country

- 1 MNg so if i now pass that joint admission and
- 2 matriculation **board test** i pass it. i will now
- 3 enter the school ...

The noun phrase *joint admission and matriculation board test*, which seems to be an established expression in Nigeria, is spoken rather quickly as:

[dʒɔɪntɪdmiʃənəmɪtrɪkʃjələʃənbɔɪdɪtʃs]

the twelve syllables taking just 1.62 seconds. Although the omission of /t/ from the end of *test* is one factor in this token of misunderstanding, there seem to be multiple other issues involved, including an added vowel after *board* and a vowel that sounds like /ʌ/ in *test*. In fact, the main problem here is that MNg seems to treat this as an established fixed phrase, so he says it rather quickly without noting that people in Brunei may not be familiar with it.

Finally, let us consider in more detail the only token in which the absence of word-final /t/ seems to be the main cause of the misunderstanding. The wider context for Token 3 is shown in Extract 2.

Extract 2. MHk + FTw : 274 (Token 3)

Context: MHk is talking about getting married while he was a student in the USA

- 1 MHk ... in texas you know at that time (.) we are you
- 2 know study in texas **tech** you know in the
- 3 graduate school. in **lubbock** texas. er **northern**
- 4 you know er (.) **west** you know part of the texas.
- 5 so (.) that february's (.) that day is snowing too (.)
- 6 so ...

In this extract, there are four tokens that are misunderstood: *tech* in line 2 and *Lubbock* in line 3, followed by *northern* in line 3 and *west* in line 4. We could say that these other tokens have had an influence on FTw's inability to understand *west*, which she subsequently transcribed as *where's*. However, the only phonetic feature of the word *west* itself that seems to contribute to it being misunderstood is the lack of a final /t/.

In summary, omission of /t/ from the end of a word-final consonant cluster rarely causes a problem, though it may sometimes combine with other factors to result in a misunderstanding occurring.

Final /d/

The six tokens that include a word with /d/ at the end of a word-final cluster which was heard as a word with no /d/, or for which the listener was unable to make any hypothesis (Token 17), are shown in Table 3. In two instances, Tokens 13 and 17, /d/ in fact occurs in the pronunciation, but they are included in Table 3 because they involve a word with /d/ at the end of a word-final consonant cluster.

In Token 12, *by the end of the day* is pronounced as [baɪələdʒeɪ], with multiple issues, including /dʒ/ instead of /d/ at the start of *day*, so it is hardly surprising that it was not understood. In Token 13, the main issue seems to be the absence of /l/ from *world*. In Token 14, *cold war* is pronounced as [kəʊlwo:], so in this case the omission of /d/ is probably the main problem, though minimal aspiration on the initial /k/ might also be a contributory factor. In Tokens 15 and 16, /n/ occurs instead of /l/, and this seems to be the key issue. And in Token 17, *attend a* is pronounced as [ʌtendʌ], with a full vowel in the first syllable of *attend* and also in *a*, and no clear stress on the second syllable of *attend*. As mentioned above, the /d/ is actually present in this token.

No.	Speaker	Listener	Word(s)	Heard as	Context
12	MIn	FMa	by the end of the day	biology	er yeah by the end of the day er (.) we
13	MIn	FTw	world	war	in the world at the time so meaning you
14	MIn	FTw	cold war	guru	have the (.) cold war (.) so supposedly
15	MLs	FBr	old	own	this one er: the old (.) people sometimes
16	MLs	FBr	old	own	sarong for: the old man in my country er
17	MNg	FBr	you attend a	??	i'm saying you attend a (.) brunei school

Table 3. Misunderstandings involving omission of /d/ from a word-final consonant cluster

In summary, therefore, the omission of /d/ from the end of a word-final consonant cluster appears to be the major factor causing a misunderstanding in only one case: Token 14, in which *cold war* said by MIn is heard as *guru* by FTw. The wider context for this token is shown in Extract 3.

Extract 3. MIn + FTw : 1010 (Tokens 13 and 14)

Context: MIn is talking about religion and communism

1 MIn ... in the **world** at the time so meaning you have
 2 the <coughs> the **cold war** (.) so supposedly our
 3 **world** is divided capitalism and communism

In addition to *cold war* being misunderstood as *guru*, in this extract *world* was heard as *war* (Token 13); however, as mentioned above, there is in fact a /d/ in this word, so we cannot conclude that omission of /d/ is a factor.

Discussion

Seventeen tokens have been identified involving the omission of final /t/ and /d/. However, in all but two of these tokens (Tokens 3 and 14), omission of the final consonant appears to be a minor factor, and in fact in some cases (Tokens 13 and 17), the consonant is actually present. It seems, then, that omission of /t/ or /d/ from the end of word-final consonant clusters is rarely important, which supports the suggestion of Jenkins (2000) that simplification of word-final consonant clusters should be allowed in the LFC. In contrast, the second sound in initial clusters such as /k/ and /fr/ is implicated in 21 tokens of misunderstanding, and in almost every case it is the sole or main cause of the problem (as was suggested for *present* heard as *pisen* in Token 8). It seems, therefore, that to enable their students to maintain intelligibility, teachers of English should focus on initial clusters and not final ones.

One problem with English teaching focusing on final clusters is that some speakers may emphasise them to the exclusion of other sounds. For example, consider Extract 4 (in which

the '@' in line 2 indicates laughter). MHk seems to be aware that FMa cannot understand his use of *next* in line 6, so in line 8, he enunciates his words really clearly, carefully putting in all the final consonants in *next* and even adding a /t/ on the end of *one* where it is not appropriate. But note that he continues to use /l/ rather than /n/ at the start of *next*, something that is a common feature in Hong Kong English (Deterding, Wong & Kirkpatrick, 2008). In fact, in this case, the repetition in line 8 does clear up the problem, largely because of the insertion of the article *the*.

Extract 4. MHk + FMa : 1061

Context: FMa is asking a prepared question.

1 FMa ... what is the most exciting project you've been
 2 involved in as an artist and why (1.7) @@@@
 3 MHk so usually is er is the most important (.) art
 4 project i did
 5 FMa uh-uh
 6 MHk would be **next** [lekst]
 7 FMa hh
 8 MHk the next [lekst] (.) one [wɒnt]
 9 FMa okay
 10 MHk you know would be the most (.) important (.)
 11 FMa okay

Extract 4 illustrates a number of issues: first, MHk is not aware that the problem is his confusion of /l/ and /n/ at the start of a word; second, he appears to think that adding an extra /t/ at the end of every word will solve the problem; third, he seems to be able to fix the grammar (by adding the article *the* in line 8) but he does not know how to improve his pronunciation.

Pronunciation teaching is crucial for improving intelligibility. However, speakers need to know what is important and what is not. The distinction between sounds such as /n/ and /l/ at the start of a word is vital, and retention of all the consonants in initial clusters such as /k/ and /fr/ is also crucial; but omission of /t/ and /d/ from the end of word-final

clusters is not so important. In fact, Couper (2011) reports that speakers from China and Korea often pay so much attention to enunciating their final plosives that *fast* can end up sounding like *faster*.

It is unfortunate if teachers put so much focus on word-final /t/ and /d/. Celce-Murcia, Brinton and Goodwin (1996: 89) offer the following sentence to allow students to practice retention of the final /d/ in *second*:

What's happening on the second day of the month?

It seems a pity that students are offered practice exercises such as this which encourage them to retain a consonant that native speakers would typically omit, especially when there is little evidence that omission of this consonant causes problems for intelligibility in an international setting.

David Deterding is a Professor at the University of Brunei Darussalam, where he teaches phonetics, grammar, translation, forensic linguistics and research methods. His research focuses on pronunciation, acoustic phonetics, and the description of English in Southeast Asia.

Email: David Deterding <dhdeter@gmail.com>

References

Celce-Murcia, M., Brinton, D. M. & Goodwin, J. M. (1996). *Teaching pronunciation: A reference for teachers of English to speakers of other languages*. Cambridge: Cambridge University Press.

Couper, G. (2011). What makes pronunciation teaching work? Testing for the effect of two variables: Socially constructed metalanguage and critical listening. *Language Awareness*, 20 (3), 159–182.

Cruttenden, A. (2008). *Gimson's Pronunciation of English*, 7th edn. London: Hodder Education.

Deterding, D. (2006a). Deletion of /t/ and /d/ in BBC English: Implications for teachers in Singapore. *STETS Language and Communication Review*, 5(1), 21–23. [On-line version: <http://www.ubd.edu.bn/academic/faculty/FASS/staff/docs/D/D/STETS-bbc-finals.pdf>]

Deterding, D. (2006b). The pronunciation of English by speakers from China. *English World-Wide*, 27(2), 175–198.

Deterding, D. (2013). Misunderstandings in English as a Lingua Franca: An analysis of ELF interactions in South-East Asia. Berlin: De Gruyter Mouton.

Deterding, D., Wong, J. & Kirkpatrick, A. (2008). The pronunciation of Hong Kong English. *English World-Wide*, 29(2), 148–175.

Jenkins, J. (2000). *The Phonology of English as an International Language*. Oxford: Oxford University Press.

Kachru, B. B. (1985). Standards, codification and sociolinguistic realism: The English language in the outer circle. In *English in the world: Teaching and learning the*

language and literatures, Quirk, R. and Widdowson, H. (eds.), 11–30. Cambridge: Cambridge University Press.

Schreier, D. (2005). *Consonant change in English worldwide*. Basingstoke, UK: Palgrave Macmillan.

Seidlhofer, B. (2011). *Understanding English as a Lingua Franca*. Oxford: Oxford University Press.