"WE DON'T PRONOUNCE OUR T'S AROUND HERE": REALISATIONS OF /t/ IN WEST YORKSHIRE ENGLISH

Kate Earnshaw, Erica Gold

Department of Linguistics and Modern Languages, University of Huddersfield, United Kingdom
k.earnshaw|e.gold@hud.ac.uk

ABSTRACT

This paper explores how intervocalic /t/ is realised across West Yorkshire and aims to establish the extent to which this phonetic variable patterns with other varieties of British English. Although sociolinguists have extensively studied T-glottaling, and variation in /t/ production more generally, in numerous areas of the UK; there are no up-to-date studies which have examined /t/ in West Yorkshire. An auditory analysis of over 600 tokens of intervocalic /t/, from multiple syllabic and phonetic contexts, using recordings of speakers from three metropolitan boroughs within West Yorkshire (Bradford, Kirklees and Wakefield) is presented. The results of this investigation revealed that throughout all three boroughs, T-glottaling is common in certain, but not all, intervocalic contexts. Taking into account previous findings this result indicates that T-glottaling may be on the rise in West Yorkshire, in line with other Northern cities participating in the consonantal change such as Manchester and Hull.

Keywords: /t/, T-glottaling, sociophonetics, regional variation, West Yorkshire, Northern English

1. INTRODUCTION

West Yorkshire has received relatively little attention from the sociophonetic community in recent years. One of the few studies to examine /t/ in West Yorkshire, was conducted by Petyt in 1985 [16] and considered the accents of Bradford and Huddersfield (Kirklees). Petyt found two non-standard forms of /t/ in use word-finally: a "sort of 'linking r'", realised as either [ɹ] or [ɾ], and a glottal stop [ʔ]. T-glottaling (where /t/ is realised as [ʔ] in non-initial position) was also reported to have started spreading to the intervocalic context, although it was least frequent here and highly stigmatised. More recently, T-glottaling has been reported in Bradford in word-final contexts only [11]. This paper aims to establish how /t/ is currently realised across the West Yorkshire metropolitan boroughs of Bradford, Kirklees and Wakefield. T-glottaling has been widely studied in English and its rates of usage have been shown to vary depending on geographical location, linguistic context [1, 11, 21], and other external factors such as social class, age and gender [1, 20, 25]. In the present study, these external factors are held constant in order to focus on how location and linguistic context affect /t/ realisations across West Yorkshire.

1.1. Linguistic constraints on /t/

T-glottaling has been said to occur more frequently in certain phonological contexts, although the precise nature of the constraint hierarchy for glottal replacement has been shown to vary between locations [18, 20]. Glottal replacement generally occurs more frequently in word-final contexts than word-medial contexts [1, 19, 20]. When T-glottaling does occur word-medially, it is often highly stigmatised. Stuart-Smith [20] observed that working class Glasgow speakers style-shifting from casual to formal styles, only replaced glottal stops with [t] in intervocalic position, and maintained their categorical use of [ʔ] prepausally. This suggests that the intervocalic context may be most socially salient.

The effect of prominence also has a strong influence on T-glottaling, whereby in most locations T-glottaling is only an option where "the stress on the syllable following /t/ is less than that borne by the preceding syllable" [21]. However, some speakers in an advanced stage of this phonological process glottalise even in stressed –ee/-oo environments such as *tattoo*, *canteen*, *eighteen* [1, 10]. The linguistic patterning of this variant is also highly sensitive to following phonetic context. For example, Smith and Holmes-Elliott observed that the phonetic environments "Ambi#Syllabic-consonant" (*bottle*), "Coda#Vowel" (*that is*), and "Ambi#Vowel" (*better*), showed greater use of [ʔ] than both "Coda#Pause" (*right*) and "Onset" (*sometimes*) environments [18]. Other studies also reported that T-glottaling occurs more commonly before syllabic consonants than before vowels [1, 13]. In this study, realisations of /t/ are analysed in the word-medial intervocalic context, taking into account both prominence and the following phonetic context.

1.2. Regional variation in intervocalic /t/

The production of [ʔ] for intervocalic /t/ has been reported in numerous cities throughout the UK. T-glottaling is found in this linguistic context in the

South (in South East London [21], Milton Keynes [25], Reading [25]), in the Midlands (in Norwich [22], West Midlands [13] and Derby [6]) and further north in areas such as Manchester [1, 11], Lancashire [23], Hull [25] and Newcastle [6]. T-glottaling is also common intervocalically in Glasgow [20], Edinburgh [4] and Buckie [18]. Other variants of /t/ in this phonological context include [ɹ] in Sheffield [19], T-voicing in Cardiff [14], and various lenited variants in Liverpool [5, 15]. T-tapping, where /t/ is realised as [ɾ] intervocalically, has also been reported in areas including South East London [21], Lancashire [23], Leicester [11] and West Midlands [13]. This study aims to identify which allophones of intervocalic /t/ are currently in use across West Yorkshire.

It also seeks to explore the extent to which /t/ varies between the boroughs of Bradford, Kirklees and Wakefield in order to determine if a local level identity is indexed through accent on a more fine-grained level than general Yorkshire English. Previous examinations of these boroughs have revealed regional nuances, (for instance the FACE vowel was found to vary across boroughs [7]), in addition to anecdotal accounts provided by WYRED participants, in relation to accent variation across West Yorkshire.

2. METHODOLOGY

2.1. Participants

The first 30 participants from the West Yorkshire Regional English Database (WYRED) [8] were selected (10 each from Bradford, Kirklees and Wakefield) for this study. Participants are all male, aged 18-30 (mean=21.8, range=19-29) and had English as their first and only language. Participants were classified as being from one of the three boroughs based on the postcode of where they grew up and went to school. The majority of the participants were White British and they were all enrolled on undergraduate or postgraduate degrees at university or had already completed a university qualification at the time of recording. By focussing on a closely defined population of participants, confounding factors such as age, gender and socio-economic background are largely controlled, therefore making it possible to test the role of different areas within West Yorkshire as an independent factor. However, it must be acknowledged that there may be an interaction between social characteristics (i.e. age, gender and socio-economic background) and location, which have not been considered here.

2.2. Task

The present study uses data from the WYRED Task 3 studio recordings. This task consisted of a 20-minute-long casual conversation between pairs of participants from the same borough. Participants were provided with topic cards as prompts, however, they were instructed that they could discuss any topics they like. The speech style elicited in this task was spontaneous and relatively relaxed.

2.3. Procedure

In line with previous studies of T-glottaling, an auditory analysis of /t/ was undertaken. The acoustic information available in the spectrogram and waveform was also considered during analysis, however, no acoustic measurements were taken. Tokens of intervocalic /t/ were selected from clearly articulated speech where there was no uncertainty as to what the intended target was. Any tokens produced in overlap or when the participant was laughing were disregarded, as were words which had been almost fully elided due to co-articulation. For each participant, all suitable tokens were manually labelled in Praat [3] using a TextGrid. Labels included the word containing the intervocalic /t/ token and an auditory transcription of the token. Within this dataset the following variants were identified auditorily: [t], [tˢ], [ɾ], [ʔ] and [Ø]. A subset of 20% of the sound files were checked and agreed upon by the second author.

During the analysis, it was observed that the vast majority of tokens which were auditorily perceived as glottal variants did not exhibit the acoustic cues we might expect to find in the speech signal. For instance, there was no silent hold phase which we would generally expect to see with all voiceless stops. Furthermore, there was rarely a clearly visible vertical striation to mark the plosive release. Instead, the percept of a glottal stop seemed to be prompted most often by a period of creaky voice. This was also found to be the case in a study of Newcastle speakers' glottal realisations [6] where it was noted that a number of scholars have claimed that glottal closure and creaky voice form a continuum (for example see [9, 12]). In Liverpool English, a typical pattern for [ʔ] was also a period of creaky voice [5]. Figure 1 shows an example of this kind of token.

Once all files had been analysed the data was exported to Microsoft Excel to be organised before statistical analysis was conducted in R [17]. As previously mentioned, syllabic position and following phonetic context can influence the realisation of /t/, therefore care was taken to group tokens into appropriate categories. Following [18] three separate categories of intervocalic /t/ were

included. Table 1 provides a summary of linguistic contexts that have been considered in this investigation.

Figure 1: Spectrogram of *voters* spoken by a Wakefield male which was perceived as a glottal variant due to a period of creaky voice
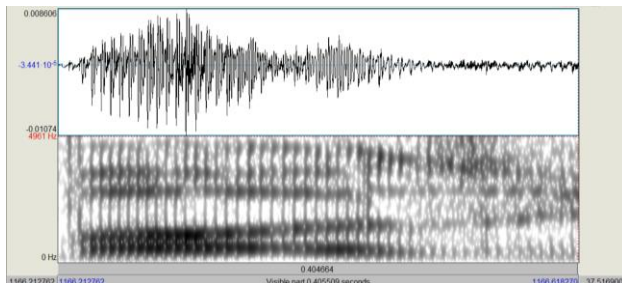
Tokens were included in the Stressed Onset category if /t/ occurred in the onset of a stressed syllable word-medially (i.e. where the following nucleus was more prominent than the preceding one). In any instances where the stress could theoretically be placed on more than one syllable (e.g. /ˈeɪtiːn/ vs. /eɪˈtiːn/), all potential variable tokens were checked auditorily before being coded accordingly. Tokens were assigned to the Ambi#V category where /t/ appeared between two vowels in an ambi-syllabic position. Tokens occurring after a vowel and before a syllabic consonant were classified as Ambi#Syl.

Table 1: Linguistic context of intervocalic /t/

Syllabic position	Following phonetic context	Examples	Description
Onset	Vowel	*attack guitar*	Stressed Onset
Ambi	Vowel	*pretty better*	Ambi#V
Ambi	Syllabic Consonant	*little bottle*	Ambi#Syl

2.4. Statistical analysis

R [17] and lme4 [2] were used to perform a generalised mixed effects logistic regression analysis in order to test the effect of linguistic context and region on T-glottaling. A decision was taken to have a binary distinction between glottal and non-glottal variants, based on the overall distribution of /t/ variants, presented in §3.1. For the purposes of the statistical analysis, glottalised tokens were coded as 1 and all other tokens were coded as 0. This data was then entered into the models as the dependent variable "*T-glottaling*". Any positive estimates in the regression coefficients indicated more use of T-glottaling within that category, and negative estimates

meant the category was less likely to glottalise. *Linguistic context* and *region* were entered into the model as fixed effects, and as random effects, there were intercepts for *speaker*.

3. RESULTS

3.1. Overall distributions

In total 642 tokens of intervocalic /t/ were analysed and a range of variants were observed in the data. The distribution of these variants is presented in Table 2. Overall the vast majority of tokens were glottalised with the next most common variant being a standard voiceless alveolar plosive. In a small proportion of tokens, /t/ was fully elided without any glottal closure or period of creaky voice. There were also some affricated forms, similar to those commonly reported in Liverpool English [15, 24], and five tapped variants.

Table 2: Overall distribution of all variants

	[t]	[tˢ]	[ɾ]	[ʔ]	Ø
N	145	23	5	438	31
%	22.6	3.6	0.8	68.2	4.8

3.2. Linguistic context

As T-glottaling was the most common variant for intervocalic /t/, the data was inspected to see how this variant was distributed across linguistic contexts (see Figure 2).

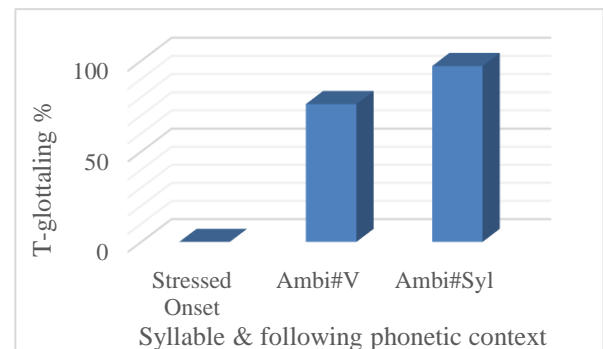**Figure 2**: Rates of [ʔ] across linguistic contexts

Figure 2 shows that T-glottaling occurs most frequently in the Ambi#Syl context (97.0% of the time), followed by Ambi#V (76.0% of the time). This is in line with previous descriptions of other dialects [11]. There were no instances of /t/ being realised as [ʔ] in the Stressed Onset context, which could indicate that T-glottaling is blocked in this context for West Yorkshire speakers, as it is in South East London English [21]. For this reason, tokens from the Stressed Onset context were excluded, resulting in 557 tokens being included in the statistical analyses.
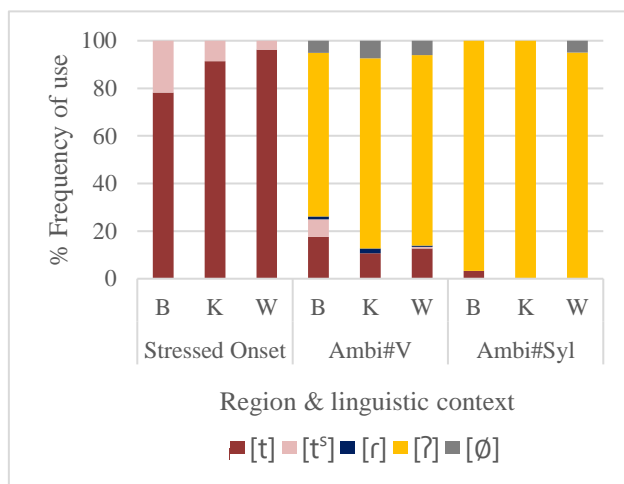
In order to test the influence of linguistic context on T-glottaling, p-values were obtained by likelihood ratio tests of the full model[i] (described in §2.4) against the model without the fixed effect of *linguistic context*. This analysis revealed that the linguistic context has a statistically significant effect on T-glottaling (χ^2 (1) = 30.271, p <0.0001), with [ʔ] being most frequent in the Ambi#Syl context. Overall, in both Ambi#V and Ambi#Syl contexts T-glottaling occurred more often than the non-glottal variants.

3.3. Region

Figure 3 presents the distributions of all /t/ variants across the regions of Bradford, Kirklees and Wakefield. As the realisations of /t/ vary according to linguistic context, the data has also been subdivided according to this factor.

It can be seen that in the Stressed Onset context, speakers across all three areas only use the variants [t] and [tˢ]. The affricated variant is used most often by Bradford speakers (21.7%), followed by Kirklees (8.6%) then Wakefield (3.7%). All of the five variants used for /t/ can be found within the Ambi#V context; however, in both this context and the Ambi#Syl context [ʔ] is the most common variant, with Kirklees speakers using it most often across both linguistic contexts. Concerning the Ambi#Syl context, all three regions used [ʔ] over 95% of the time.

Figure 3: /t/ variants by region and linguistic context (B=Bradford, K=Kirklees, W=Wakefield)

Based on the distributions in Figure 3, it appears that T-glottaling is used most often by Kirklees speakers, followed by Wakefield, then Bradford. To test the influence of region on T-glottaling, p-values were obtained by likelihood ratio tests of the full model[ii] (described in §2.4) against the model without the fixed effect of *region*. This analysis showed that region did not have a statistically significant effect on T-glottaling (χ^2 (2) = 2.424, p = 0.2976). A further

model[iii] comparison was conducted to examine the influence of the interaction between *linguistic context* and *region* on T-glottaling. This revealed that any interaction that exists does not significantly affect T-glottaling (χ^2 (2) = 1.1787, p <0.5547).

4. DISCUSSION

Overall, it would appear that the rise of T-glottaling observed by Petyt [16] has continued as /t/ is very commonly realised as [ʔ] intervocalically. However, the data from West Yorkshire demonstrates that not all intervocalic tokens behave the same. For instance, T-glottaling occurs significantly more often in the Ambi#Syl context compared to Ambi#V, whereas glottal stops never occur in the Stressed Onset context, indicating that in this speech community T-glottaling is not in as advanced a stage as in Manchester [1] and London [10].

In addition to T-glottaling, other non-standard forms of /t/ are present in West Yorkshire including [tˢ] and [ɾ]. It could be the case that these variants have spread from other regions such as Liverpool and Lancashire, although, it's possible that they are a result of more idiosyncratic variation. It could also be the case that differences in these released variants are regionally stratified across West Yorkshire, as seven out of the ten speakers who used the affricated tokens were from Bradford; however, substantially more data would be required to test this theory.

It should be noted that as this study only considers a small number of speakers, who all largely share the same social characteristics, it is necessary to use caution when making claims about West Yorkshire in general. As all speakers are young males, we might expect their rates of T-glottaling, for instance, to be higher than other subsections of the speech community [1, 19]. It would appear that T-glottaling is socially salient within these speakers as during the Task 3 recordings a number of speakers talk about /t/ when describing their accent and one remarks that they "don't pronounce their t's around here".

5. CONCLUSIONS

This paper has shown how intervocalic /t/ is realised in a range of linguistic contexts across three boroughs within West Yorkshire. Results show that speakers from Bradford, Kirklees and Wakefield broadly behave in the same way and do not index local level identity through use of this particular variable. It is evident that the following phonetic context, syllabic position and prominence all affect how /t/ is realised and therefore it is suggested that these aspects should all be taken into account when conducting analyses of other phonetic variables.

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[i] glottal ~ region + environment + (1 | subject)

[ii] glottal ~ region + environment + (1 | subject)

[iii] glottal ~ region*environment + (1 | subject) (It should be noted that this model failed to converge)