

ACOUSTIC AND SOCIOLINGUISTIC ASPECTS
OF LENITION IN LIVERPOOL ENGLISH

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1. Introduction

This study concerns the phonological process of lenition occurring in Liverpool English, i.e. *Scouse*. In particular, we will provide an acoustic analysis of the process, taking into account also some of the classical sociolinguistic variables normally employed in linguistics.

Scouse is one of the best known accents of British English.¹ It is traditionally stigmatized, since in England the *Scouse* voice is perceived as ugly and unfriendly. The *Scouse* accent is spoken in and around Liverpool; however, in the last decades, it has been widely spread throughout Merseyside.

The base of *Scouse* has probably to be found in the Liverpool working-class accent spoken by the wave of Irish immigrants who have come to the city over long periods of time. The immigration from Ireland to Britain, and to the city of Liverpool in particular, developed early and was constant in time; starting from the Modern Age, it continued for many centuries and became very strong in the XIXth century. Historical and demographic studies have shown that in 1841,

¹Cfr. Trudgill (1984; 1986; 1990), Trudgill & Hannah (1982), Hughes & Trudgill (1996), Trudgill & Chambers (1987), Trudgill & Cheshire (1998), Wells (2000).

about a quarter of the inhabitants of Liverpool were born in Ireland.² More recently, the data from the *Census 2001* revealed that 60% of all Liverpudlians have an Irish origin.³

Historical research done on the Liverpool area⁴ has clearly shown that, in the past centuries, the Irish community in Liverpool was definitely separated not only from the English indigeneous community, but also from the other immigrants living in the city (i.e. Welsh, Scots). The differences in terms of economical means and education determined a different settlement: the Irish immigrants and their descendants settled in the poor areas near the port, while English-born people preferred the southern part of the city. It may be interesting to recall that still now *Scouseland* is the name given in slang to the part of the city including the port of Liverpool.

This separation between the two ethnic groups was so strong that we can speak of the Irish settlement in Liverpool in terms of a segregation, a sort of *ghetto* condition, determined by the poverty and ignorance of the migrants. The segregation of the Irish people, clearly expressed in terms of space, was reinforced by differences in language (*Irish English* vs. *British English*) and religion (Catholic vs. Protestant).

However, in the XXth century, especially after the Second World War, the social interactions between Irish immigrants and

² See Marotta (2006) and the references quoted there for the details relative to the demographic and historical aspects of the Irish immigration.

³ See the website www.statistics.gov.uk.

⁴ We refer the reader in particular to Pooley (1977), Davis (1991), Neal (1998) e McRaid (1999).

Liverpudlians increased in an extensive and rapid way. The more frequent contacts between the citizens belonging to the different ethnic groups had the consequence of changing the social network of the Irish people: the traditional close-knit network, which is typical of immigration contexts, became a new loose-knit social network.⁵

As a result, the distinctive features of the *Scouse* accent could spread out from the Irish people and enter the civic community. Nowadays, *Scouse* seems to be widely spread throughout Merseyside, although it remains partly stigmatized.

In Liverpool English, the term *Scouse* not only means the special accent of Liverpudlians of low social class,⁶ but also a traditional dish made with stewed meat and vegetables, normally prepared and eaten by sailors during their journeys (cf. Spiegl 2000: 16). The basic ingredients of this dish are potatoes, onions, carrots and lamb meat.

Many types of this local dish exist: *internet* sites referring to the popular traditions of Liverpool give evidence on different recipes of *Scouse*. Some of these dishes, all named *Scouse*, are particularly interesting; among these, the so-called *Blind Scouse*, which is the version without any meat. Another variety of the dish is made with leftovers, especially on the day before the salary payment (cfr. Spiegl: 2000: *ibidem*). As we can easily see, the *Scouse* is not a dish of high level or good quality; rather, it gives the impression of a popular and poor cooking style. At the same time, the ingredients recall those used

⁵ For the application of the social networks to linguistics, we refer to the classical studies by Milroy (1980; 2002), Milroy & Milroy (1985).

⁶ This meaning is normally assumed as the base for the derivated noun *Scouser*, i.e. the speaker of *Scouse*; cf. *Cambridge International Dictionary of English*, p. 1270.

in the Irish stew, once again reinforcing the idea of a strong relation between *Scouse* and the Irish people.

As far as the etymology of *Scouse* is concerned, the word is normally considered a simplification of the compound *Lobscouse*, an English form borrowed from a more ancient form *Labskaus*, belonging to a Northern Germanic variety. The inhibition of palatalization in the cluster *-sk-* was probably due to the extensive contact of British (as well as Irish) people with North Germanic dialects, which did not palatalize at the time of the Middle Ages. At the same time, the diphthong *ou* derived from *au* is an evidence of an original Scandinavian form, since the original Proto-Germanic diphthong *au* normally has different outputs in English (cf. Lass 1994).

2. Phonological features and voice quality

Although *Scouse* is marked mostly at the phonetic and prosodic levels, it also peripherally involves the lexical and morphosyntactic levels.⁷ Here, we will deal with the phonetic level only, with a brief reference to the basic phonological features which are typical of this English variety. The *Scouse* accent affects both the vowel system and the consonant system.⁸

As far as the vowel system is concerned, the most relevant aspects can be summarized as follows:

⁷ As for the other levels of linguistic analysis, we refer the reader to Shaw, Spiegl & Kelly (1966), Spiegl (2000); see also Hughes & Trudgill (1996).

⁸ Since we do not have enough room to present the global picture of *Scouse* phonology, we refer the reader to our previous work on the topic (cf. Marotta 2004).

1. the high front vowel /i/ is pronounced as long and tense in any context; for instance, even in words like *city* or *pity*;
2. the central open-mid vowel is fronted, so that words such as *her* and *hair* have the same sound;
3. the open-mid back vowel is centralized, therefore, there is homophony between words such as *luck* and *look*.

As far as the consonant system is concerned, the following aspects are observed:

1. stop consonants are lenited, especially in intervocalic position after stress;
2. interdental fricatives are pronounced as dental stops, as it normally happens in Irish English;
3. /r/ is produced as a tap, instead of an approximant, like in *RP*;
4. in the cluster /ng/ in word final position, the velar nasal is always followed by the voiced velar stop;
5. the liquid is pronounced as a *dark l* in coda as well as in the onset of a syllable.

Another strong feature that permits to identify a speaker as a *Scouser* is intonation. The most relevant aspect of *Scouse* melody is probably the rising tone at the end of declarative sentences, instead of a falling tone, like in *RP*. This *Final Rising Pattern* is common to the so-called *Urban Northern British English* (cf. Cruttenden 1994): the varieties of English spoken in Northern Ireland and Western Scotland, as well as in the cities of Birmingham, Newcastle and Liverpool do

share this melodic pattern (see Grabe & Post 2002). It is easy to observe that all these varieties have the Celtic background in common; at the same time, the above quoted cities have all been a target of immigration for a high number of Celtic populations.

An example of this kind of intonation is shown in Figure 1:

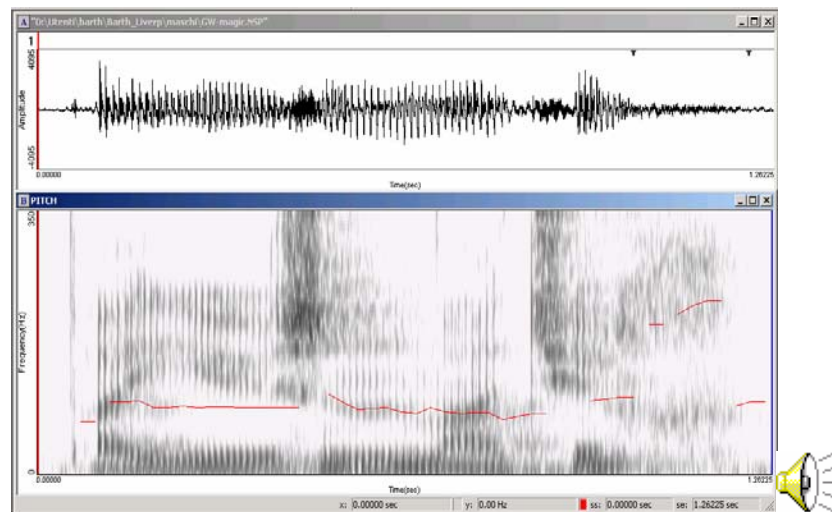


Figure 1. Waveform, spectrogram and F0 curve of the phrase *by using magic*, as produced by the subject GW (M).

However, the most relevant feature of the *Scouse* accent is probably its special phonatory and articulatory setting. Knowles (1974), up to now the most detailed study devoted to this variety of English, said that in *Scouse* the pharynx is tightened and the larynx is displaced upwards. The lower jaw is held close to the upper jaw even in the pronunciation of open vowels, while the centre of the tongue is raised and retracted with the back raised to the velum, thus leading to a

constriction in the back of the oral cavity. According to Knowles, there might be a connection between this external setting and the velarization of all consonants in *Scouse*. Another outcome of the articulatory setting is the relative immobility of the tip of the tongue, which influences the articulation of the alveolar sounds.

A further important articulatory feature concerns the relaxation of the lower lip and of the tongue; as a consequence, during the articulation of stop consonants no complete closure is possible, so that some air can escape from the mouth. It is noteworthy to underline that there is an apparent contrast between this feature of lax voice and the uneconomical use of the velo-pharyngeal mechanism, since a greater amount of energy is needed in the production of speech sounds due to the tightening of the pharynx.

According to Knowles (1974), this particular articulatory setting (close jaw, velarization and constriction of the pharynx) might have an effect on voice quality. The *Scouse* voice is often described as adenoidal, i.e. denasalized due to partial obstruction of the nasal cavities (cf. Laver 1980). Saying *Scouse* voice quality is nasal or adenoidal means that in this accent the balance between the oral and the nasal resonance is made at a different point and in an abnormal manner, in the sense that there is a greater proportion of nasal resonance than in other varieties of English.

Barbera & Barth (in press) have recently reanalyzed the articulatory setting typical of *Scouse*, arguing that the constriction in the back of the oral tract might force also the velum in an intermediate

position between the one usually taken for oral sounds and the one for nasal sounds. In this way, the air flow through the nasal cavities is partly obstructed, thus reducing the normal nasal resonance and at the same time causing vibration of the velum. The result seems to be velopharyngeal friction recognizable also spectroacoustically. Therefore, the Authors propose a definition of the *Scouse* voice as hyponasalized rather than nasal or adenoidal.

3. *The process of lenition*

The lenition occurring in Liverpool English may be described as follows: voiceless plosive phonemes are produced as fricatives or as affricates, that is as segments with a very short phase of occlusion followed by a long interval of friction during the release of the consonant. The process normally occurs in intervocalic position word-internally, but it may be present in other contexts, too. According to the scanty literature on the topic,⁹ not all plosives are affected by lenition with the same degree and frequency: /k/, /t/ and /d/ are the primary targets; /b/ and /g/ normally remain as plain stops, whereas /p/ may be only occasionally lenited. Moreover, /t/ shows the highest number of outputs, going from the affricates to the fricatives, from the voiceless glottal fricative to the approximant.

A possible output of lenition for /t/ is the so-called *slit fricative*, i.e. a special sound which is produced without contact between the

⁹ Cf. Knowles (1974; 1978), Honeybone (2001), Sangster (2001), Watson (2002); Marotta (2004).

tongue and the alveolar ridge, since the tongue shape is flat cross-sectionally; in this way, a broad fricative channel is created in the vocal tract. The symbol used for this slit fricative is [θ̥], that is the symbol of the voiceless interdental fricative as base symbol together with the diacritic for a alveolar place of articulation taken from the extended IPA (cf. Pandeli *et al.* 1997; Honeybone 2001).

In a previous study (cf. Marotta 2004), we have systematically analyzed the behaviour of the voiceless plosives in different phonological contexts by using data taken from spontaneous and read corpus relative to four native speakers (two males and two females), of different age and education. The acoustic analysis carried out not only confirmed the occurrence of the lenition process, even in young and educated people, but also showed its spreading out of the canonical intervocalic context. Fricatives and affricates were found as possible outcomes of the plosive phonemes, especially for the coronal place of articulation.

The lenition taking place in Liverpool English has to be considered as a weakening process. A way to indicate how strong segments lenite to become weaker is to set up a scale of weakening where the different outcomes are located at different steps, corresponding to the different degrees of weakening. With reference to Lass (1984: 178) and Honeybone (2001), *Scouse* lenition can be said to belong to the opening type of weakening, that means that the resistance to the airflow decreases, but no change in voicing occurs. The trajectory of the process can be represented as in the following

scheme, where the lenition of the velar stop is taken as reference:

0	1	2	3	4
<i>stop</i>	<i>affricate</i>	<i>fricative</i>	<i>approximant</i>	<i>elision</i>
k	kx	x	h	Ø

How far lenition proceeds along this trajectory depends on the phonological context in which the stop occurs: as it is well known, weaker outputs are favoured in intervocalic position within an unstressed syllable, whereas post-pausal and post-consonantal contexts tend to preserve stronger segments.

In the present study, we will present an experimental analysis of the lenition occurring in Liverpool English based on a *corpus* of spontaneous speech. Our primary goal is the identification and classification of the different lenited allophones of the stops on the ground of specific acoustic parameters; we will pay special attention to segment duration in order to set up a scale of length related with the strength hierarchy. In the second section, dedicated to the sociolinguistic aspects of the phonological process, we will concentrate on the differences between the male and the female speakers, looking for a possible correlation between the degree of lenition and the typical *Scouse* intonation.

For both goals, we will compare the data collected with the ones presented in the previous literature on the topic, with special reference to Marotta (2004), the first systematic acoustic analysis carried out on *Scouse* lenition carried out in Italy.

4. Acoustic analysis

4.1 Subjects

The present study was based on the analysis of six subjects of Liverpool English, judged as representative speakers of this accent. Two sociolinguistic variables guided our choice of the speakers: their age and their gender. Since the data set is relatively small, we decided to choose only adolescents of approximately the same age in order to permit comparison of the results without having to pay attention to many variables. Another social factor that affects variation within dialects seems to be the gender of a speaker. For this reason we decided to analyze the speech of both males and females.

The subjects, who at the moment of the recording were between sixteen and seventeen years old, were all born and have grown up in Liverpool. Three of them were male (GW, NS, PH) and three were female (LL, LM, DS). The recordings of five of the six speakers (GW, NS, PH, LM, DS) were taken from the IViE *corpus*¹⁰, whereas speaker LL was recorded in Viareggio (Lucca, Italy) in August 2004.

4.2 The corpus

For this study different types of speech were recorded and analyzed: spontaneous speech for all speakers; for subject LL also a

¹⁰ The abbreviation IViE stands for *Intonational Variation in English*, a project carried out by Esther Grabe, Brechtje Post and Francis Nolan in 2001. The IViE *corpus* is available on-line at the website www.phon.ox.ac.uk.

reading *corpus*. The section of spontaneous speech for speaker LL was obtained asking her questions about informal topics such as holidays, food or culture, whereas the other subjects had to re-tell the fairytale of *Cinderella*, which they had previously read.

As regards the reading task, the obstruents under investigation were inserted into a set of sentences and into a short story created *ad hoc*. In this way, the examiner had the possibility to put the sounds in the different phonological contexts of interest for the analysis without permitting the speaker to focus on the items under investigation. Every single sentence as well as the whole text were read twice by subject LL.

The contexts examined were the following:

- Intervocalic [V_V]
- Pre-pausal [_##]
- Post-pausal [##_]
- Pre-consonantal [_C]
- Post-consonantal [C_]

All informants were recorded in places that actually were not ideal (classroom, room of a flat) with professional instruments, though. However, the recordings were of rather good quality, presenting very little background noise, so acoustic analysis was possible.

In Table 1, we present the number of occurrences of the phonemes.

	[V_V]	[_##]	[##_]	[_C]	[C_]
/t/	127	34	5	36	59
/k/	72	12	7	33	15
/p/	62	1	6	7	8
/d/	68	33	5	49	21

Table 1: Number of occurrences of the phonemes analysed in the different contexts.

4.2 Methodology

The acoustic analysis was carried out in the Laboratory of Phonetics of the Department of Linguistics, University of Pisa, using the software *Multispeech Signal Analysis Workstation. Model 3700, Version 2.3* by *Kay Elemetrics*. The sampling was done with a sample size of 16 bits and at a sample rate of 22,050 Hz for speaker LL, while the rate was 16,000 Hz for the speakers taken from the IViE *corpus*. Parameters for the analysis of the spectrograms were the following:

- *Analysis size:* 100 points (males); 125 points (females)
- *Window weighting:* Hamming
- *Pre-emphasis level:* 0.800

The aim of the qualitative analysis was the identification and classification of the possible outputs of the stop phonemes, whereas the quantitative analysis was concerned with the duration of these

segments. All data were then inserted in a dedicated database *Windows Access*.

It is well known that the step of dividing a sequence of speech into its single segments is rather problematic. As is highlighted also by Ladefoged (2003: 103) “*even when using spectrograms in conjunction with waveforms there will be problems, as many segments do not have clear beginnings and ends*”. It is therefore vital to choose coherent criteria for the measurements. For this reason we will outline the criteria of segmentation adopted in the present study. The division and measurement of segments was carried out using spectrograms in conjunction with waveforms. The two windows were ganged together so that a cursor line appeared at the same time point in both of them, thus permitting the acoustic representation of the segments both by their spectrograms and by their waveforms. The criteria used in the classification may be summarized as follows:

We considered a segment as:

- a) a *stop* if the VOT was less than half the duration of the entire segment;
- b) an *aspirated stop* if the VOT was equal or more than half the duration of the entire segment and if there was a visible burst in the spectrogram, followed by friction noise;
- c) an *affricate* if the VOT was equal or more than half the duration of the entire segment, but the burst was absent in the spectrogram and the friction noise had the characteristics of a spirant;

d) a *fricative* if the silence corresponding to the occlusion in the vocal tract was absent.

According to the distribution of energy and intensity in the spectrogram we identified different types of fricatives:

- with reference to the phoneme /t/, the distinction between the allophones [θ] and [s] was based on the higher frequency and intensity of the sibilant; the same criterion was used for the distinction between the corresponding affricates [t^θ] and [t^s]¹¹;
- for the phoneme /k/, the fricative allophones [x] and [ç] could be distinguished due to the lower frequency of the former and the lower intensity of the latter;
- with reference to the phoneme /p/, the distinction between the fricatives [ϕ] and [f] was based on the lower frequency and intensity in the spectrogram of the former allophone.

5. Results

In agreement with previous studies on the topic, no case of lenition was found for the stops /b/ and /g/. Therefore, these consonants were excluded from the subsequent acoustic analysis.

Honeybone (2001) reports that in a small group of monosyllabic function words with short vowels even elision of the voiceless

¹¹ As regards acoustic perception, the sibilant allophone is more similar to the phoneme /s/, while the slit allophone is similar to the interdental fricative /θ/.

alveolar stop can occasionally occur. This phenomenon, the conditions of which are described in detail by Watson (2002), was detected also in our data. However, since the number of occurrences of deletion was rather low and at the same time our main interest was the classification of the allophones produced by lenition, we did not take these cases of elision into account. Honeybone (2001) and Watson (2002) mention another possible realization of /t/ as a flap in word-final position when it is followed by a vowel. According to these Authors this output is limited to certain lexical items and constrained by their phonological environment. No case of flapping occurred in our data.

We now proceed with the presentation of our results phoneme by phoneme.

5.1 The phoneme /t/

Our data confirm that the voiceless alveolar stop is the most affected one by lenition in Liverpool English. This phoneme presents also a wider range of possible routes in terms of lenition compared to other segments: in Liverpool English, /t/ can be lenited along two lenition trajectories (cf. § 3 and *supra*): [t]→[t⁰]→[θ] or [t]→[t^s]→[s]. The distinction between the sibilant allophones [t^s] and [s] on the one hand and the slit variants [t⁰] and [θ] on the other hand was based on the higher frequency and intensity by which the former are characterized (see § 4.3). 69% of the 261 occurrences of /t/ analyzed

presented lenition. For this phoneme the process resulted particularly frequent in the pre-pausal context (87%); high percentages of lenition were also found intervocalically and in the post-consonantal context (76% and 81%, respectively), in particular in unstressed syllable. Among the great variety of allophones, the most frequent lenited allophones, which showed a wide distribution in all contexts examined, were the fricatives [ʃ] (27%) and [s] (17%). Lenition to the affricates [tʃ] and [tʰs], on the other hand, seems to be in certain way restricted to some of the contexts, since these outputs appeared systematically mainly in the post-pausal ([tʃ] 35%; [tʰs] 10%) and in the post-consonantal context (21% and 10%, respectively), while they were nearly absent intervocalically and in the pre-pausal position .

If we compare Figures 2 and 3, we clearly note the higher frequency and intensity of the sibilant allophone, visible in particular in the spectrogram from the concentration of energy in the upper part of the spectrum and the darker colour.



Figure 2: Waveform and spectrogram of the phrase *telling her about*; subject LL (F); post-pausal /t/ is realized as [tʰ].

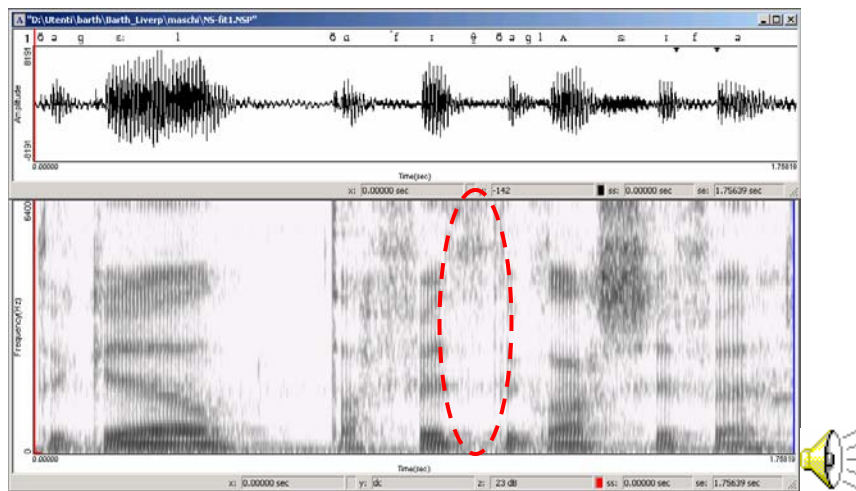


Figure 3: Waveform and spectrogram of the phrase *the girl that fit the glass slipper*; subject NS (M); pre-consonantal /t/ is realized as [θ].

5.2 The phoneme /k/

After /t/, the voiceless velar stop is the phoneme which is most frequently affected by the lenition in Liverpool English. However, there are clear differences compared to the alveolar. The lenition trajectory for /k/ comprises two stages only; from the stop to the affricate and then to the fricative: [k] → [k^x] → [x], or [ç]. The fricative can be realized as velar or palatal, depending on the preceding vowel. We did not detect any case of elision of /k/ in our analysis.

20% of the 139 occurrences of /k/ which were analyzed presented lenition. It is noteworthy that in the pre-pausal context 43% of all segments were affected by the process, while this percentage was about 18% for the other contexts investigated. Not surprisingly, lenition was nearly completely absent in the post-pausal context, even though Honeybone (2001: 242) says that in this context “*the typical lenition seems to be stage 1 affricates [...] and stage 2 fricatives can occasionally occur*”.

As regards the allophones, their choice seems to depend on the position in the syllable occupied by the phoneme. In onset position of a stressed syllable /k/ was normally realized as aspirated stop [k^h], whereas in unstressed syllable the occurring allophone was either the plain stop [k] or one of the lenited allophones [k^x], [x] or [ç]. Lenition to a fricative, that means one step further down the lenition trajectory, was, however, more frequent than lenition to an affricate.

In Figure 4, we show an instance of a voiceless palatal fricative allophone from /k/, whereas in Figure 5 an instance of a velar affricate is presented.

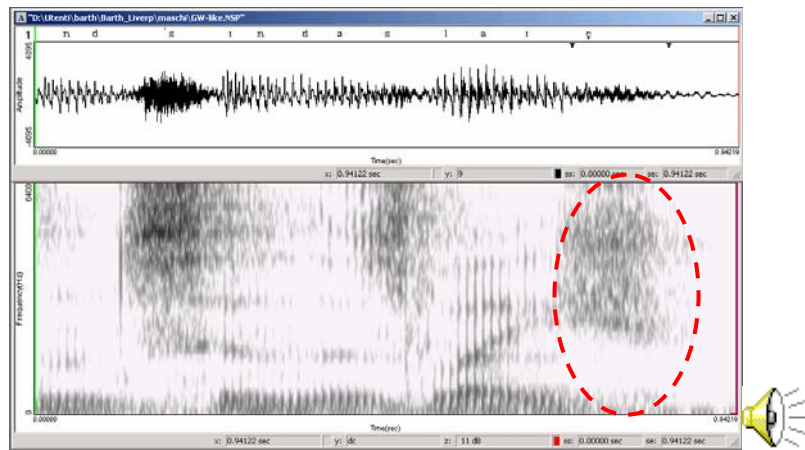


Figure 4: Waveform and spectrogram of the phrase *and Cinders is like*; subject GW (M); pre-pausal /k/ is realized as [ç].

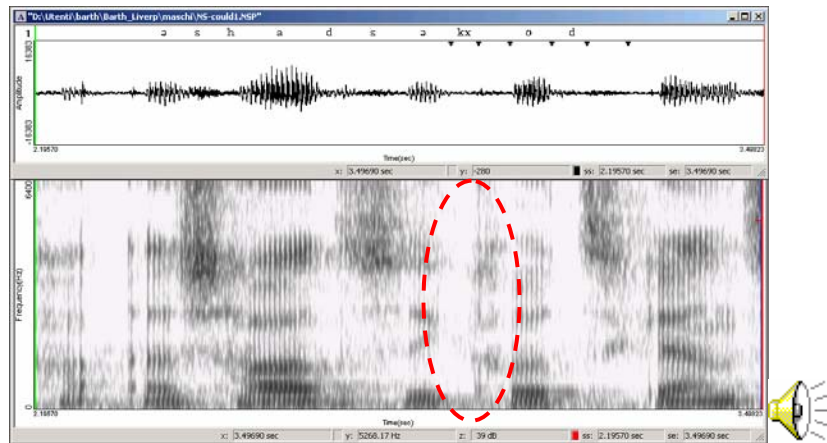


Figure 5: Waveform and spectrogram of the phrase *as hard as they could*; subject NS (M); intervocalic /k/ is realized as [kʰ].

5.3 *The phoneme /p/*

The bilabial stop seems to be the least affected one of the voiceless stops by the lenition process occurring in *Scouse*. Previous work on this accent often only mentions that /p/ can occasionally be lenited to [ɸ] in word-final or intervocalic environment (cf. Honeybone 2001; Marotta 2004). One reason might be the lesser perceptive salience of [ɸ] as well as the lesser frequency of /p/ in the English lexicon.

Our data presented eighty-four occurrences of the voiceless bilabial stop, mainly in the intervocalic context. Lenition to [ɸ] was found in 15% of all occurrences. It should be highlighted that the process affected nearly exclusively segments in the intervocalic context in unstressed syllable. So, this seems to be a relevant prosodic constraint for lenition of this phoneme.

In only one single case the output of lenition of /p/ was the labiodental fricative [f]. Since the places of articulation are different for the phonemes /p/ (bilabial) and /f/ (labiodental), the canonical lenited allophone of /p/ should be [ɸ], which shares the point of articulation with /p/. We give an example of the fricative [ɸ] from /p/ in Figure 6.

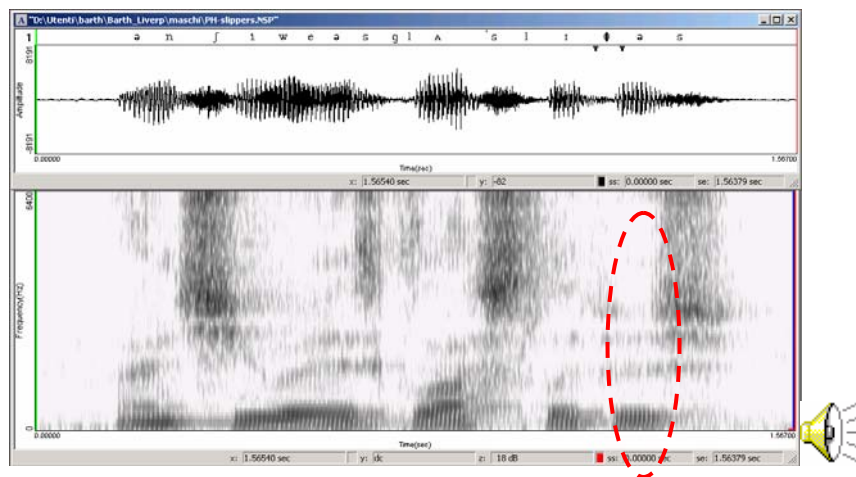


Figure 6: Waveform and spectrogram of the phrase *and she wears glass slippers*, subject PH (M); intervocalic /p/ is realized as [ϕ].

The spectrum of [ϕ] is similar to that of [f], showing signs of friction over a wide range of low frequencies; the bilabial allophone is however characterized by a lower intensity.

5.4 The phoneme /d/

Lenition in Liverpool English seems to affect voiced stops less frequently. As far as the voiced alveolar stop is concerned, Honeybone (2001: 236) only mentions that “*the segment is often quite noticeably affricated or spirantized in normal speech*”. In her study, Sangster (2001) investigates the weakening of the alveolar stops, but does suggest neither any real patterning of the process of this segment nor any precise description of its acoustic parameters.

Our analysis showed clearly that for /d/, too, different lenited outputs are possible. We basically perceived a fricative and an affricate. Moreover, also the spectrograms of these sounds were very similar to those of [t^h] and [θ], although showing a lower intensity, a shorter duration and, of course, the typical voice bar due to the voiced feature. With reference to the transcription already used for the voiceless counterparts, we therefore propose to employ the same notation for the voiced outputs of /d/, where friction is present; therefore, [ð̥] for the slit fricative and [d̥] for the affricate.

For these lenited allophones, transcribed as [d̥] and [ð̥], none of the investigated contexts was clearly lenition-promoting, since the process occurred in all contexts with nearly the same frequency. The data showed no preference of the affricate or the fricative allophone. However, it should be underlined that the vast majority of lenition of the 176 occurrences analyzed was found in the female speakers.

In the spectrum in Figure 7, the affricate [d̥] is characterized by a phase of absence of noise, but occurrence of the voice bar, corresponding to the occlusion, followed by friction noise of low intensity in the upper part of the spectrum, corresponding to the fricative phase. Figure 8 shows the spectrum of the fricative allophone [ð̥], which is nearly identical to that of the affricate, being the only difference the absence of the occlusive part.

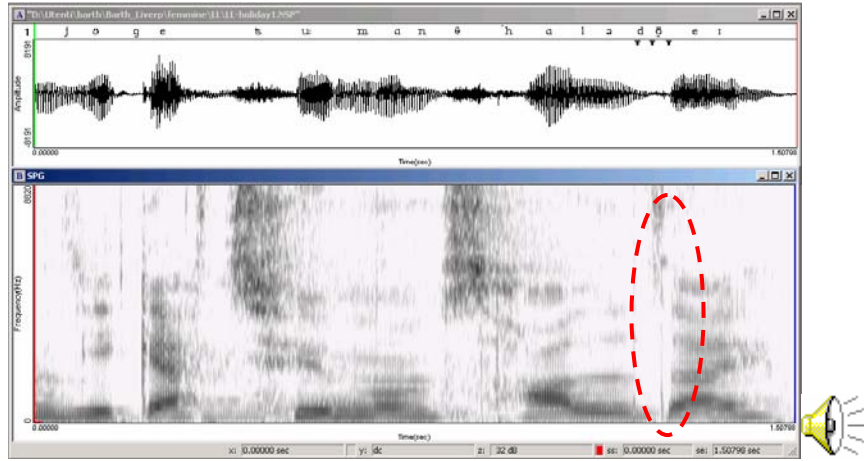


Figure 7: Waveform and spectrogram of the phrase *you get two months holiday*; subject LL (F); intervocalic /d/ is realized as [d^h].

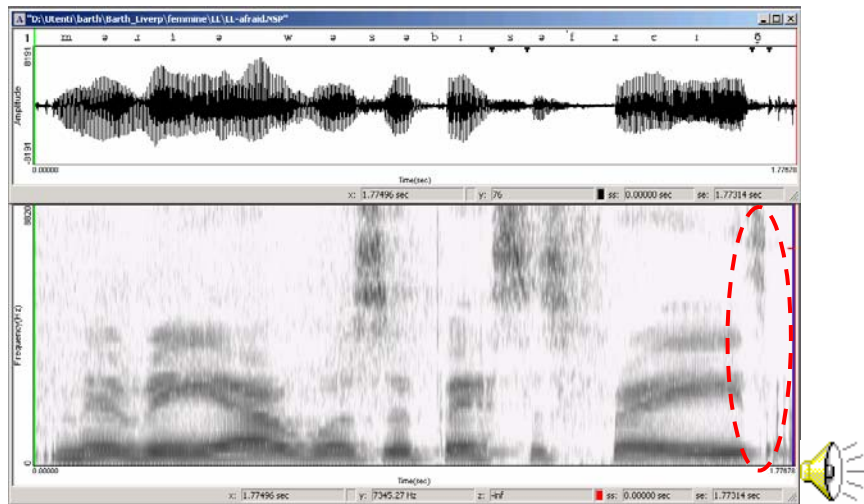


Figure 8: Waveform and spectrogram of the phrase *Maria was a bit afraid*; subject LL (F); pre-pausal /d/ is realized as [d̤].

5.5 Scale of weakening and segment duration

In the second part of our acoustic study we were concerned with the duration of the lenited allophones found for each single stop. Table 2 shows the results of our measurements.

/t/	[t ^s]	[t ^h]	[t ^h]	[s]	[θ]
msec.	145	126	109	103	92
σ	18	19	21	20	18
/d/	[d ^h]	[ð]			
msec	88	49			
σ	14	15			
/k/	[k ^h]	[x]	[k ^x]		
msec	120	104	93		
σ	22	19	9		
/p/	[p ^h]	[ϕ]			
msec	123	79			
σ	20	12			

Table 2: Duration and standard deviation of the allophones in the *corpus*.

From this analysis, the strength of lenition seems to be inversely proportional to the duration of the segment. This is to say, the further down it appears in the lenition trajectory and hence the weaker it is, the shorter also its duration.

6. *Sociolinguistic analysis*

In the second part of our study we were concerned with the sociolinguistic aspects of lenition in *Scouse*. A point of particular interest were possible differences between the two genders as far as the frequency of this phenomenon is concerned.

In the past, linguists and anthropologists often reported differences in the use of language related to speakers' gender, but it was only about thirty years ago that the first in-depth studies of these differences appeared. Sociolinguists often think of gender as an opposition of two categories: male and female. However, as argues Eckert (1989), the variation based on gender may not always be adequately accounted for in terms of such a binary opposition. On the contrary, gender differences in a society where women have called traditional gender roles into question are rather complex. So, a logical assumption may be that there is no simple relation between gender and linguistic variation.

A widespread belief among sociolinguists is that women tend to use fewer stigmatized and non-standard variants than do men. Therefore, they consider speech communities to be marked by consistent linguistic correlations with gender, which are in part even predictable. The reason for this linguistic behaviour is normally seen in women's stronger status consciousness, what makes them more aware of linguistic variables.

6.1 Lenition in relation to gender

In order to analyze the relation between speakers' sex and the occurrences of lenition in their speech, we calculated the percentage of lenited segments of the different stops for each single speaker. The results are presented in Table 3:

	Males			Females		
	GW	NS	PH	LL	DS	LM
/t/	64%	71%	86%	83%	93%	39%
/k/	50%	55%	29%	10%	23%	16%
/p/	0%	11%	36%	6%	13%	42%
/d/	10%	5%	11%	16%	25%	11%

Table 3: Percentages of lenition for phonemes and subjects.

A number of interesting aspects emerge from Table 3. First of all, male speakers lenited the voiceless stops more frequently. As we have seen above in § 1, lenition is partly stigmatized in Liverpool English. On the other hand, for males lenition of /d/ was rather rare, while it was much more frequent among the female subjects. Moreover, the females used a greater variety of allophones of the different phonemes in their speech. So, these data seem to confirm Labov's theory (1984) according to which females are more conservative in their use of stable variables, but less conservative in their use of changes in progress. He resolved this apparent paradox arguing that women try to

curtail the use of stable variables that are stigmatized in the larger community, while, at the same time, women lead in changes that are still limited to the local community and which carry local prestige. Women's speech is, therefore, said to be driven by prestige norms. This picture of females as promoters of innovation might be the explanation for the fact that the percentage of lenition for /d/ was higher for the female speakers. Lenition of this phoneme is a new, not already stigmatized process which seems to be diffused by the females. It is, however, important to underline that high percentages of lenition of voiceless stops, especially /t/, were found also in some female subjects. The percentage of lenition of these stops was sometimes even higher than that of the males (cf. Table 3). This seems to indicate the wide diffusion of the phenomenon across gender boundaries.

We have already mentioned that in our data the females used a greater variety of allophones than their male peers. An interesting explanation for this observation is proposed by Eckert (1989). According to her, throughout their lives, men and women are unlikely to compete with each other for what regards social status since this variable is perceived in relation to members of the same sex rather than the opposite. Eckert argues that women's prestige orientation is the outcome of their powerless position in society, which leads them to signal status linguistically. If this is true, it should be possible to find an expression of this attempt to create authority in women's phonological variables more than in males. This effect might be

reinforced by the age of our subjects. Especially during adolescence girls realize that one relevant way to gain authority and influence is through development of certain linguistic strategies, the essential function of which is to mark group membership. This is partly true also for boys, but unlike females, they have other ways of signalling social status and group membership, which leads to less variation in their speech.

6.2 Lenition in relation with intonation

As we have already seen above (cf. § 2), Liverpool English is also characterized by a typical intonation. This particular intonation was another point of interest in our sociolinguistic analysis. We investigated a possible correlation between the typical *Scouse* intonation and lenition. Our basic question was: does the presence of the marked *Scouse* intonation implicate a higher percentage of lenition in a subject's speech?

The classification of a speaker as having a "strong" or "weak" *Scouse* intonation was based on purely auditory perception, with some cursory check on the F0 curve.

As far as the male group is concerned, we observed that the percentage of lenited segments was proportional to the occurrence of the *Scouse* intonation: the stronger the *Scouse* intonation, the more frequent the lenition. None of the female subjects, on the other hand, presented the *Scouse* intonation, in agreement with what described in Marotta (2004). However, as we have seen in Table 3, the percentages

of lenition for the same phoneme were sometimes even higher for the females than for the males. We therefore argue that the correlation between lenition and *Scouse* intonation is one-way. This is to say that the presence of this intonation implicates a certain degree of lenition, whereas the opposite is not true, i.e. the occurrence of lenition in a subject's speech does not implicate the presence of the typical *Scouse* intonation.

7 Conclusions

The goal of this article was to contribute to the understanding of the lenition of stops in Liverpool English. Our data confirm that lenition of plosives is a widespread phenomenon in *Scouse*. As was claimed also in previous work on this subject (cf. Knowles 1974, Honeybone 2001, Sangster 2001, Watson 2002, Marotta 2004), the process affects mainly the voiceless alveolar and velar stops, leading to an audible affrication or frication of these phonemes. In our analysis we noticed, however, that also the voiceless bilabial and the voiced alveolar stop undergo lenition more than occasionally, although the process was clearly less frequent for these phonemes. We observed that the frequency of lenition decreased gradually passing from /t/ over /k/ and /p/ to /d/.

The phoneme lenited most frequently by all speakers was the voiceless alveolar /t/, presenting also the greatest variety of possible allophones: [t], [t^h], [t^s], [t^ɸ], [s], [θ]. The process occurred in all

environments investigated, but was most frequent in intervocalic and pre-pausal position in unstressed syllable.

Also the data for /k/ confirmed the description of this segment as frequently affected by the lenition process. The number of allophones produced by the speakers was four: [k], [k^x], [x] and [ç], occurring mainly in the intervocalic and in the pre-pausal environment in unstressed position.

The prosodic constraint (i.e. no stress) resulted as *condicio sine qua non* for lenition of /p/. On the contrary, there seems to be no clearly lenition-promoting context for the voiced alveolar /d/. Furthermore, this phoneme seems to have a lenition trajectory similar to the one of its voiceless counterpart. Therefore, we suggested a transcription of the lenited allophones of /d/ as [d^h] and [ð], based on the argumentation of Pandeli *et al.* (1997) for *slit-t*.

It was not surprising to find the greatest variety of allophones for /t/ and /d/, since phonemes with a coronal place of articulation are the ones most frequently subject to lenition, according to the so-called coronal syndrome (cf. Kenstowicz 1994: 516).

The generally lenition-promoting character of the intervocalic context was confirmed by the data in our analysis. Finally, the occurrence of the segment in unstressed syllables seems to increase the probability of lenition.

As regards the sociolinguistic analysis, we observed that the frequency of lenition of the voiceless stops /t/ and /k/ was higher for

the male subjects, while it was nearly equally distributed between the two genders as far as the phoneme /p/ is concerned. However, the most important fact emerging from our data is that females lenited the voiced alveolar /d/ clearly more often compared to their male peers. A possible explanation for these results might be the stigmatization of lenited /t/ and /k/, leading to curtailing of the process by the more status-conscious female speakers. These subjects, on the other hand, lead in the diffusion of the new, not already stigmatized lenition of /d/. Following this argumentation, the other voiceless stop /p/ could hence be seen as an intermediate stage, with its lenition being less stigmatized than that of /t/ and /k/, but still more stigmatized than that of /d/.

The rather high percentages of lenition occurring in the speech of the secondary school students contemplated in our analysis could lead to the conclusion that *Scouse* cannot be considered a working class accent any more. Rather, it has spread to other social classes, having lost part of its stigmatized character.

Considering our findings, the final question is: is *Scouse* spreading in Liverpool? For various reasons the answer seems to be yes. An important point is that young people show more lenition than adults. Another fact in favour of this thesis is, as we observed above, that the phoneme /d/ is only recently systematically affected by the process. From the data here discussed, as well as from those presented in

Marotta (2004), young females with a loose-knit network seem to strongly promote this innovation.

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** Although the paper has been conceived and developed by both Authors, for academic reasons, the responsibilities should be divided as follows: G. Marotta: § 1-2-3-7; M. Barth: § 4-5-6.*

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