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ABSTRACT
              A study examined the effect of language style and
variation in speech rate on the vocalization of /l/ in local
Cambridge English. This sociolinguistic feature has been described as
marking southeastern varieties of British English and as a connected
speech process (CSP) in its sensitivity to variation in speaking
rate. Language style variables were sentence reading and narrative
reading. Sentence reading was slow, normal, or fast. Vocalization was
measured as total, partial, or not at all. Vocalization scores were
found to be similar for fast sentence reading and narrative. These
results are discussed in terms of the speaker's possible approaches
to different speech tasks. The occurrence of "/l/- clarification," in
which the /l/ is moved from word-final position to the initial
position in the following word, is also examined. It is concluded
that style does play a significant role in distinguishing between
CSPs affected by rate, and that CSPs functioning as fast speech
strategies are influenced by style. (MSE)

The effects of style and speaking rate on /l/-vocalisation in local Cambridge English*

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ABSTRACT

This paper reports the results and conclusions of an auditory
study of local Cambridge English, focussing on the effect of
style on the vocalisation of /l/. This sociolinguistic feature
has been described as a feature marking south eastern
varieties of British English, and as a connected speech
process in its sensitivity to variation in speaking rate.
The study concludes that this feature is socially salient in
local Cambridge English.

1. Introduction

The vocalisation of /l/ has been described as a feature marking working-
class London speech and Cockney English (Gimson, 1980:202-3; Wells, 1982:313-
5). Wells cites it as a change in progress, his argument being that speakers
do not apply vocalisation consistently to all possible sites of vocalisation.
For instance, he notes that many speakers restrict it to preconsonantal
((#)C) and absolute-final (||) position, as in 'real nuisance' and 'all.'. Some
speakers extend it to word-final prevocalic environments (_V), as in 'call
Andy'. Wells comments that this extension is indicative of the gradual
establishment of vocalised /l/ as an alternative to velarised /l/ as an
allophone of /l/ in English.

The vocalisation of syllabic /l/ is very common in many varieties of
English which do not have vocalisation in any other environment. So
vocalisation tends to occur in words like 'middle', 'purple' and 'crumble'.

Trudgill (1974:182) refers to the vocalised variant as a phonetic
realisation rule in Norwich English. This description implies that
vocalisation is a strategy employed in connected speech, and suggests that it
is affected by speaking rate. It also implies that particular dialects or
regional varieties adopt particular connected speech processes (CSPs) as
socially salient markers of the speech community.

In an auditory study, the results of which I have reported elsewhere
(Wright 1987), I investigated the sociolinguistic status of some CSPs in the
speech of local Cambridge speakers. These included glottalisation,
palatalisation and /l/-vocalisation. Speakers were asked to read a set of
sentences containing sites for the application of these CSPs at three
different rates of utterance; first 'slowly and carefully'; then 'at a normal
speed', and finally 'as fast as possible'. The results showed that the
incidence of /l/-vocalisation in local Cambridge English appears to be
strongly correlated with age. This suggests support for the claims of both
Trudgill and Wells, that it is spreading to urban varieties of south eastern

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English, notably in the speech of young people.

Figure 1 shows the percentages of vocalisation in the three reading styles defined in terms of speaking rate, for speakers under 25 and over 30.

MODES	YOUNG			OLD		
	SLOW	NORMAL	FAST	SLOW	NORMAL	FAST
-VOC	26	15	23	46	34	33
+VOC	74	85	77	54	66	67

Figure 1: Percentage occurrence of /l/-vocalisation in young and old speakers across reading modes

Notice first that the young speakers have a very high proportion of vocalised /l/ overall, in contrast to the older speakers. Secondly, speakers' behaviour is not absolutely consistent. They exhibit differences in their use of vocalised /l/ at different rates of utterance. These observations strongly suggested that on the one hand /l/-vocalisation is becoming a feature of local Cambridge youngsters' speech. On the other, its incidence appears to be affected to some extent by varying speaking rate; that is, it seems to be a weakly phonetically motivated CSP. These assertions raise the question of the salience of the feature as a sociolinguistic variable and as a phonetic connected speech process.
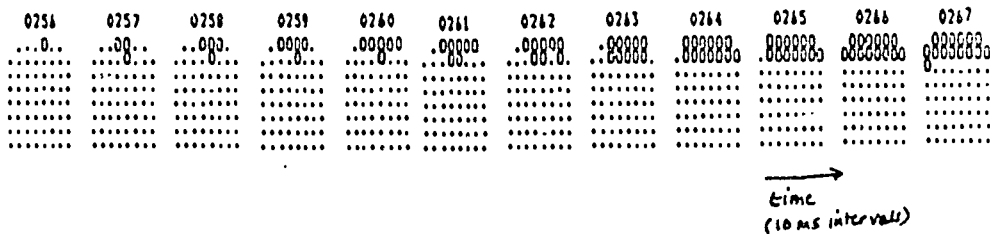
2. Speaking rate and /l/-vocalisation

To examine the effect of speaking rate on /l/-vocalisation, I undertook a study of the relation between time and articulation of the CSP (Wright 1987). This w s an electropalatography (henceforth EPG) study. Previous work on the relationship between alveolar place assimilation and speaking rate has shown that rate-dependence is matched by the continuous (or 'gradual') articulation of CSPs.

Figure 2 shows the EPG records of three articulations of the final consonant of the word well, in illustration of the gradual or continuous nature of /l/-vocalisation. I discerned three patterns of articulation, corresponding with three degrees of vocalisation. The frames in each row are records of lingual- palatal contact at 10msec intervals during continuous speech. Each frame represents the palatal 'map'. The top four rows correspond to the alveolar ridge and post-alveolar areas; the bottom four rows correspond to the palatal and (pre-)velar areas of the oral cavity. The dark spots on each frame represent actual contact between the tongue and the palate.
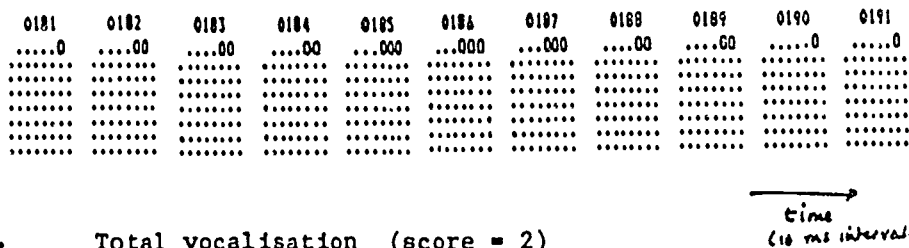
1. Non-vocalisation (score = 0)

   well/ (total alveolar contact)

time
(10 ms intervals)

2. Partial vocalisation (score = 1)

   well/ (residual alveolar contact)

time
(10 ms intervals)

3. Total vocalisation (score = 2)

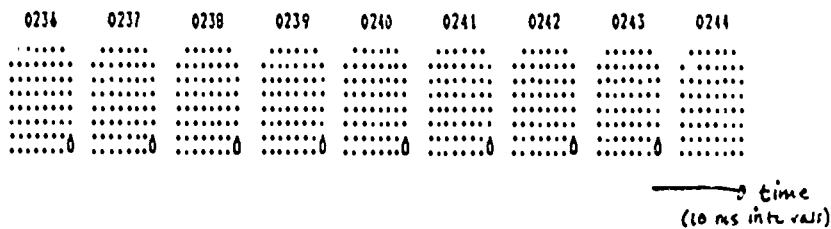   well/ (no alveolar contact)

time
(10 ms intervals)

Figure 2: Palatograms of 'well'

The first extract shows complete alveolar contact, indicating full articulation of the lateral. Note that since EPG does not register tongue gesture, we cannot distinguish between the articulation of clear and dark /l/. The second shows incomplete or residual alveolar contact. In articulatory terms, this is partial vocalisation of the lateral. The third shows zero alveolar contact, with minimal velar contact characteristic of the articulation of back vowels (like /u/). This represents complete vocalisation in articulatory terms.

Two EPG subjects (both speakers of local Cambridge English under 25 years of age) performed the same task as the speakers in the auditory study. They read a set of sentences at slow, normal and fast rates. The sentences contained possible assimilation sites and environments in which vocalised /l/ could occur.

Figure 3 shows the mean scores for alveolar place assimilation and /l/-vocalisation for two EPG subjects. The scores are taken over a gradually
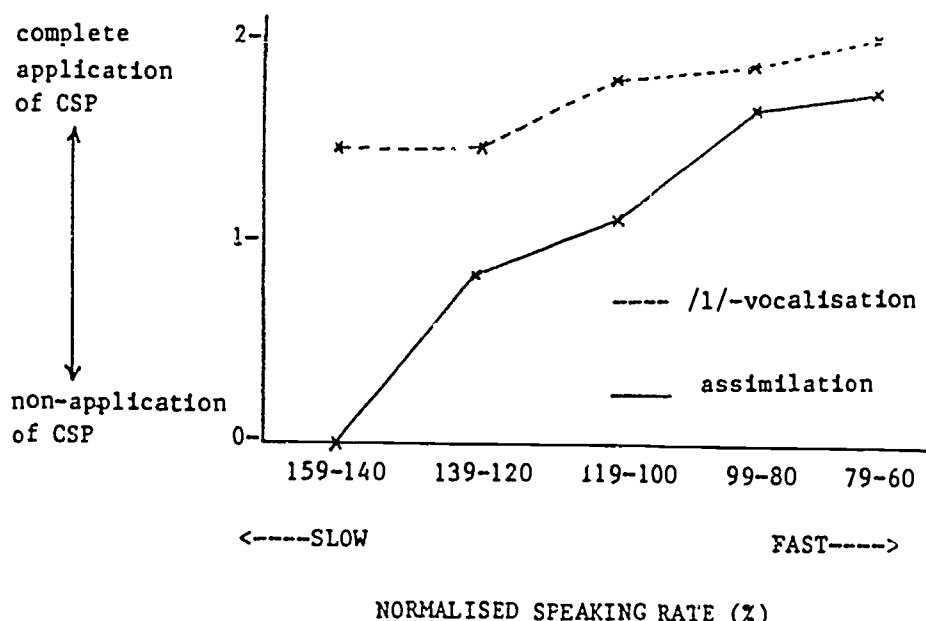
Figure 3: Mean scores for assimilation and /l/-vocalisation for two EPG subjects:

increasing speaking rate. Notice that the incidence of assimilation seems to be strongly affected by an increase in speaking rate. Slowest speaking rates do not exhibit assimilation (indicated by the zero marking 0), while fast speech tends to host an increase in assimilation. The speakers exhibit a tendency for partial and complete assimilations in articulatory terms.

/l/-vocalisation is weakly affected by speaking rate. The point to note is that whereas there is a gradual increase in assimilation from zero to nearly 2 (almost complete assimilation), even at slow rates of speech, /l/ shows a tendency towards vocalisation (in articulatory terms); increasing to full vocalisation (2). The figures reviewed in this context refer to the degree of gradualness of the articulation of these CSPs. It is important to note that /l/-vocalisation contrasts markedly with assimilation in auditory terms. While there appears to be articulatory gradualness, the auditory distinction between non- vocalised dark /l/ and vocalised /l/ is quite discrete.

The weak rate-dependence of /l/-vocalisation raises the following issue: Given the observation that vocalisation does seem to increase at faster speaking rates, why does the incidence of vocalisation apparently level off or even drop in favour of non-vocalised /l/ in the fast speech reading of the subjects in the auditory study? Referring again to Figure 1, notice that in the speech of the young subjects, the frequency of vocalised /l/ increases from 74% in slow mode to 85% in the normal reading mode. But then, with a shift into a fast reading mode, it falls slightly to 77%. For the older group, while there is not a significant drop in vocalisation with the increase of speaking rate from normal to fast, it remains more or less level (66% for normal; 67%

for fast).

This data for the auditory study of younger and older speakers holds a clue to the decrease in vocalised /l/ at fast speaking rates. Both junctural environments (operating across word boundaries) and word-internal ones were investigated as potential sites of /l/-vocalisation. The high frequency lexical items like always and the phrase all sorts tended to show vocalisation for all speakers in all reading modes. However, junctural contexts, where /l/ occurs pre-vocalically, as in the phrase 'call Andy', showed clear or 'clarified' /l/ in fast mode, resulting in [kolaendi]; whereas slower rates of speech produced the vocalised variant of /l/, thus [kowaendi].

It seems that the appearance of clear /l/ might account for the increase in non-vocalised /l/ at fast rates of speech. This analysis suggests that there is another variant of /l/, which seems to be part of a strategy for linking /l/ and adjacent vocalic elements in fast speech. This connected speech phenomenon of '/l/-clarification', seems to interact with the sociolinguistic CSP of /l/-vocalisation.

3. Connected speech and /l/-clarification

The notion of the interaction of connected speech processes (in this case, fast speech processes) with a sociolinguistic variable needs some clarification. Connected speech processes (CSPs) are those processes which occur at word boundaries in the stream of speech. That is, they do not occur at the word boundaries of isolated or citation forms. CSPs like assimilation, palatalisation and the focus of the present paper, /l/ clarification are conditioned by phonetic factors like speaking rate, and non-linguistic factors like stylistic variation.

These processes do of course occur as predictable morphophonemic processes within words, and their phonetic realisations are established in the phonology to the extent that they are expected to exhibit variability only as a consequence of dialect or accent differences. Thus palatalisation is analysed as a historical process, of the coalescence of /s, z/ + /j/, /t, d/ + /j/, realised in the Modern English phonemes /ʃ, ʒ/ in the course of the seventeenth century, and in the eighteenth century, /tʃ, dʒ/ (as in soldier [souldʒə], feature [fiːtʃə]) Gimson, 1980: 176). Alveolar place assimilation (e.g. of an alveolar to an adjacent bilabial or velar) is to some extent also fixed in the phonology (in the loanwords incongruent, impress, where the phonetic realisation of the borrowed prefix -in was already dependent on its context in the target language, Latin). These processes are treated as regular sound changes, which have become phonologised, and hence part of the system.

In connected speech, an obvious but important point to make is that collocations are not fixed, and so the occurrence of these processes depends far more on phonetic conditioning factors than on phonological environment. Studies in the Cambridge project demonstrate for instance, that alveolar place assimilation is likely to occur more frequently and consistently at faster speaking rates and in more casual styles than in slower, more formal speech. Phonological environment then is not the determining factor. So, for

example, the lexical pair <u>hand grenade</u> may be realised in speech as [haendgɹə neid], [hæengɪəneid] or even [haeŋgɪneid], depending on the phonetic conditions.

The phenomenon of /l/ clarification should be treated in a similar fashion. It occurs variably, but most predictably in fast speech, in which syllable boundaries become re-aligned, in order to facilitate linking. (It might be considered akin to the generalisation of 'intrusive /r/' from the strategy of using /r/ to link words.) Consequently, while it is clearly a morphophonemic rule in one domain of speech, and thus phonological or system oriented -- within the word; /l/ clarification (a realisation of the more general phenomenon of resyllabification) functions as a speaker strategy for organising syllables and their combination in fast speech.

It is this role which justifies its treatment in connected speech as a variant of velarised or vocalised /l/. The notion of interaction rather than simple alternation or substitution between velarised and vocalised /l/ and clear /l/ is used in an attempt to emphasise the dependence of these different strategies on phonetic factors.

4. Style and variation in /l/

The problem of the co-occurrence and indeed interaction of vocalisation of /l/ and clarification of /l/ observed in the earlier Cambridge study (reported in Wright, 1987) motivated another study using local Cambridge speakers.

A set of sentences focussing on different phonological environments for the vocalisation of /l/ was constructed. As in the earlier general auditory study, speakers were asked to read the sentences in three different modes:

as slowly and as carefully as possible;
normally; and
as fast as possible.

This range of modes was intended to provide the basis for relating /l/-vocalisation and /l/-clarification to speaking rate. In addition, a short story, containing dialogue, about a trip to Wells-Next-the-Sea was constructed. This passage also focussed on potential sites of the variation in the realisation of /l/. On the basis of Wells' observations and my earlier study, it was expected that pre-consonantal and absolute-final contexts would show /l/-vocalisation to be the over-riding tendency in the behaviour of the sixteen Cambridge subjects interviewed. On the other hand, the pre-vocalic contexts represent environments which could exhibit vocalisation and clarification.

4.1 Results

The results are illuminating. Figure 4 shows the percentage totals for all the speakers across the different rate-oriented and speech-act type styles. Note that these figures cover all the phonological environments identified in Table 1.

```
Environment              Example

        pre-consonantal
V_#C          _____
                    real nuisance
                    awful feeling
                    mechanical things
                    apple crumble
                    football side
                    all men


        absolute-final
_ //.         _____
                    ...final.
                    ...all.
                    ...school.


        pre-vocalic
_ #V          _____

  i. C_#V            middle of
                     Marble Arch
                     crumble and
                     purple if

 ii. V_#V            while I
                     stole our
                     well it's
                     Sal on
```

Table 1: Phonological environments for variation in /l/

Velarised (dark) /l/ decreases in occurrence over the rate-dependent
modes: from around 42% in slow mode, to 20% in fast reading mode. On the other
hand, there is a parallel increase in both /l/-vocalisation and /l/-
clarification.

Consider the incidence of /l/-vocalisation in the sentence readings
first. The slow mode has around 40% vocalisation (which is just slightly
lower than the proportion of velarised /l/). Its incidence increases
slightly in the reading of sentences at a 'normal' rate of utterance, and
reaches 43% in the fast reading mode. The incidence of clear /l/ increases
from 13% in the slow reading to 25% in the fast reading.

If we compare the sentence readings with the narrative reading, the levels
of each variant in the story data are roughly comparable with those from the
fast reading mode. The similarity of the responses for each variant in the
fast reading mode and the narrative is quite striking. In particular, it
raises the question of the distinction between rate of utterance and speech
situation type in affecting the phonetic realisation of /l/. Also, it prompts
the question: what is the relative status of /l/-vocalisation and /l/-
clarification? And is it the case that they interact, and if they do, how?
Consider the distribution of the variants in the speakers' behaviour for each
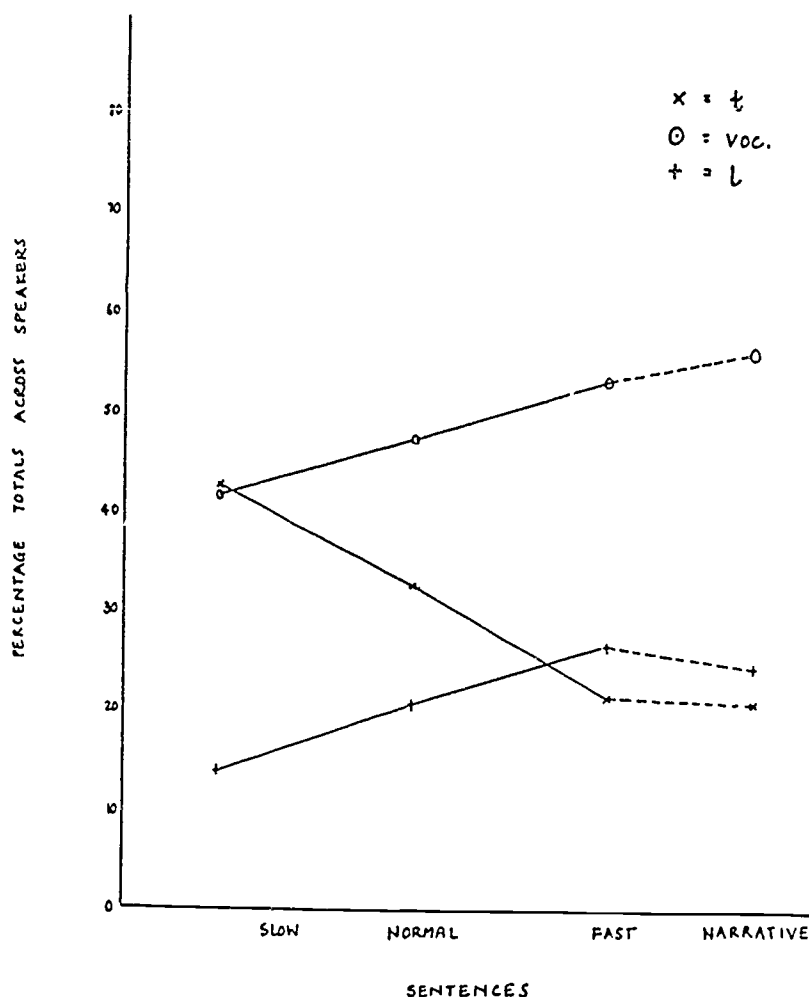phonological environment.

Figure 4: Percentage totals across speakers and styles, showing variation in the phonetic realisation of /l/.

Figure 5 shows the proportional breakdown for speakers' behaviour in each phonological environment -- in the narrative and in the fast reading for the sentences. Notice that as expected, /l/-vocalisation accounts for most of the responses in pre-consonantal and absolute-final environments (the first two columns of A and B in Figure 5). However, clear /l/ was actually produced by some speakers. For instance, in the narrative, the sequences all to and all those exhibited a clear /l/ before the dental [o:l tʉ; o:l deᵈz]. These (aberrant) pronunciations could be accounted for by suggesting that the speaker 's perception of vocalisation as a stigmatised feature produces a hypercorrect reaction. The reaction is to produce a clear /l/ when the speaker may not have velarised /l/ in his/her repertoire. The clear variant also occurred pre-pausally and sentence-finally, for example, in school//. In the sentence readings, clear /l/ occurred in the sequence all the, not as a marker of hypercorrect behaviour, but as a consequence of resyllabification where the dental had been 'deleted' as a fast speech process; thus [o:(+)lə]. It also occurred pre-pausally and sentence-finally in all//. This instance might be a part of a strategy to signal the end of a phonetic and syntactic unit (but not necessarily a turn).

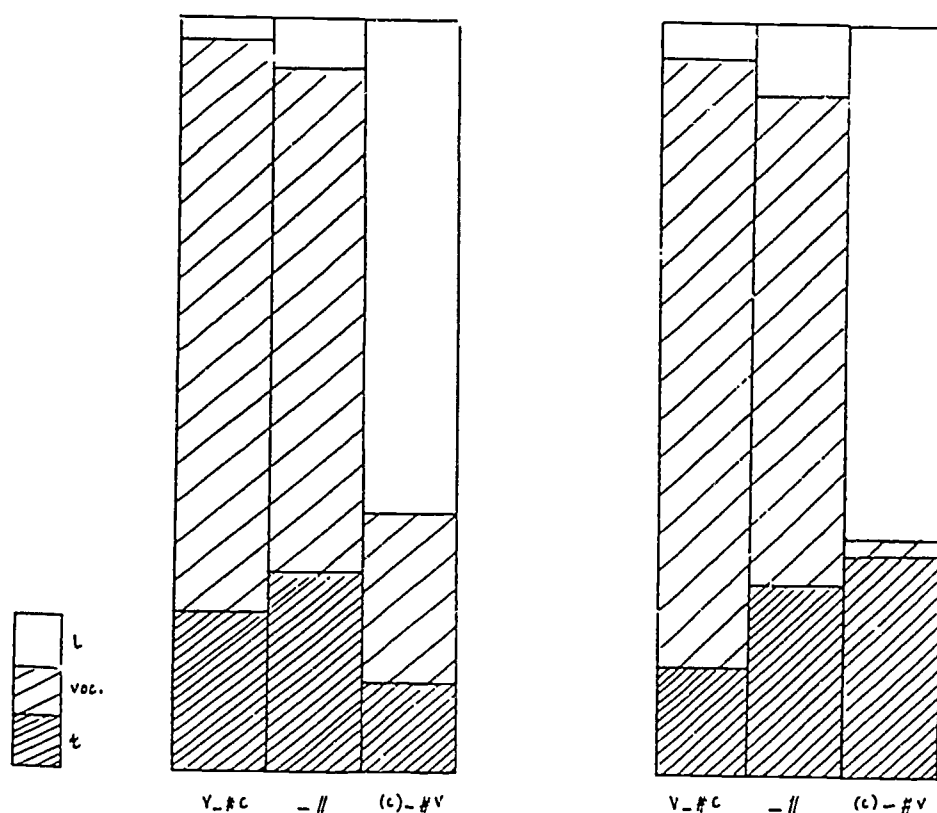A. NARRATIVE   B. SENTENCES: FAST READING

Figure 5: Distribution of /l/ variants across phonological environments.

In pre-vocalic environments, the proportion of /l/-vocalisation is much lower: 22% in the story, and only 4% in the reading mode. The environment accounting for this proportion in the story is the vocalisation of word-final /l/ in crumble and. Speakers tended to have either clear or vocalised /l/ in this context, and very rarely velarised /l/.

5. Discussion

How can we interpret the apparent similarity between the scores for the sentence reading in fast mode and the narrative? The similarity suggests an equation of fast speaking rate (often associated with 'casual' speech) with the arguably less formal, more cohesive story style. Both texts involve a reading task. However, the sentences (in the list) represent a series of short assertions on unconnected topics, so it is possible to see the production of each sentence as a distinct speech act. There is no continuity or development of topic to hold the speaker's interest, and it is arguable that the speaker focusses on the task of reading at the highest possible speed.

In contrast, the story has characters who interact using dialogue, and there is a discernible line of narrative. It is possible that speakers treat this task as a kind of performance in story-telling, and not as a simple mechanical reading task. For instance, they assign particular (appropriate) intonation patterns, and add laughter at particular points in the dialogue.

If we make a stylistic distinction between the story and the sentence readings, we can account for the column (Figure 5) showing the distribution of variants for pre-vocalic environments. In particular, /l/-vocalisation seems to be a marker of colloquial Cambridge English, but it is also weakly rate-dependent. It is a CSP which has social salience and some phonetic motivation as shown by EPG (Figure 2 above). It is established in pre-consonantal and absolute-final position, and appears to be increasing in occurrence in pre-vocalic environments (see story column in Figure 5). So it appears to be in the process of losing its sensitivity to rate, as it acquires stability in colloquial styles (as represented by the story reading. Detailed auditory analysis of the incidence of /l/-vocalisation in conversational data gathered from the same subjects is reported in Wright, in prep.).

/l/-vocalisation interacts with a linguistic phenomenon -- /l/-clarification -- in an interesting way. When speaking rate increases, /l/-vocalisation in pre-vocalic position seems to be inhibited by a strategy to link words. This is apparently a phonetic consequence of the phonological process of re-syllabification. Its effect is to maintain the alveolar lateral in word-initial position, and as this lateral is phonetically realised as clear (non-velarised) in this position, the velarised (or in the case of Cambridge speakers, vocalised) lateral is replaced. It has the consequence, then, of moving /l/ from word-final position to word-initial position of the following word:

call Andy [ko:ł aendi:] >> ca llAndy [ko: laendi]

The issue of the relative linguistic status of /l/-vocalisation and what I have termed /l/-clarification (for convenience) is one that poses questions for phonological accounts of speech. It also raises the question of the linguistic substance of a (socio) linguistic variable. That is, if dark /l/ and velarised /l/ are treated as two variants of a variable, is it not possible that clear /l/ is a variant of the same: as a consequence of the effects of the interaction of speaking rate and style on the morphophonological environment in which vocalisation/velarisation occurs?

To broach these issues more fully, we would need to question whether there is a principled basis for distinguishing between the processes described, or whether they are related processes which are variably affected by the natures of their domains of operation or application (see Wright, in prep.). The results of this experiment demonstrate that style plays a significant role in distinguishing between CSPs which are affected by rate. They also suggest strongly that CSPs functioning as fast speech strategies are influenced by style.

NOTES

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