Sociolinguistic variation in a second language: the influence of local accent on the pronunciation of non-native English speakers living in Manchester

A thesis submitted to the University of Manchester for the degree of Doctor of Philosophy in the Faculty of Humanities

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Rob Drummond

School of Languages, Linguistics and Cultures

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List of abbreviations

L1	First language
L2	Second language
LoE	Level of English
LOR	Length of residence
LOR (m)	Length of residence in months
MGT	Matched guise test
NNS	Non-native speaker
NS	Native speaker
NBrEng	Northern British English
SSBrEng	Standard Southern British English
SLM	Speech Learning Model

Attitudinal factors

ATT	Attitude towards Manchester
AW	Awareness of a Manchester accent
CHA	Desire to lose one's Polish accent and sound like a NS (change)
MOT	Motivation to improve pronunciation

Abstract

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This study is an investigation into sociolinguistic variation in a second language. More specifically, it is an investigation into the extent to which speakers of English as a second language acquire particular features of the variety of English they are exposed to. The speakers in question are Polish migrants, and the variety of English is that found in Manchester, a city in the North West of England.

The research uses data gathered from 41 participants who have been in Manchester for various lengths of time and who came to the UK for a wide range of reasons. The aim was to explore the extent to which local accent features are acquired by second language English speakers, and the linguistic and social factors which influence this acquisition.

Methodologically, the research draws on practices from variationist sociolinguistics, but by using them in a second language context, the study has the additional aim of developing the link between these two areas of study.

Four linguistic features were identified, on the basis of them each exhibiting local variants that differ from any pedagogical model of English the speakers will have been exposed to in Poland. All four demonstrated some degree of change towards the local variants in the speech of many of the participants, but to greatly differing degrees. Multiple regression analyses helped to determine which factors might be influencing the patterns of variation, with the social constraints of length of residence, level of English, gender, attitude, and identity among those believed to be playing a part.

The thesis ends with a discussion exploring the implications of the findings in terms of existing and future research, and looks at how they might usefully be applied to situations outside that of academic linguistics.

Declaration

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

Copyright statement

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1: Introduction

This study is an exploration into sociolinguistic variation in a second language. More specifically, it is an exploration into the extent to which speakers of English as a second language acquire particular features of the variety of English they are exposed to. The speakers in question are Polish migrants to the UK, and the variety of English is that of Manchester, a post-industrial city in the North West of England. The features being investigated comprise a mixture of those specific to the area, and those that can be found across the UK. The term 'local accent' therefore refers to the realization of these features in the speech of the people of Manchester, with the understanding that similar realizations can, to varying degrees, be found in a wider geographical area. Crucially, however, all the features that are discussed exhibit local variants that differ from those found in any standard pedagogical model of English pronunciation.

The study was designed to address the following research questions:

1. To what extent do non-native speakers of English[1] acquire features of the local native-speaker accent in their own speech?
2. For those features which are variable for native-speakers, to what extent do non-native speakers acquire similar patterns of variation?
3. What factors (social and linguistic) influence the degree of both these types of acquisition?

The structure of the thesis is as follows. The remainder of this introduction provides a brief history of Manchester, including some background information on the established Polish community in the city. It ends with a discussion about the more recent wave of Polish migration to the UK following the EU expansion of 2004. The following literature review covers the various areas of linguistics which inform the present study and, by highlighting links between them, creates a viable context for the research. This is followed by a section detailing the four linguistic features under investigation: variation in the STRUT vowel, glottal variation in /t/, (ing) variation, and h-dropping. The methodology chapter describes all the procedures involved in the research, from

[1] The author is aware of issues surrounding the use of the terms 'native' and 'non-native' speakers of English, especially in the field of TESOL (e.g. Higgins 2003). However, as the focus of the research is so narrow in this respect, it was felt that these were the terms that best described the context.

participant selection, to data collection, to statistical analysis. This is then followed by the main body of the thesis: the results and analysis of the empirical research. Four individual chapters represent the four features, with each containing a results and a discussion section, the latter exploring how the results relate to existing knowledge. The style chapter then compares the findings from the different data elicitation tasks, taking each of the features in turn where relevant. In addition to focusing on the STRUT vowel in particular, there is also a section which explores the production of other vowels in order to assess the degree of influence from the first language; this is done against a backdrop of an existing theoretical model of second language phonological acquisition. There then follows a separate section for the results of the Matched Guise Test, which was used to determine whether the participants could identify differences between accents of English. The final results chapter reports on the speech of a single speaker who falls outside the criteria set for participant selection, but who provides an insight into longer term changes in the speech of Polish migrants. The discussion chapter highlights the most relevant findings from throughout the study and demonstrates how they might be applied either to further research or to real world issues. Finally, the conclusion examines the extent to which the research questions outlined above have been answered.

1.1 The history of Manchester[2]

Manchester is a city in the North West of England, UK. The city itself has a population of 483,800, and the metropolitan area of which it is a part, the county of Greater Manchester, has a population of 2,600,100 (Office for National Statistics 2010). Manchester's history is closely intertwined with that of the Industrial Revolution, the period of immense development between 1780 and 1850 in Britain. During this period Manchester grew from the 'boom town of the 1790s' to the 'massive urban sprawl of the 1840s, the first city of the industrial revolution' (Kidd 2006:28). The city became known throughout the world as a centre for the manufacture of textiles and for the trade of cotton goods. This rapidly developing textile industry was itself dependent on advances in machine technology, a fact that put Manchester at the centre of the revolution in engineering in addition to that of textiles (Kidd 2006:23). The result of all this

[2] Many of the details for this section are taken from Alan Kidd's authoritative history of the city. Readers are advised to follow up any interest in the history of Manchester by consulting Kidd (2006).

development in such a short space of time was a powerful, energetic city, transformed both economically and socially with a global reputation. Manchester entered the second half of the nineteenth century as 'an economic marvel in an age of great cities' (Kidd 2006:29).

However, the period from 1850 saw Manchester's fortunes decline as other British cities caught up with its level of development. Socially too there were serious problems, stemming from the rapid growth in population without the required planning or infrastructure. This rapid growth included a significant number of migrants from overseas, including a considerable number of Eastern European Jews. Interestingly, the existing Jewish community, who were an accepted part of Manchester's professional class, did not welcome the influx of generally poor, illiterate Jews on this scale. They feared that their existence in Manchester would destroy their own hard-earned status as respectable citizens of the city. This is particularly interesting when considered in relation to the recent wave of migration from Eastern Europe. On speaking to members of the established Polish community in Manchester recently, it became clear that there was a level of unease amongst some older residents as to the danger of their good name in the community being damaged by the reputation (real or imagined) of the new arrivals.

The decline in the cotton industry in the early 20th century hit the North West of England hard, although Manchester itself, having built up a viable engineering industry in Trafford Park, was not the worst affected. The Second World War helped to maintain the city's importance in terms of engineering, however, this period was to be the peak of its success in this regard. The post-war period saw Manchester face a serious level of decline, making 'the one-time powerhouse of the industrial revolution into one of the weakest industrial cities in Britain' (Kidd 2006:191).

The focus of Manchester then changed from manufacturing to service-based industry, giving the city something of a new lease of life, albeit one with its own pressures and fluctuations. Manchester was also at this time a very important player in the newspaper industry, second only to London. The end of the twentieth century saw Manchester trading on its industrial heritage with attractions such as The Museum of Science and Industry, itself a development of an area of the city which played a central part in the Industrial Revolution.

One of the most important events in Manchester's history, especially to Mancunians themselves, was the IRA bomb of 1996. On Saturday 15th June the largest IRA bomb on British soil was detonated, injuring 200 people and causing extensive damage to city centre buildings and businesses. The scale and speed of the subsequent regeneration project, and the determination behind it, were clear signs of an opportunity for reinvigoration being taken. The result was a re-energized city which had grown in confidence and attractiveness, and which had recaptured some of its earlier prestige. Host of the Commonwealth Games in 2002, home to the world-famous Manchester United, and home of the largest single-site university in the UK, Manchester became and remains a vibrant, popular and successful city.

1.2 Poles in Manchester[3]

Although it is difficult to determine details of Polish migration to the Manchester area before the Second World War, it is possible to trace with some degree of accuracy the development of the city's Polish community during and after this period. As a starting point, Scragg (1986:49) cites Police records as showing 296 Poles in the city in December 1940. The war itself brought the Polish Air Force to the area, with a training camp in nearby Blackpool, and a similar training facility for the Polish Women's Air Force just outside Manchester. The area was evidently an important one in terms of Polish activity during the war, along with London and Scotland (where the Polish Army was based).

The period after the war saw a large rise in the number of Poles in the UK, and Manchester remained a popular destination. Ex-servicemen and their families made up a large proportion of the new arrivals, along with refugees who did not want to return to a Poland dominated by the Soviets. By December 1951 there were 135,770 people registered as Polish nationals in the UK, with Lancashire (the area around Manchester) the second most populated after London, and Manchester itself having 3,300 (Scragg 1986:59-61). The British government's commitment to help Poles who wished to stay in the country after the war led to low levels of unemployment within the community, and an overall success in encouraging a degree of assimilation into the target culture.

[3] Due to the scarcity of background information on this topic, details are taken either from W.T. Scragg's MA dissertation (Scragg 1986), or from the recollections of the participants themselves.

However, for many, life in Britain was only ever intended to be temporary, leading to great efforts in preserving the Polish identity and way of life, especially in the family. Second generation Poles were understandably split between the two cultures, and they began to lose their sense of 'Polishness', including the bonding desire to return one day to Poland. As the second generation assimilated more and more into the local culture, and as the first generation realised that their stay may be more permanent, there was greater pressure on the first generation to themselves assimilate. Scragg (1986:75) sees this as the pressure of being torn between the financial advantages of assimilation and the social pressures of betraying one's culture. The risk was to lose one's social status in one or other community.

The Polish community in Manchester was by this time centred around two particular areas, Moss Side and Cheetham Hill. The former is the home of the first Polish church built in exile after the Second World War, the Polish Roman Catholic Church of Divine Mercy, originally built in 1873 as a Welsh Methodist Chapel, and bought by the Polish people of Manchester in 1958. It is still the centre of an active Polish community in the city. The latter is the home of the Polish Circle, a social and cultural centre for Poles in the area, which still exists today. In both these areas Polish businesses were established, and the Polish Circle began to offer a Polish school for young children. The result was a very well established, self-sufficient community, content in its location, but with strong ties to Poland. In fact, since the Second World War the Polish community in Manchester has exhibited most of the features of a small Polish town with its own elites, hierarchies and social institutions. 'It has been possible to lead an almost completely Polish life, with a Polish doctor, dentist, architect, delicatessen or whatever. Each strata of its society has been able to fulfil its needs' (Scragg 1986:80).

The recent wave of Polish migration to the UK is usually seen as having begun on 1st May 2004, the date on which the European Union expanded to include Cyprus, The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia. However, an agreement was already in place whereby nationals from EU candidate states could set up their own businesses in the UK. This self-employment scheme was popular with Poles in particular, as they were able to apply while already in the UK as tourists, unlike nationals from some other countries (Drinkwater et al. 2006:5). Indeed, Garapich (2008:736) sees the changes made in May 2004 as a 'legal manoeuvre to legitimize

already established flows', with the subsequent influx of Poles into the UK a continuation of a process started years earlier. He goes on to suggest that 'our preoccupation with the phenomenon shows a change in perception rather than a qualitatively different reality on the ground' (p.736). The figures certainly suggest this was the case, with 2003 seeing 260,000 Poles enter the UK (Garapich 2008:730).

It is unclear how many Poles were in the UK illegally before 2004, although Duvell (2004:5) notes that 'in 1996, Polish nationals came third amongst those being identified for illegal entry', suggesting that the number might be quite high. Of course, on 1st May 2004 this ceased to be a issue as the new laws acted as 'a *de facto* amnesty of undocumented workers' (Drinkwater et al. 2006:6). Whenever the process is judged to have begun, the period from May 2004 is seen as 'the largest single wave of foreign in-movement ever experienced by the UK' (Baure et al. 2007:219).

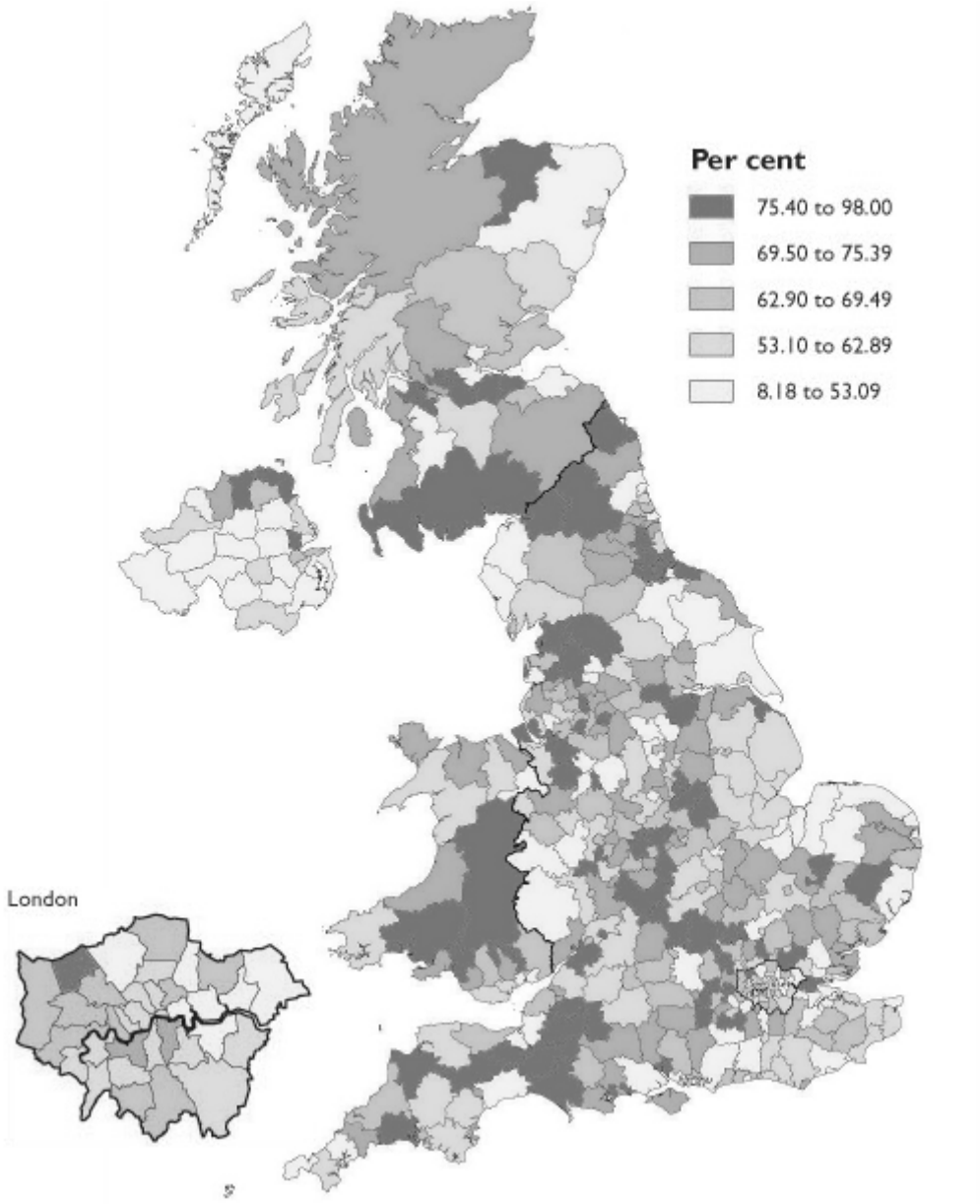
The reason the 2004 expansion of the EU was particularly controversial was the fact that eight of the new member countries (subsequently named the A8 and including all but Cyprus and Malta) were poor in relation to the existing EU members. The fear was that this financial imbalance would lead to wide-scale economic migration from the A8 countries to the rest of the EU, a fear which resulted in many countries imposing very restrictive immigration regimes. In fact, only three countries, Sweden, Ireland and the UK allowed virtually unrestricted access to A8 nationals, with only Sweden allowing completely free movement. The restriction imposed by the UK took the form of the Worker Registration Scheme (WRS), a system whereby individuals are required to register with the Home Office when taking up employment.

According to WRS figures[4], in the period between May 2004 and December 2006, Poles accounted for 64.4% of the total number of A8 migrants to the UK, with the second largest group, Lithuanians, accounting for 10.7% (Baure et al. 2007). In terms of geographic distribution, the A8 migrants, and particularly the Poles, have not followed the traditional route of staying predominantly in and around London and the South East of England. Instead there is a wide distribution across most parts of the UK. In fact, of the ten local authorities which have the highest proportion of Poles in relation to other

[4] The UK has no means by which to accurately determine numbers of migrants at any one time. However, of the various sources of data available, the WRS is seen as providing the most complete information.

A8 nationals, five are in the North West of England, the area focused on in the present study (Baure et al. 2007). Figure 1 shows a map of the UK indicating the distribution of Poles in comparison to other A8 nationals. In terms of demographic makeup, the vast majority of arrivals were between 16 and 35, with males outnumbering females by 61% to 39%[5] (Drinkwater et al. 2006).

Figure 1: Poles as a percentage of all registered A8 nationals, May 2004 to December 2006 (from Baure 2007:129)



[5] These figures come from an alternate source, the Labour Force Survey (LFS) but reflect the overall A8 figures from the WRS.

Eade et al. (2006:10-12) identify four categories of Polish migrants, developed in relation to individuals' migratory strategies[6]. *Type As* (20%) are circular migrants who usually stay between 2 and 6 months at a time, but move regularly between Poland and the UK. They tend to exist in dense Polish networks and work in low-paid jobs. *Type Bs* (16%) also see their time in the UK as a money raising activity, but unlike *Type As* it is a one-off venture. They also tend to work in low-paid jobs. *Type Cs* (42%) keep their options open. Predominantly young and ambitious individuals, they work in a range of jobs from low-paid to highly skilled and professional. They are prepared to follow whatever employment and social opportunities they find, be they in the UK, Poland, or elsewhere. *Type Ds* (22%) are those individuals who have been in the UK for a while and who intend to stay for good.

The various types of migratory patterns help to maintain the cycle of new migration. *Type As* and *Type Bs* (the less permanent workers) strongly rely on *Type Cs* and *Type Ds* (the more permanent workers) when they arrive in the UK. Similarly, those *Type Cs* and *Type Ds* who run their own businesses often employ the newly arrived *Type As* and *Type Bs.* The result is a well-established and effectively functioning network of Polish migrants of all types.

The temporary nature of many of the occupations in which the Polish migrants find themselves, along with the financial imbalance between the two countries leads to what Eade et al. (2006:13) refer to as 'the transnational construction of class' in which 'individuals dynamically interpret their position with reference to several stratification systems'. The stratification systems include the class structure back in Poland, with which many migrants continue to have regular contact by maintaining economic interests there, as well as the class structure in the UK. Crucially, however, the perception of social class in the UK is constructed in relation to perceived opportunities rather than an individual's actual position. In other words, the opportunity to better one's position is enough to place an individual higher up the social scale, regardless of their current occupation. This then creates a contrast between people's objective class position i.e. their occupation and their subjective class position (Eade et al. 2006). This helps to explain the fact that many well-educated and highly-skilled migrants who were

[6] Eade et al. use the terms *Storks, Hamsters, Searchers and Stayers,* but here these have been renamed as *Type A, Type B, Type C* and *Type D* respectively.

in professional occupations in Poland can be found in relatively low-paid occupations in the UK. This is certainly the case for several of the participants interviewed for the present study.

2: Literature review

Because the topic of this research is a relatively underexplored area, it is necessary to look towards a variety of disciplines within linguistics to find appropriate previous research with which to inform the present study. Three main areas have been identified, namely, second language (L2) phonological acquisition, variationist sociolinguistics, and dialect acquisition. Research into the latter two has primarily been from a first language (L1) perspective; however, examples of research which have applied variationist principles to studies of second language acquisition (SLA) are discussed, along with research into dialect acquisition in a second language. The final section identifies all the social factors which might play a part in influencing patterns of variation in the speech of the Polish participants. Each factor is dealt with in turn, and reference is made to relevant studies from the areas of previous research mentioned above.

2.1 L2 phonological acquisition - theoretical background

2.1.1 The influence of the L1

That L2 phonological acquisition is influenced by a person's L1 is not something that has ever been seriously challenged, nor is it likely to be. The extent of this influence, however, is something that merits ongoing investigation, and is a topic that has attracted the attention of various researchers since the 1950s. The idea of using a learner's L1 to explain and predict pronunciation errors in the L2 was most famously put forward by Lado (1957:2), whose 'Contrastive Analysis Hypothesis' (CAH) assumes that

> ... the student who comes in contact with a foreign language will find some features of it quite easy and others extremely difficult. Those elements that are similar to his native language will be simple for him, and those elements that are different will be difficult.

The CAH uses comparisons between the distribution of phonemes and allophones in the L1 and the distribution of phonemes and allophones in the L2 to identify areas of learning difficulty. Lado identified the greatest difficulty as occurring when two or more allophones in the L1 are assigned to different phonemes in the L2, i.e. when what in the L1 is a contrast between two allophones is, in the L2, a contrast between two phonemes.

However, subsequent research which showed that factors other than the L1 have an influence over L2 pronunciation (e.g. Nemser 1971; Johanssen 1973; Dickerson 1975)[7] served to lower the expectations of the CAH, giving it a role in which it explained observed difficulties rather than predicted likely difficulties. This weak form of the CAH had questionable value; it was seen to be useful as a 'heuristic which can be followed in analysing student errors in the second language learning situation' (Eckman 1987:56) but otherwise 'impractical and inadequate' (Ellis 1985:308). Yet the strong form has continued to play a part in SLA research to this day. The reason for this is that even though it by no means provides a complete model with which to understand learning difficulty, there can be little doubt that L1 does play a part, particularly with regard to phonological acquisition. What has been rejected is the idea that the CAH can *fully* explain difficulties in learning an L2, but this does not mean that it should be abandoned altogether. As a partial explanation it continues to be valid, and with a degree of revision it continues to play a central role. This revision involves the incorporation of certain universal principles which will be discussed in a later section.

2.1.2 The role of perception

Three notable theoretical models of L2 speech learning have been developed over the last 20 years: Flege's (1995) Speech Learning Model (SLM); Best's (1995) Perceptual Assimilation Model (PAM); and Kuhl's (1993) Native Language Magnet (NLM) model. However, of the three, it is Flege's SLM that has been most influential, so it is this model which will be discussed here.

2.1.2.1 Speech Learning Model

Early versions of the SLM can be found in a number of articles by Flege (1981; 1987b; 1987c; 1991; 1992), and although individual hypotheses have been slightly revised more recently (e.g. McAllister et al. 2002), the latest full version was published in Flege (1995). It should be pointed out, however, that Flege himself regards this as a working model. In relation to the CAH, the crucial difference in the SLM is the assertion that, rather than

[7] Nemser (1971) found that it was the type of task used to gather phonological data which influenced the nature and number of sound substitutions made by his Hungarian subjects learning English, rather than L1 transfer; Johanssen (1973) found that while many errors could be predicted by the CAH, the intrinsic difficulty of some of the L2 (in this case Swedish) sounds was also important; Dickerson (1975) in her study of Japanese students learning English, found that while positive and negative transfer does exist, 'the reason that the CAH will always be rejected is that positive and negative transfer do not work invariably but variably' cited in Tarone, (1987:76).

elements that are similar in the L1 and the L2 being simple to acquire and elements that are different being difficult (as in the CAH), in fact it is the other way around, with sounds that are perceived as similar causing the problems.

It is the perception of these L2 sounds which is so crucial. The SLM works on the basis that in many cases, the L2 sounds are not perceived accurately in the first place. This is thought to be because L2 sounds are interpreted in relation to a person's L1 phonology, as 'bilinguals cannot fully separate their L1 and L2 phonetic subsystems' (Flege 2003) and will automatically be compared and contrasted with these existing sounds. As a result of this comparison, L2 sounds will be classified as 'identical', 'similar', or 'new' in relation to the L1. New sounds will cause a new sound category to be established, but similar sounds may be assigned to existing L1 categories even though some phonetic differences are perceived. The latter occurs through the mechanism of 'equivalence classification', whereby a single perceptual category subsumes both the L1 and the L2 sound so that they come to resemble one another. This process can not only lead to inaccurate L2 production, but can also affect the L1 production (Flege 1987b; 2003).

Although there are some well-argued doubts as to the reliability of the methods employed in classifying L2 phones as new or similar (see Rochet 1995 for a detailed critique)[8], the SLM offers a convincing framework within which to view L2 phonological acquisition. For the purposes of this study, the value of the SLM lies in its potential ability to shed light on the mechanisms at work in the acquisition or otherwise of one of the identified phonological features, the local variant of the STRUT vowel.

2.1.2.2 Universals

While the CAH and the SLM show the importance of the L1 in the acquisition of L2 phonology, this is not the complete picture. Other theories explain this acquisition in terms of universal principles, and it is to these theories which we will now turn.

Central to the notion of linguistic universals within the acquisition of an L2 is the concept of some kind of a *learner language* construct. The concept of a learner language was proposed by three different people at around the same time: Corder's (1971)

[8] Rochet (1995) identifies three main criteria which have been used to determine whether L2 phones are new or similar (a phonetic symbol criterion; an acoustic similarity criterion; and listeners' perceptual judgements of L1 and L2 phones) and takes issue with all three. He is especially critical of using phonetic symbols as a means to identify sounds as new or similar, and provides several examples to support his assertion that this technique be abandoned.

'idiosyncratic dialect', Nemser's (1971) 'approximative system', and Selinker's (1972) 'interlanguage' all described the idea of an emerging internal system between the L1 and L2. It is the latter term, interlanguage, that has endured, and much has been written about the subject. Bayley (2007:134) provides a succinct definition of the original term as a system 'which shared features of the learner's first language and the target language but was fully explainable by neither'. The value of the concept of interlanguage (IL) is therefore in attempting to describe a particular systematicity in a person's speech which cannot be accounted for either in terms of L1 transfer or in terms of L2 input; the systematicity must therefore exist in the rule system of the IL.

By accepting the idea of IL, we are able to research the IL of individuals in the same way that we would research any other natural language. Adjemian (1976) is often referred to when discussing the validity of studying IL; he claims that

> ... underlying the IL hypothesis is the unwritten assumption that ILs are linguistic systems in the same way that natural languages are. (By "natural language" I mean any human language shared by a community of speakers and developed over time by a general process of evolution). That is, ILs are natural languages.
>
> (Adjemian 1976:298)

It is this view of IL that will be subscribed to in the present study. Examples of research into the inherent variability of IL, thus supporting its status as a separate linguistic system will be addressed in a later section.

2.2 The study of language variation

The pioneering work of William Labov in the late 1960s and early 1970s established an approach to quantitative studies of linguistic variation with the central belief that the alternative forms which can be found in all languages do not occur randomly but are in fact influenced either by external social factors, internal linguistic factors, or both. These two sets of factors are not always given equal attention (Tagliamonte 2006), and indeed one may be more relevant than the other in any particular study; but for many variationists it is the interplay of these factors that is so interesting.

Methodologically, what sets variationist sociolinguistics apart from more traditional dialectology (and for that matter most SLA research) is the fundamental importance of accessing natural, spontaneous, unguarded speech, often termed 'the vernacular'. The reason for this is the belief that such every-day speech is actually the most systematic,

and is therefore the form most open to analysis. However, there is the issue of 'the observer's paradox' – the problem of wanting 'to observe how people speak when they are not being observed.' (Milroy & Gordon 2003:49). Clearly this paradox can never be overcome entirely, but there are established techniques for accessing the most natural speech (often referred to collectively as being part of 'The Sociolinguistic Interview'[9]) which primarily involve asking questions which will elicit emotional responses, often in the form of narratives of personal experience. The understanding is that it is during these periods that the speaker will concentrate more on what they are saying rather than how they are saying it. But however one chooses to go about accessing natural speech, the goal is always to draw attention away from precisely which variable is under investigation:

> Therefore, instead of asking the question: 'How do you say X?' as a linguist might, a sociolinguist is more likely not to ask a question at all. The sociolinguist will just let you talk about whatever you want to talk about and listen for all the ways you say X.
>
> (Tagliamonte 2006:5)

Rather than give a general overview of the large body of research in this area, this review will only include a selection of those studies which themselves focus on some of the linguistic variables or social factors being investigated in the present study. These will be covered in the appropriate sections below.

2.3 Variation and SLA

> The research on social factors and variation [in SLA] is unified in the underlying theoretical framework that learners are active agents in their language use, language choices, and targets for acquisition. That is, they are not passive recipients of the target language, and variation in production is typically systematic and may be due, in part, to social marking due to gender, identity, accommodation to the interactant, and the linguistic environment etc.
>
> (Hansen Edwards 2008:251)

Running in parallel to the initial development of variationist ideas were systematic investigations into second language acquisition, again with the aim of understanding the underlying system of learner language. While some researchers took advantage of the common ground between the two fields of enquiry (e.g. Dickerson 1975; Wolfram 1985), SLA research was, until recently, influenced very little by research on sociolinguistic

[9] See Tagliamonte (2006) for a detailed discussion of how to best structure a sociolinguistic interview.

variation (see Tarone 2007 for a recent overview of sociolinguistic approaches to SLA theory). Preston (1996) attributes this lack of influence to a variety of factors, but perhaps the most important one, and the one that, according to Bayley (2007:134) still persists, is the 'misunderstandings by SLA researchers of basic concepts and methods of variationist linguistics'. Preston (1996) illustrates this by referring to certain comments by Ellis (1985; 1987) a leading scholar in SLA, all of which Preston shows to be simply incorrect.[10]

Another misunderstanding is described by Young & Bayley (1996), who highlight the tendency of early research into variation in SLA (interlanguage variation) to find a single co-occurring contextual factor to explain the variation found in the learners' language. For example, Beebe (1977) attributed variation to the ethnicity of the interlocutor, for Ellis (1987) it was the available time for discourse planning, and for Douglas & Selinker (1985) variation was attributed to the discourse topic. However, it should not be the purpose to find a single factor:

> Research in the variationist approach, in contrast to research that seeks a single overarching explanation, assumes that interlanguage variation, like variation in any language, is likely to be subject to the influence of not one but multiple contextual influences. … The question for the researcher is thus not which single factor is associated with variation, but what the relative strength of the different factors associated with variation is.
>
> (Bayley 2007:135)

It is precisely this view that informs the current study. Crossing over as it does between SLA and variationist sociolinguistics, its purpose is to identify the relative strength of the social and linguistic factors influencing the apparent variation in the acquisition of the identified phonological features, not to identify a single influential factor.

It was mentioned above that Young and Bayley (1996) criticise some of the earlier interlanguage variation research. However, this is not to say (even by Young and Bayley) that there is not a great deal of value in these studies. Described as 'pioneering' by Bayley (2007:134), Dickerson (1975) describes the variation evident in the pronunciation of English /z/ by Japanese learners of English. Dickerson begins with the belief that

> …the learner's second-language system must be a system of variable rules if it is to account for the variability (wide assortment of pronunciations) in his production, the

[10] The three comments relate to: the definition of a variable rule; the characterisation of how systematic variability is to be discovered; and variationist methodology.

> fluctuations between his in-class and out of class performance, and irregularities in his process of acquisition.
>
> (Dickerson 1975:401)

This particular study is relevant in two ways: firstly, the findings that the variation in the pronunciation of English /z/ can be attributed both to the influence of the phonetic environment and the type of verbal task being used are interesting in themselves, but secondly, and arguably more importantly, the study is the first clear example of a sociolinguistic variationist model being applied to the study of interlanguage.

Beebe (1980) is another good example of this application. Moreover, it provides further evidence for viewing interlanguage in the same way as a natural language. The study investigates a claim by Tarone (1979) that 'IL is progressively more permeable in increasingly more formal situations to the superordinate rule system, that is, the target language' (Beebe 1980:434). While finding support for this claim in the data gathered from Thai adults living in New York, concluding that IL is indeed more permeable in more formal situations by a superordinate rule system, Beebe also found that the superordinate rule system in question changes depending on the linguistic context. The evidence suggests that in the case of word final /r/ it was the TL (English) which was acting as a superordinate system, yet in the case of word initial /r/ the permeating superordinate system was the NL (Thai). Beebe suggests that the NL becomes the superordinate system when there is existing sociolinguistic variation with regard to the sound in question. In this case, word initial /r/ has various highly conscious alternatives in Thai, whereas word final /r/ has no social value.

The study also raises some interesting questions about methodology. Beebe aimed to study speech of different levels of formality by using three different production tasks: a conversation, a reading passage, and reading a list of isolated words from a passage. She was aware of the problems of using artificial tasks to gather sociolinguistic data, but justifies her methods in the following way:

> The data in this study are not claimed to be unselfconscious, spontaneous, every day, vernacular conversation. They are, however, natural in the sense that Wolfson (1976:208) suggests; that is, they are "appropriate to the occasion." They are appropriate to the interview - a normal speech event in our society."
>
> (Beebe 1980:436)

While Beebe is obviously clear in her categorisation of formal/informal tasks, the problem when comparing research is that people use different criteria. This is a topic taken up in Tarone (1979) who makes the point that:

> ... we have been too lax in our definition of what constitutes informal style, or the vernacular. We are not consistent in what we *mean* by "formal context" and "informal context", and this has hurt the field when we have tried to make sense out of data generated in our studies.

(Tarone 1979:186)

Of course this issue is not limited to the gathering of data for studies in variation. It is relevant in most research where speech data are elicited, including that outlined in an earlier section concerning models of L2 phonological acquisition. In their review of previous work looking at successful L2 phonological acquisition, Piske et al. (2001) provide a summary of the types of elicitation techniques which have been used, along with details of which studies used which method. The techniques include: reading sentences, reading paragraphs, reading individual words, free speech (recounting personal experiences or describing pictures), and repetition of speech.

Perhaps it is unfair to compare the elicitation techniques of two different research areas, yet arguably this is another illustration of the historical lack of mutual regard mentioned at the beginning of this section. If we are reliably to use insights gained in one field to inform research in another, we need to be sure that the data are comparable. And surely the first factor to consider is the manner in which that data are elicited.

Tarone (1979) is quite clear about what she feels should be done. The article describes what she calls the 'chameleon'-like qualities of interlanguage, referring to the tendency of IL to vary 'with the subtlest shifts of situation, just as the chameleon changes colour as it surroundings change' (Tarone 1979:181). Tarone argues that researchers tend to ignore this quality when they set up and report on their research, so sets out to demonstrate why more care should be taken by illustrating how the five methodological axioms which Labov (1970) (cited in Tarone 1979) identifies as leading to the 'Observer's Paradox' can be usefully applied to IL and the study of IL. Indeed, Tarone successfully shows how the axioms can be applied to IL, leading to the conclusion that in order to avoid or minimise the effects of the paradox, far more care should be taken in the reporting of precisely how the data are gathered. Precise nature of the task, interlocutors, physical surroundings, and topic are all identified as areas which need to be recorded in detail.

Tarone argues that we should also be very clear about exactly what we mean when we use the term 'spontaneous speech', as the term 'seems to apply to a very wide range of speech styles indeed' (Tarone 1979:188).

Despite being one of the articles criticised by Preston (1996) above, Ellis (1985) still offers some useful insights into IL variation. Ellis describes the difference between situational variability, where linguistic alternatives are influenced by extra-linguistic factors, and contextual variability, where linguistic alternatives are influenced by the linguistic environment. A good example from the studies mentioned previously would again be Dickerson (1975), which provides evidence for both types of variability - the Japanese students' pronunciation of English /z/ was influenced both by the type of task (situational) and by the linguistic environment (contextual). However, Ellis also makes a case for non-systematic variability within IL. His argument stems from the point that while 'new linguistic forms emerge in all natural languages',

> … Interlanguage is a special type of natural language in that it is characterised by a very high level of instability. It is subject to constant bombardment by new linguistic forms, many of which are 'taken in' when, to begin with, they exist side by side with existing forms.
>
> (Ellis 1985:125)

There is then pressure for these two forms occurring in free variation to be integrated into the system, either being matched into distinguishable functions, or else one being made redundant and then eliminated. It is during this process, Ellis argues, that non-systematic variability can be seen:

> Non-systematic variation occurs when two forms are assimilated but have not yet been integrated into the learners' form-function system. Systematic variation occurs when the new forms have been accommodated by restructuring of the existing form-function system to give the new forms their own meanings to perform. Situational variability is one aspect of this process.
>
> (Ellis 1985:127)

As with any theoretical position there are critics, and Ellis's views of variability, along with those of Tarone (1983) were heavily criticised by Gregg (1990), which led to a response from both scholars[11]. However, as this is now seen as 'a rather unproductive debate…between proponents of Universal Grammar in SLA and variationists' (Young

[11] Ellis (1990); Tarone (1990); see also Tarone (2007) for a brief revisiting of the issue.

1999:109) there is little need to look any further, particularly as much of the argument falls outside the scope of the present study.

Earlier criticism of the variationist position with regard to IL can be found in Bley-Vroman (1983) who takes issue with the assumption that a learner's language is systematic, arguing that when one looks at the actual behaviour of learners 'one is struck by the difficulty of ascribing to it the sort of consistent, logical structure that the systematicity assumption might lead one to expect' (p.2). However, one does not need to venture far into the article before it becomes clear that systematicity and variation are simply being used as an example of the real issue Bley-Vroman is concerned with, namely that of what he terms 'the comparative fallacy' – the mistake of analysing features of learner language in relation to the target language. So while the article is ostensibly about systematicity and variation in IL, the fundamental argument is concerned with deeper ideas of IL development and SLA which, while interesting, again fall outside the scope of the present study. It is perhaps worth noting, however, that Bley-Vroman's ideas on SLA are seen to lie within a more radical school of thought (Klein 1998).

Another interesting point on interlanguage variation which is directly relevant to the present study is that mentioned in Bayley (2007) concerning the tendency of SLA researchers to use the standard language as the TL variety when assessing acquisition of particular forms in obligatory contexts. Bayley points out the inappropriateness of this 'if the primary native speaker input learners receive comes from speakers of a variety in which the form under investigation is used variably' (p.139). Bayley uses the example of Spanish-speaking Puerto Ricans in New York City who, in acquiring English, receive much of their native speaker input from speakers of African American Vernacular English (AAVE), and makes the point that:

> For such speakers, we cannot assume that the absence of third person singular –s represents a failure to acquire an obligatory feature of the target language. Rather, it may well reflect acquisition of a feature of the dialect that the second language user has chosen as the target. That is, absence of an inflection or morpheme that is obligatory in the standard language but variable in vernacular dialects may represent a second language speaker's sociolinguistic competence rather than linguistic incompetence.
>
> (Bayley 2007:139)

It is this idea of sociolinguistic competence rather than linguistic competence that again illustrates the potential strength of combining these two areas of research, addressing as

it does the issue of non native speakers acquiring native speaker patterns of variability. Acknowledging the existence of these two separate competences, linguistic competence has been referred to as 'the vertical continuum' (Corder 1981; Young 1988; Adamson & Regan 1991) or 'Type I variation' (Mougeon et al. 2004), and sociolinguistic competence as 'the horizontal continuum' or 'Type II variation'.[12]

Amongst the notable studies into Type 2 variation are Adamson & Regan's (1991) study into variation in (ing) by Cambodian and Vietnamese immigrants; Bayley's (1996) study into patterns of consonant cluster reduction by Chinese speakers of English; Major's (2004) study into NS and NNS (Japanese and Spanish) production of four stylistically conditioned phonological processes; Mougeon et al.'s (2004) study into the acquisition of 13 sociolinguistic variables by French immersion students in Toronto, Canada; Uriteschu et al.'s (2004) study into schwa deletion, again by French immersion students in Canada; and more recently, Schleef et al.'s (forthcoming) study into (ing) variation by Polish adolescents in the UK.

The examples above, and the growing body of research of which they are a part, indicate a move away from much of the previous SLA research which has not considered

> …the ample evidence from empirical sociolinguistics that shows that many forms that are thought to be invariant in the target language are in fact used variably by native speakers, particularly by the working class and minority speakers with whom immigrants learners of languages like English are most likely to interact.
>
> (Bayley & Regan 2004:334)

In other words, SLA research in general has been concerned with the acquisition or otherwise of NS target forms with the implicit assumption that these forms are fixed. By this reasoning, a lack of target feature 'x' indicates a lack of progression along the vertical continuum, when in fact, a lack of target feature 'x' might instead indicate advanced progression along the vertical continuum along with a degree of progression along the horizontal continuum.[13] But this is not to say that the two areas of investigation are, or should be, separate. Mougeon et al. (2004) make the point that:

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[12] The present study will adopt the 'Type 1' and 'Type 2' labels to describe this difference.

[13] Bayley (1996) provides a good example of this in the case of word-final cluster reduction in Chinese speakers of English. The more advanced speakers' lack of inflectional –t,d was not an indication of speakers being at a low level on the vertical continuum (like their low proficiency

> although studies of Type 1 and Type 2 variation have clearly different foci, they are not entirely independent of each other, since researchers investigating Type 1 variation pay attention to the influence of both linguistic and extra-linguistic factors and since researchers investigating Type 2 variation may have to account for, in the speech of L2 learners, the presence of non-native forms alternating with target-language variants used to express a given notion.
>
> (Mougeon et al. 2004:409)

The comment above is a good reflection of the thinking behind the present study. While in some ways it is more concerned with Type 2 rather than Type 1 variation, i.e. sociolinguistic rather than linguistic competence, the concept of L2 phonological accuracy still plays a large part, especially with regard to STRUT variation. What sets STRUT apart from the other features under investigation is the fact that whereas t-glotalling, (ing) and h-dropping are examples (to a greater or lesser degree) of features which would usually be seen as invariant in a pedagogical model of English yet are in fact used variably by NSs[14], the STRUT vowel remains largely invariant in local NS speech, but in a different form. This suggests that for this particular feature it is not a case of looking at the interplay between linguistic competence and sociolinguistic competence as such, but rather it is a case of looking at the interplay between linguistic competence and dialect acquisition. Linguistic competence, i.e. L2 phonological accuracy, is relevant in terms of whether or not the vowel is produced within the NS target range, and dialect acquisition is relevant in terms of which variety of the vowel within the NS target range is being used.

2.4 Dialect

2.4.1 Perception and attitudes

It is too easy to view the acquisition of an L2 in terms of moving towards a single, standard variety of that L2. While this is theoretically possible (although increasingly unlikely) in an EFL context in a non English-speaking country where the only native speaker model available may be that of the Received Pronunciation (RP) or General American (GA)[15] influenced teaching materials, it is definitely not the case in any context

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colleagues) but rather, an indication that they were quite advanced along the horizontal continuum of NS variation patterns due to increased contact with NSs.

[14] (ing) and /h/ would invariably be taught in their standard forms; t-glottaling is likely to exist in the speech of English teachers, although it is unlikely to be made explicit.

[15] These are the terms generally used in EFL pronunciation materials. I acknowledge that in a linguistic setting they are inaccurate, vague or both.

where L2 acquisition is taking place in the L2 country itself. It would not take long for an individual arriving in the UK, for example, to encounter varieties of English that are different from whichever pedagogical model he or she is used to. In her studies of target language variation in New York, Eisenstein's (1986:40) subjects 'stated they had become aware of English dialects a short time after exposure to native speakers from a week to within a few months of arrival.'

There is a considerable amount of research into the perception of, and attitudes towards, varieties of English as an L2, and those that focus on regional variations are of particular relevance to the present study. Major et al. (2005) review a number of previous studies (several of which appear below) into the effect of non-standard varieties of English on listening comprehension, and conclude that while listening comprehension is a 'complex construct', it is 'aided when the listener is familiar with the particular accent and has no negative attitudes toward that accent' (p.45). In some ways perhaps this is common sense, but the point is that familiarity and attitude must be working together, as there are examples of situations where listeners are familiar with a particular dialect, but their negative attitude towards it has interfered with comprehension (see Eisenstein & Verdi 1985 below).

Major et al.'s (2005) study investigated the comprehension of standard American English (SAE), Southern American English (SoAE), African American English, Australian English, and Indian English. The participants were made up of 158 non-native speakers (NNSs) from a variety of L1 backgrounds, and 52 native speakers (NSs). Analysis of the data showed that NNS comprehension was not affected by the different regional dialects, although it was affected by the ethnic and international dialects. Major et al. concluded that this may be down to three factors: the listeners' increased exposure and familiarity with SAE and SoAE; the likelihood of listeners having a more positive attitude towards SAE and SoAE (although attitude was not actually measured); and the phonological similarity between SAE and SoAE. The authors warn of the danger of generalising these results to other regional dialects. However, with regard to the present study this is perhaps an indication that comprehension of the local dialect should not cause too many problems being, as it is, a regional rather than an ethnic or international dialect. That said, the difference between hearing one speaker deliver a lecture in SoAE in an

academic environment (as in the study described above), and trying to understand the everyday speech of local people speaking in a regional dialect, is significant.

Eisenstein (1982) looked at the developing sensitivity of international college students in New York towards three varieties of English: the regional Standard English, New Yorkese English (New York nonstandard) and Black English. Irish accented English and Hawaiian Pidgin were also used as examples of unfamiliar dialects. The students were from a variety of L1 backgrounds and had varying levels of English language proficiency. The study showed that even relatively low level English language learners can discriminate between different dialects, although this ability is initially only that of discriminating between a dialect being similar to or different from a standard, and not that of identifying specific varieties. As English language proficiency increases, so too does the ability to discriminate between and identify dialects, along with the development of attitudes towards each variety.

A similar study by Eisenstein & Verdi (1985) looked at the intelligibility of the same three dialects for, specifically, working class English language learners. They found that despite the participants having a considerable amount of exposure to Black English due to their living environment, they still rated it as the least comprehensible variety. In both studies, the participants' comparatively negative attitude towards Black English reflected those of the native speaker control group. Also in both studies, it was the standard variety which was regarded the most favourably.

However, not all studies have found the same similarity between NS and NNS attitudes towards different varieties of English. Alford & Strother (1990) found that although NNSs were able to distinguish between three American English varieties (North, South, Midwest), their responses to questions about subsequent personality traits of the speakers did not match those of NSs. Alford & Strother make the point that 'International students, for the most part, do not have the same cultural framework is native students' (p.487) and therefore their opinions are free from the cultural biases of the NSs who, it is pointed out, could 'provide uniform responses on Likert chart for regional dialect groups without even listening to a tape' (p.486) due to existing stereotypes. Alford & Strother did not give details as to the language level of their participants, so it is difficult to directly compare these findings with those of Eisenstein (1982), but they do say that their participants had only been in the US for around six

months. Although this is not necessarily an indication of language level, it is likely that this puts them at the lower end of Eisenstein's range of levels, so perhaps it is consistent that attitudes had not yet started to develop. Clark et al. (forthcoming) bring in the issue of age as a factor in acquiring attitudes similar to those of NSs, suggesting that their Polish adolescent judges were in the process of acquiring NS attitudes, despite not being able to accurately identify different varieties of UK English.

Al-Kahtany (1995) studied the attitudes of students from Saudi Arabia at university in the US towards three varieties of English: Standard American English, Black English, and Indian English. It was found that the participants had no trouble distinguishing varieties, and were able to rank them in relation to various criteria. Once again, it was the standard variety which was consistently ranked more highly. Al-Kahtany looked at the results in relation to a variety of factors, some of which are more relevant here than others, but the finding that participants who showed signs of integrative motivation had more favourable attitudes to all three varieties of English than those participants who showed signs of instrumental motivation, is quite interesting. This contrasts with the findings of Matsuura et al. (1994) and Chiba et al. (1995), who found that instrumentally motivated students showed the most acceptance of non-standard varieties, albeit a weak correlation in the second study. In terms of English language proficiency, the participants in all these studies would be at the middle to higher end of the range identified in Eisenstein (1982), supporting the idea that attitudes develop along with proficiency.

However, there are some methodological concerns, especially with the Al-Kahtany study. While Alford & Strother (1990), Eisenstein (1982) and Eisenstein & Verdi (1985) all used variations of the matched guise technique (MGT) (Lambert et al. 1960), an established way of removing certain personality variables, Al-Kahtany (1995) used three individual speakers, each representing one variety. On the one hand this eliminates the potentially false nature of the speech in matched guise studies, but on the other it opens the possibility of the speakers being judged on elements of speech other than purely dialect variety. In fairness, the MGT is not without its flaws, such as the artificiality of the situation, and the danger of the recordings being influenced by existing stereotypes. However, if these possible limitations are acknowledged, there still remain some interesting findings.

McKenzie (2008) deals with these methodological constraints by employing the verbal-guise technique (VGT) in his study into the attitudes of Japanese university students towards six varieties of English. McKenzie's main concern with the MGT is its use of reading aloud rather than natural speech. Obviously, this is an important part of the MGT, as it is trying to eliminate as many variables as possible, but McKenzie argues that as a marked verbal style, reading aloud is not appropriate for this kind of study. Instead, McKenzie (2008) used spontaneous speech, with each variety being spoken by a different person. Unlike Al-Kahtany (1995), however, the speakers were chosen from a large database so as to match voice qualities and rates of speech as far as possible. The varieties in question were Glaswegian vernacular, Glaswegian standard, southern American, Midwest American, moderately accented Japanese, and heavily accented Japanese, and all were evaluated in terms of 'competence' traits and 'social attractiveness' traits.

McKenzie joins Starks & Paltridge (1996) in criticising researchers in this area who have

> assumed a homogeneity within the observed speech communities and hence have generally failed to take into account the potentially differentiating factors within the population, which may influence attitudes towards languages and language varieties.
>
> (McKenzie 2008:67)

One of his main aims, therefore, is to show that the social variation amongst the participants is significant when investigating their attitudes towards language varieties. Indeed, the results show that differences in gender, self perceived proficiency in English, and level of exposure to English, all have significant effects on the attitudes of the Japanese listeners towards the different varieties. In other words, just as it is wrong to think of an L2 as being of one variety, we should not regard a group of L1 learners of that L2 as a homogenous whole. The relevance of these ideas to the present study is that they support the suggestion that attitude towards a variety of the L2 is relevant at an individual level, and that these attitudes can be complex. The present study will take these findings that attitudes towards varieties of English vary within an L1 group, and link them to the acquisition of phonological features of a particular variety, thus investigating the roles of perception and attitude in L2 phonological acquisition.

Taken as a whole, these studies suggest that NNSs are certainly capable of differentiating between varieties of English. In terms of comprehension, it has been found that standard

and regional varieties are easier to understand than ethnic and international varieties, and in terms of attitude, it has been found that again, standard varieties are regarded more highly than non-standard varieties. However, the findings of Mackenzie (2008) show us that individual differences play an important part in any type of research into L2 attitude, and that we should not generalise too much across groups of learners.

2.4.2 Dialect acquisition

The majority of research into the acquisition of a second dialect is concerned with investigating what happens when people move from one region (with dialect A) to another region (with dialect B) within the same language. In other words, the dialects are mutually intelligible. Most individual studies have concentrated on children (e.g. Payne 1980; Chambers 1992; Tagliamonte & Molfenter 2007) although a few have concentrated on adults (e.g. Shockey 1984; Munro et al. 1999; Straw & Patrick 2007). The main reason for the preference of studying children is that, as with SLA, there is a strong belief that the younger a person is, the more complete the acquisition will be. Chambers (1995:85) suggests:

> Someone coming to a dialect region under the age of seven will master the dialect like a native, and someone coming to it over the age of 14 will always betray non-native origins. In between 7 and 14, there is no telling how an individual will fare.

This is certainly in line with the idea of a sensitive period for SLA (see section 2.5.1). There is plenty of evidence to show that adults do acquire features of a second dialect, it is simply that this acquisition will not be complete, a finding which echoes the hypotheses of Flege's SLM with regard to SLA.

Although it is useful on some levels to look at the parallels between SLA and second dialect acquisition, Munro et al. (1999) make the point that the two differ in one particularly significant way: if the two dialects are mutually intelligible there is no *need* for acquisition to take place, which is obviously not true in the case of a second language. With no communicative necessity, degree of acquisition then rests on attitudinal and other factors (described in a later section).

The point was made earlier that the present study, especially in relation to the STRUT vowel, looks at the interplay between L2 linguistic competence and dialect acquisition. This is due to the fact that that the participants involved in the study all had some level of English (learned in Poland) before coming to Manchester, so the change being

investigated is dialectal, within the same language. That is to say, individuals with, for example, one vowel sound for STRUT words in English, as determined by the standard pedagogical model, find themselves in a region where there is a different vowel sound for STRUT words. On this level, the fact that the individuals come from a different L1 background is largely irrelevant, they are simply moving from one English dialect model to another. Of course the situation is complicated by the individuals' varying degrees of proficiency within English, and one of the aims of the present study is to investigate this issue, whereby some words may be pronounced a certain way due to dialect acquisition, and some may be pronounced a certain way due to language acquisition, depending on their likely status within an individual's interlanguage.

Central to existing research on dialect acquisition is the concept of accommodation, initially developed by Giles et al. (1973; 1979) and extended by Trudgill (1986). The suggestion is that in face-to-face communication, people will modify their way of speaking in response to features of the other person's pronunciation, resulting in 'accent convergence', whereby a person's speech will start to sound more like that of their interlocutor, or 'accent divergence' where differences will be exaggerated. This accommodation can occur in the short term, where the phenomenon is transitory, or in the long term, where the change is more permanent. In fact, this is where the distinction between accommodation and acquisition becomes blurred if, indeed, there is a distinction to be made. This is a point that Chambers (1992) raises, when he acknowledges that the distinction may be terminological rather than substantive, but argues that if there is a difference, his study shows evidence of acquisition rather than long-term accommodation. However, the difference really is negligible, so Trudgill's (1986:39) comment that:

> If the speaker accommodates frequently enough to a particular accent or dialect … then the accommodation may in time become permanent, particularly if attitudinal factors are favourable.

would appear to be a sensible position to take.

Trudgill goes on to consider how often a particular occurrence of accommodation must take place before that accommodation becomes permanent and suggests that this might be

> On the first occasion when a speaker employs a new feature in the absence of speakers of the variety originally containing this feature - when, in other words it is no longer accommodation … when a British couple resident in the USA begin using American pronunciations or expressions in their own home, when no Americans are present.
>
> (Trudgill 1986:40)

In the present context this is perhaps quite easily recognized, at least in terms of the STRUT vowel, as the participants were interviewed by somebody whose own STRUT vowel is the same as that in their pedagogical model. We can therefore assume that for this feature no accommodation is taking place, at least at the point of recording.

Although not explicitly about second dialect acquisition in the way that Chambers (1992) is, Trudgill (1986) does address the same ideas in his description of the geographical diffusion of linguistic forms, which occur when 'face-to-face interaction between speakers from different areas happened sufficiently frequently for accommodation to become permanent.' (p.42). A particularly relevant example is that of the transition zone between /ʌ/ and /ʊ/ which is described in (among others) Chambers & Trudgill (1998); Trudgill (1986); Upton (1995) and Britain (2001). It is argued that within this transition zone can be found 'mixed lects' in which both versions of the variable (u) exist although one or other may dominate, and 'fudged lects' in which an intermediate sound [ɤ] can be found, although dominated by one of the other sounds. Interestingly, this intermediate form does not originate from either dialect, leading to Trudgill's (1986) description of it as an example of interdialect - a term reflecting the concept of interlanguage - to illustrate the idea of 'contact between two dialects lead[ing] to the development of forms that actually originally occurred in neither dialect' (p.62). Britain (2001) adds to the existing data and suggests a third category, 'scrambled lects', in which it is the intermediate sound which dominates. In fact, he suggests that this domination is starting to stabilise. Upton (1995) makes a similar point, suggesting that the mixed and fudged dialects should not be seen as the result of two phonemic systems competing in a situation of transition, but that 'mixing and fudging, especially the latter, might be long-term features of a region's phonology rather than being stages on the route to the dominance of one system over the other' (p.393).

The relevance of this to the present study is clear, especially as this is one of the phonological features under investigation. Existing research suggests that the acquisition of phonological features of the local accent by the adult non-native participants will not

be complete. Whether this happens to be the case or not, it is expected that there will be evidence of variation due to the different length of time individuals have spent in the area. It will be interesting to see whether this variation bears any relation to the ideas of mixed, fudged, and scrambled lects. Certainly the existence of the intermediate sound is useful in understanding what might be happening. However, local experience would suggest that any intermediate sound would be closer to [ə] than [ɤ].

Chambers (1992) is one of the most influential studies into dialect acquisition, which describes his study of six Canadian children who moved to southeast England. The findings support his eight proposed principles of dialect acquisition, two of which are particularly relevant here. Principle five suggests that 'In the earliest stages of acquisition, both categorical rules and variable rules of the new dialect result in variability in the acquirers' (p.691) thus acknowledging that any kind of change does not simply occur fully at a single point in time; and principle six suggests that 'Phonological innovations are actuated as pronunciation variants' (p.693), meaning that the variability of the phonological acquisition is consistent with the idea of Lexical Diffusion, whereby 'a linguistic change spreads gradually across the lexicon, from word to word' (Chambers & Trudgill 1998:160).

> According to this theory, phonological innovations are actuated by the acquisition of particular instances of the new rule or phoneme, and they only become rule governed or systematic (if ever, in the first generation) after a critical mass of instances has been acquired.
>
> (Chambers 2002:693)

The concept is perhaps more clearly described in Trudgill (1986:58):

> The point is that during accommodation speakers do not modify their phonological systems, as such, so that they more closely resemble those of the speakers they are accommodating to. Rather, they modify their pronunciations of particular words, in the first instance, with some words being affected before others.

Studies into lexical diffusion have repeatedly shown that this diffusion does not occur at a uniform rate. Instead, there appears to be a rate of change which is much more rapid in the middle than it is at the beginning or the end of the time span, resulting in an 'S-curve model of diffusion' (Chambers & Trudgill 1998:163).

It is not hard to envisage precisely this process of lexical diffusion happening amongst participants in the present study, especially with a feature as salient as the STRUT vowel.

The issue of salience is important here. Trudgill (1986) makes the point that it is the more salient linguistic features which are more likely to play a part in the accommodation. To people with the southern STRUT vowel, the northern counterpart is certainly salient; following Trudgill's reasoning, it is possibly one of the two phonological features most likely to be imitated by somebody impersonating a Northern British English (NBrEng) accent. However, there is a chance that this particular vowel could be '*too* salient' (Trudgill 1986:20) and too stereotypical, and may be consciously avoided.

It was mentioned earlier that there are very few studies into the acquisition of a second dialect by adults. However, there is one in particular which helps to illuminate the process. Munro et al. (1999) studied the speech of ten Canadian adults who had been in the US for an average of 7.7 years, and who had all moved to Alabama after the age of 18. This is important, as in another significant study of adult second dialect acquisition, Straw & Patrick (2007), two of the adults had arrived in the second dialect area as children. Munro et al. were consciously trying to 'ensure that all participants would have passed the hypothesised sensitive period for language acquisition' (1999:389). The participants' accents were rated, along with those of control groups of Canadians in Canada and Alabamans in Alabama, by 22 native Canadians who graded their speech on a 9 point scale from 'very Canadian' to 'very American'.[16]

The study found that

> … many of the speakers in the Canadian immigrant group had acquired aspects of the D2 and that, in one instance, this acquisition had made the speaker indistinguishable (from the perspective of Canadian listeners) from native speakers of Alabaman English.
>
> (Munro et al. 1999:393)

The experiment was repeated using listeners from Alabama and the results were found to be similar, showing that certainly in this context second dialect acquisition amongst adults is perfectly feasible.

Munro et al. (1999) express a degree of surprise at these results, outlining four reasons to expect a much smaller amount of dialectal change. Age and (lack of) necessity have already been mentioned, but the fact that 'the D2 in question may be regarded by many Canadians as a low prestige variety of English' (p.401) is interesting. While it would be

[16] It should be pointed out that this type of study will only be dealing with surface level phonetics, unlike the more complex features discussed in, for example Chambers (1992); Payne (1980).

logical to assume that this would negatively affect the degree of acquisition, it appears to have had no such influence. The final reason is that of the nature of the speech of the interlocutor, who in this case was a native Canadian. Accommodation theory would suggest that the participants would be accommodating their speech towards the person they are speaking to, and would thus show fewer examples of the D2.

These final two reasons are equally applicable in the present study, although perhaps not to the same degree. While Manchester English does not languish at the bottom of tables supposedly ranking accents of English in terms of prestige, neither does it appear at the top. Coupland & Bishop (2007) found Manchester English to rank 27th out of 34 in terms of social attractiveness, and 21st out of 34 in terms of prestige. There is a possibility, then, that its acquisition may be undesirable, although this would depend on the participants having acquired existing attitudes towards accents, unless there is something fundamentally unattractive about Manchester English[17]. Secondly, as has been mentioned briefly, the interlocutor in all cases in the present research has been someone whose speech contains no features of NBrEng.

Another interesting study which follows dialect acquisition into adulthood (although, as in Straw & Patrick (2007) the focus starts in childhood) is Sankoff (2004). Sankoff manages to take a longitudinal approach by using data from the British television documentary series "Seven Up", which followed a group of children who were seven in 1963, and who were filmed at seven-year intervals from that point. Sankoff chose two children from the north of England, and followed the phonological variation in their speech into adulthood. Methodologically, there must be concerns as the amount of data, and therefore the number of usable tokens, is so small, yet there are some interesting findings. Although working in the opposite direction (northern to southern), Sankoff is interested in the northern versus southern pronunciation of the STRUT vowel, and to what extent it becomes lowered and unrounded as the two boys become adults and move away from their northern homes. The data from one of the subjects is hard to interpret due to the very few examples available at certain points, and his uncharacteristic lack of rounding at the beginning. The other subject showed a significant amount of change towards the southern variant, which, although by no

[17] The idea that some accents are aesthetically less attractive than others is an idea that is universally rejected (e.g. Edwards 1982; Giles & Coupland 1991).

means categorical, is a clear departure from where he started. Crucially, however, this acquisition is inconsistent and shows variation, in line with the findings of the other studies mentioned above. Sankoff hints at the existence of a process similar to lexical diffusion to account for the process of change and variation, although acknowledges that there is no specific evidence of this in the data available.

Evans & Iverson (2007) also looked at a change in the STRUT vowel from NBrEng [ʊ] towards Standard Southern British English (SSBrEng) [ʌ] by studying the speech of UK university students who had moved from their home town and its NBrEng vowels to various universities in England where they were exposed to SSBE speakers. They found that the vowel did indeed become more centralised over time, although there was considerable inter-speaker variation.

Taking all the studies together, it is clear that second dialect acquisition can, to an extent, occur across the entire lifespan, although it is likely to occur more rapidly and more completely in younger children. Accommodation theory would appear to provide a valid account of the process behind dialect acquisition, although there are obviously other social factors working as constraints against this acquisition. The more the dialect acquisition context can be controlled, the greater the insights into how these constraints may be operating. Studies such as Sankoff (2004), while providing valuable illustrations of dialect change in progress, involve so many uncontrollable factors, it is difficult to draw any conclusions. It is hoped that these studies, having provided insights into some possible factors influencing dialect acquisition, can help in making the present study sufficiently controlled to enable the development of some valid explanations.

2.4.3 Dialect acquisition in a second language

The vast majority of studies into SLA have concentrated on the acquisition of a standard variety of the L2, which, in terms of English, has been the standard pedagogical models of GA and RP. Similarly, the vast majority of studies into the acquisition of a second dialect have concentrated on mutually intelligible dialects within the same language. However, there are a handful of significant studies which have addressed the issue of dialect acquisition within a second language, and these are Wolfram et al. (2004); Sharma (2005); Fox & McGory (2007); Baker (2008); and Rindal (2010). Interestingly, two of the studies (Fox & McGory and Baker) come from an SLA background in terms of methodology, and three (Wolfram et al., Sharma and Rindal) come from a sociolinguistic

background. In many ways, these studies form the starting point for the current investigation.

Wolfram et al. (2004) investigated (amongst other things) the /ai/ diphthong in the speech of adolescents in two emerging Hispanic communities in North Carolina, USA. The interest in /ai/ lies in the fact that while the sound exists in both Spanish and American English, the local variety is unglided, whereas the L1 vowel retains its trajectory. They found that there is indeed evidence of a modest move towards the local variant, but the scale of the change is intriguingly far from straightforward. Firstly, they note the importance of the lexicon in the acquisition of phonetic processes, with certain frequent words displaying the change despite an overall resistance to glide weakening; secondly, they note the gradience and variation in the transition, commenting that 'The phonetic transition from L1 to L2 productions of /ai/, Southern or otherwise, appears to be gradual and incremental rather than abrupt and discrete.' (Wolfram et al. 2004:354).

They also comment on the 'phonetic intermediacy' of the feature, echoing Trudgill's (1986) thoughts on the previously mentioned interdialectal forms. Finally, they discuss the role of individual identity, suggesting that 'some variation appears to be a matter of individual choice' (p.354), with speakers who share similar LORs, proficiency, and social background showing different choices in terms of dialect accommodation. They illustrate this with the example of a brother and sister who show differing patterns of accommodation, reflecting their contrasting social allegiances.

In accounting for the relatively small degree of accommodation to the local vowel system, Wolfram et al. suggest three possible causes. The first is the insularity of the communities in question and the resulting limited interaction with the adjacent communities; the second is that the majority of the ESL teachers who the children come into contact with do not in fact use the local Southern American English themselves. These two reasons combined actually leave very little chance of exposure to the local variety. The third reason is a more general one, and one that might be applied to any migrant community, including the one in the present study:

> It may also be the case that the overall reluctance to accommodate the local norm is simply a stage in the life cycle of the incipient communities which have emerged for the

> most part over the past decade and are still in the process of establishing their sociolinguistic identity.
>
> (Wolfram et al. 2004:355)

Sharma's (2005) research into indigenized non-native varieties of English (NNVEs) involved analysis of the speech of first-generation immigrants from India to the US who arrived in the US as adults, and who 'for the most part have maintained their multilingual repertoires in the United States, mostly working in small shops and businesses' (p.197). Central to Sharma's research is the now familiar understanding that 'NNVEs represent an unusual sociolinguistic challenge: they can neither be straightforwardly subsumed under models of individual second language learning nor under models of native variation'(Sharma 2005:194).

Like the Wolfram et al. study above, participants were interviewed to elicit naturalistic speech, with the interviews lasting between one and two hours. Included in this time was the gathering of personal demographic information, 'and information about the speakers' attitudes towards language used, dialects and cultural contact' (p.198). The purpose of the study was to investigate 'the emergence of dialect consciousness' (p.194) by focusing on specific syntactic and phonological variables, the latter being relevant here. The phonological features in question were aspiration, l-velarisation, and rhoticity, with Indian English generally having aspirated stops, no velarisation of /l/, and non-rhoticity. Sharma found that, once again, the use of D2 features is variable, often evident in 'discourse-prominent and salient positions rather than consistently throughout their speech' (p.209). Furthermore, the frequency of American phonological features did not correlate with what Sharma identified as indicators of proficiency - daily use of English and amount of education in English, inviting the question of what exactly was motivating the high degree of variation. More specifically:

> Why do *certain speakers* show greater rates of adoption of American phonological features?
>
> Why are *certain features* employed stylistically (rhoticity, aspiration, velarization) while the earlier variables were primarily governed by proficiency (agreement, tense, copular, articles)?
>
> (Sharma 2005:212)

By analysing the qualitative data gathered from the interview concerning the question of attitude towards dialect and dialect change, it was found that the three highest users of

American phonological features expressed positive attitudes towards accent change, seeing the Americanisation of their speech as a good thing. In contrast, the two lowest users of American phonological features expressed pride and security in their Indian English pronunciation. Sharma also comments on the discrepancy between the influences on the syntactic variables (largely English proficiency) and the phonetic variables (largely attitude), by highlighting some of the qualitative data showing that Indian English syntax is felt to be superior to that of American English, and that maintenance of this high standard is a vital part of showing oneself as a proficient speaker. This contrasts with phonetic variation, which 'is seen in less prescriptive terms and may be recruited more readily for the construction of a local Indian identity.' (Sharma 2005:217).

Fox & McGory (2007) studied the production and perception of native Japanese speakers living in Ohio (SAE) and Alabama (Southern American English, SoAE), to see whether the regional dialect had influenced them in any way. The research was informed by Flege's SLM, with the belief that the potentially different distribution of similar phones between Japanese phonology and SAE phonology on the one hand, and Japanese phonology and SoAE phonology on the other, may result in a difference in acquisition.

Participants were tested on their production of isolated words ([hVd]) concentrating on 10 vowels, which were read in a random order from a computer screen. On analysis, it was found that the strongest correlation was between the pronunciation of the two Japanese groups, i.e. the vowels of both groups sounded more like each other than they did to either of the native models. However, of the two models, SAE was clearly the intended target for both groups, showing that there was no significant evidence of the Japanese speakers living in Alabama acquiring features of SoAE. Similarly in the perception study, the Japanese Alabama group were found not to have a significantly different perceptual vowel space than the Japanese Ohio group, with both groups identifying SAE vowels more accurately than SoAE vowels, and the Japanese Alabama group showing no significant increase ability in identifying SoAE vowels.

Fox & McGory conclude that there is 'little or no support for the claim that native Japanese speakers living in Alabama are acquiring the local, non-standard dialect of American English' (p.134). However, they do suggest the likelihood of sociolinguistic factors not examined being responsible for this, such as:

> the "dialect" and pronunciations of English spoken by their EFL instructors,
>
> the attitude of the native Japanese speakers - and that of their peers – toward a nonstandard dialect of American English …
>
> the amount of actual time that these native Japanese speakers spent daily interacting with individuals who actually use SoAE.
>
> (Fox & McGory 2007:134)

It is precisely these factors, along with several others, which are to be investigated in the present study.

Baker (2008) investigated the acquisition of Utah English features by adolescent Spanish speakers, focussing on the social factors behind this acquisition. She concentrated on vowel mergers before /l/, as typical Utah accented speech would suggest a merger one way, typical Spanish accented speech would suggest a merger the other way, and typical Chicano speech (Fought 1999) would suggest no merger. Participants read carrier sentences containing the target words, and were asked to complete an attitudinal questionnaire concerned with attitudes towards living in Utah.

Interestingly, she found that there was indeed a correlation between the acquisition of Utah features and attitude, although it showed that speakers with a more negative attitude towards Utah were more likely to show signs of acquisition. By way of explanation for this counter-intuitive result, Baker suggests the possibility that the negative attitudes intensify as contact with native speakers increases (indeed, the group with negative attitudes did report more interaction with local speakers). In other words, it was the increased contact with local speakers that was affecting the degree of acquisition, even though at the same time this increased contact was heightening negative attitudes towards the target community. A second experiment looking at psycholinguistic factors such as working memory and phonological memory was carried out, but when all the results were combined and subjected to multiple regression analysis, attitude was still important (second only to working memory).

Rindal (2010) studied the L2 (English) pronunciation of 17-18 year old students in Norway with regard to the choices they make between the use of British (RP) and American (GA) English. She concentrated on four phonological variables which had been selected due to the ease with which they can be distinguished as stemming from an RP or GA source: postvocalic /r/; intervocalic /t/; the GOAT vowel; and the LOT vowel. She wanted to

explore the extent to which students aimed towards a particular variety, and whether the pursuit of this aim could be seen as playing a part in the construction of individual identity. 23 students were recorded reading a word list and in conversation before taking part in a matched guise test and a written attitudinal questionnaire. 5 students were then interviewed for more in-depth questions about attitudes.

Rindal found that students did indeed aim for a particular accent, and tended to be successful in achieving this with regard to the four phonological variables. She also found that the students routinely evaluated the pronunciation model choice of both L1 and L2 speakers, and that these choices were relevant in how individuals were perceived by others. Similarly, qualitative data from individual speakers clearly showed that the choice of accent was a conscious decision in the construction of identity, both for them and for others.

Looking at these five studies together, it is clear that there is evidence to support the process of dialect acquisition in a second language, albeit to different degrees and for different reasons. That the Fox & McGory study found no significant degree of acquisition is perhaps not surprising when we consider the methodology of the experiment. This is not a criticism of their research, it is simply another illustration of where SLA research and variationist research appear to be looking at the same issue, yet by their differing approaches actually find themselves looking at different things. The most important difference is in the gathering of speech data. The SLA and psycholinguistically informed studies by Fox & McGory and Baker both use very contrived examples of the target variable, elicited as they are in carrier sentences (Baker) or CVC words (Fox & McGory). This contrasts with the more naturalistic conversational data gathered in the other three studies. Clearly there are advantages to the controlled SLA approach, not least the fact that the result is a perfectly balanced data set of precisely the variable under investigation. However, it could be argued that research into linguistic variation is best served by the methodology of the branch of linguistics which has the topic as its primary focus: variationist sociolinguistics. If one accepts this to be the case, and in turn accepts the notion that informal speech, or the 'vernacular' provides the best insight into underlying patterns (e.g. Labov 1972; 1984; Tagliamonte 2006) then clearly the type of speech elicited in the two SLA studies are at the opposite end of the continuum to the ideal. In sociolinguistic interview terms, both would be seen as using

formal tasks in which the most attention was paid to speech, and thus not conducive to showing underlying patterns of variation. This is not to say that variationist methodology is perfect in this type of endeavour, far from it, it is simply to suggest that in these particular cases, more natural speech might have yielded a deeper insight.

2.5 Factors influencing variation

There are a numbers of factors which might potentially influence the acquisition of local variants in the present study, most of which have been discussed in previous research. The purpose of this section is to look at those factors in turn, with reference to (where relevant) previous studies in the five areas highlighted as influencing the current research, namely L2 phonological acquisition, L1 variation, L2 variation (with a focus on Type 2 variation), L1 dialect acquisition, and L2 dialect acquisition.

2.5.1 Age

The factor of age has played a central role in much of the research into successful L2 phonological acquisition, largely as a reaction to the idea that the learning of an L2 after a 'critical period' (Lennerberg et al. 1967) of human speech learning will render complete mastery of the L2 impossible. However, the observation that degree of foreign accent was gradual rather than abrupt led some to instead posit the idea of a 'sensitive period' (Oyama 1976; Long 1990). Useful research into age of exposure to the L2 can be found in, among others, Abu-Rabia & Kehat (2004); Flege et al. (1997); Moyer (1999); Purcell & Suter (1980); Thompson (1991); see also Piske et al. (2001) for a good review. Long (2005) provides an interesting defence of the Critical Period Hypothesis, exposing problems in previous research which has argued against it. It is the case that the majority of studies show that the earlier a speaker learns the L2, the lower the degree of foreign accent, but there has been no convincing evidence of a definite period, either critical or sensitive. Instead, it has become clear that age of learning is typically confounded with other variables such as degree of L1/L2 use that are just as likely to affect L2 pronunciation.

Similarly, age has traditionally played a central role in studies into L1 variation, but the issue is complex. Although easy to measure and categorise, chronological age is not necessarily the most effective way of approaching the issue. Instead, it can be useful to view age based on life stages (e.g. Chambers 1995; Eckert 1997). In a detailed review of

existing research, Eckert (1997) describes how different studies have defined cohorts *etically* and *emically* when it comes to age:

> The etic approach groups speakers in arbitrarily determined but equal age spans such as decades, while the emic approach groups speakers according to some shared experience of time. This shared experience can be related to life stage or history.
>
> (Eckert 1997:155)

When using a simple division of age into childhood, adolescence and adulthood, it is generally accepted that 'if adolescence is the life stage in which speakers push the envelope of variation, conservatism is said to set in during adulthood.' (Eckert 1997:164). This is especially true for middle-aged adults (Milroy & Gordon 2003). However, given such a finding, it is sometimes difficult to establish whether this pattern is an example of a change in progress, whereby the use of a particular variant is used with increasing frequency down the age scale (Chambers 2004:355) or an example of age-grading, whereby adolescents (for example) are simply using variants that are appropriate to their age group which will disappear as adulthood approaches. Clearly, as researchers we must be vigilant that these two age-related differences are not mistakenly identified, a very real risk when carrying out apparent-time studies.

In much of the SLA research into Type 1 variation, when age has been investigated, it has been addressed in the same way as standard SLA research, namely investigating the existence of a critical or sensitive period (see Preston 1989 for an overview). In terms of Type 2 variation research, there is little if any mention of age, with participants generally being at similar life stages. This is probably due to the fact that age and age-related factors are so intertwined with aspects of proficiency, rendering a proper look at variation difficult. It makes sense that one factor (age or proficiency) should be controlled, and it is usually age which is kept relatively constant. Certainly, the Type 2 studies referred to earlier generally investigated a particular age group: Bayley (1996) used adult Mandarin speakers aged 18-40; Major (2004) used undergraduate students; Mougeon (2004) and Uritescu (2004) used high school students aged 14 and 17; Schleef et al. (forthcoming) used high school students aged 12-18. Surprisingly, the only one that used speakers of a wide age range, Adamson & Regan (1991) did not appear to look at age as a factor, despite using participants between the ages of 12 and 40.

As mentioned previously, studies into dialect acquisition within the same language have tended to look at children as a matter of course due to the increased likelihood of acquisition taking place, with younger children showing greater acquisition than older children. Those studies which include adults then tend to look specifically at adults (deliberately excluding children), e.g. Munro et al. (1999). Several studies have looked indirectly at the difference between children and adults in terms of dialect acquisition by investigating the complex issue of the influence of parent's pronunciation on that of a child's when in a different dialect area (e.g. Payne 1980; Kerswill & Williams 2000). Perhaps because the anecdotal evidence is so strong, there are very few studies which explicitly set out to show the difference between children and adults when it comes to dialect acquisition, although those that do, find, once again, that earlier is better (e.g. Krashen & Seliger 1975).

As with existing research into L2 variation, studies into dialect acquisition in a second language tend not to address age as a factor, instead using participants of similar age groups. Of the five studies mentioned earlier, three looked at adolescents (Wolfram et al. 2004); (Baker 2008); (Rindal 2010) and two looked at adults (Sharma 2005); (Fox & McGory 2007).

The present study specifically avoids children and adolescents in order to eliminate the SLA age effects described above, instead focusing on adults between the ages of 18 and 40. However, age will still be investigated as a factor.

2.5.2 Length of exposure to L2

Most L2 phonological acquisition studies looking at this variable have involved assessing the pronunciation of people living in the L2 community (usually English-speaking), hence its usual title of Length of Residence (LOR). Purcell & Suter (1980); Flege et al. (1997); and Abu-Rabia & Kehat (2004) all found LOR to be a relevant factor to greater or lesser degrees, with greater experience of the L2 generally leading to more accurate pronunciation, although Piske et al. (2001) found the relation between the two to be insignificant when LOR was looked at independently from age. This is also the conclusion of DeKeyser & Larson-Hall (2005) in their review of the available literature. Flege (2009:7) makes the valid point that 'LOR effects will be obtained only for immigrants who receive a substantial amount of native-speaker input'. As evidence he cites the different findings of Flege et al. (2006) in which there was no significant

difference in the pronunciation of Korean children with LORs of 3 and 5 years, and Winitz et al. (1995) in which a Polish 7-year-old boy achieved native-like pronunciation after a year. The Polish boy received far more native-speaker input than the Korean children, due to his living environment. One should always be cautious of such narrow studies as Winitz et al. (1995), due to the very real potential of significant variation between individuals, but it is interesting nonetheless.

L2 Type 2 variation research does not look at LOR in any detail. This is a surprising omission in Adamson & Regan (1991) and Bayley (1996), as both studies gave LOR details for the participants showing a wide spread (2 - 96 months and 2 - 61 months respectively). It is possible that LOR was investigated but found to be insignificant, but this is unclear in both studies. Schleef et al. (forthcoming) explicitly tested for the influence of LOR (7 – 60 months) in their study, but it was found to be a statistically insignificant factor in both geographical groups of participants.

L1 dialect acquisition studies have approached LOR in different ways. Perhaps the most insightful is Payne (1980) which showed that LOR was important, but that it was (unsurprisingly) inextricably linked with age of arrival. Munro et al. (1999:393) talk of a 'partial' influence of LOR, but were unable to analyse this formally.

Sharma (2005) and Wolfram at al (2004) both make interesting points about the connection between LOR and L2 dialect acquisition which echo, in different ways, Flege's comment above about the necessity of NS input. Sharma finds LOR to be insignificant in a VARBUL analysis, despite having participants with LORs of between 0.5 and 40 years[18]. She puts this down to the fact that 'superficial contact with a native variety does not necessarily entail sustained contact with the variety' (p.205), making the point that many immigrants maintain social networks in their L1. Similarly, Wolfram et al. make the point that in densely populated ethnic communities such as the one they investigated, 'many children are not exposed to extended verbal interaction in English until they go to school' (p.344) rendering LOR insignificant in those cases.

LOR will be considered as a factor in the present study, with the main groups of participants under investigation having LORs of between 2 and 60 months.

[18] For the VARBUL analysis itself, LOR was divided into three categories: 0-5 years, 5-20 years, and 20+ years.

2.5.3 L1 background

The majority of studies in both L2 phonological acquisition and L2 variation involve subjects of only one nationality, so there are relatively few examples of research which has taken L1 background as a variable. Abu-Rabia & Kehat (2004), despite identifying L1 background as a variable under investigation (p.87) do not then report on its relevance. This is a shame, as the subjects whose acquisition of Hebrew was being investigated came from an interesting variety of L1 backgrounds (Russia, US/Guatemala, Nigeria, Bulgaria, Romania, Poland, South Africa). Purcell & Suter (1980) found support for Suter's (1976) original conclusion that L1 plays a significant part in pronunciation accuracy, although neither study provides much in the way of a plausible reason for this. Flege et al. (1997) also found that L1 background is significant, although their study was a lot more specific in terms of the type of production they were analysing. Whereas the subjects in Suter (1976), Purcell & Suter (1980) and Abu-Rabia & Kehat (2004) were assessed on a variety of tasks including a sample of "free speech", those in Flege et al. (1997) were simply assessed on their pronunciation of four English vowels.

One study which does discuss the importance of L1 background is Mougeon et al. (2004). They found evidence for differing influences of English, Spanish and Italian in the nature of variation acquired in French, with the latter two languages encouraging acquisition of a particular variant in French that had related counterparts in those languages.

L1 background will be considered in the present study only in terms of how features of Polish phonology may interact with and influence the features under investigation. Due to the fact that all participants come from a single L1 background, L1 will clearly not act as an independent variable.

2.5.4 Amount of L1/L2 use

It is very difficult to measure reliably the amount of L1/L2 use. However it is done, it must at some point involve an element of self assessment on the part of the individual, thus inviting a degree of inconsistency between speakers. However, it is understandably a central feature in much SLA research. Flege et al. (1999) found that in a comparison between native Korean speakers living in the US who used English often and Korean rarely and a similar group who used English rarely and Korean often, those in the first group were judged to have significantly better pronunciation of English. Similar findings with regard to frequent use of the L1 having a negative influence on pronunciation

accuracy in the L2 can be found in Flege et al. (1997) and Piske et al. (2001). This finding is also supported by Abu-Rabia & Kehat (2004). While it would be natural to assume that increased use of the L2 would result in improved L2 pronunciation accuracy, there is some research to suggest otherwise. For example, Flege & Fletcher (1992) found that L2 use was not significantly correlated with the degree of L2 accent in native Spanish speakers, and while Thompson (1991) found a simple correlation between the two, it was not significant in a multiple regression analysis.

Perhaps the degree of success in finding this factor to be significant is the detail in which it is measured. Both Mougeon et al. (2004) and Uritescu et al. (2004) found that additional exposure to French outside the school context led to the increased acquisition of the variants in question, and both studies used multiple means to ascertain the level of this exposure. Other L2 variation studies such as Bayley (1996) and Schleef et al. (forthcoming) used social network as an indirect measure of L1/L2 use, with both showing the expected results of more contact with local speakers correlating with increased use of the target variant.[19]

Sharma (2005) conflates use of L1/L2 with degree of education in English to create a proficiency factor, so does not comment on usage as such; however, a look at the VARBRUL results suggests that usage is significant, with greater L2 use generally reflecting a greater degree of acquisition of target variants. Baker (2008) uses self-assessment measures but in a detailed way, with participants detailing their percentage of L1/L2 use in 10 contexts. Participants were also asked about friendship networks. The importance of L2 use was inconclusive, but those speakers with a greater number of English friends did produce more local variants.

Despite the issues surrounding the accurate measurement of L1/L2 use, this will be a factor in the present study. As well as considering self reported L2 use, the degree of exposure to the L2 will also be investigated, due to the importance of perception in relation to the acquisition of local variants.

2.5.5 Motivation

The question of motivation is only really relevant in L2 studies. Aspects of motivation do play a part in L1 variation and dialect acquisition, but these are better dealt with in terms

[19] With the exception of t/d deletion in Bayley (1996), described earlier.

of attitude and identity (see section 2.5.10). Although there is plenty of research on the effects of motivation on SLA in general (e.g. Gardner 1985b; Dörnyei 1990; 2001; 2003) there has not been as much which has concentrated specifically on L2 phonological acquisition. Piske et al. (2001) and Moyer (1999) both identify the difficulty in quantifying motivation with enough precision to enable valid conclusions to be drawn, and this would seem to be a justified concern. Similarly, it is often hard to separate motivation from other variables. Generally, motivation is measured through responses to questions asking subjects to rate the importance of good L2 pronunciation and/or the desire to sound like a native L2 speaker. Bongaerts et al. (1997) and Moyer (1999) both used highly motivated subjects in their studies to see whether native-like pronunciation could be achieved by late learners, although it should be pointed out that the Dutch subjects in the first study were not questioned as to their motivation, rather they were identified as highly motivated by the University teachers. Subjects in both studies showed high levels of L2 pronunciation accuracy, even reaching native like accuracy in the case of the Dutch subjects. Purcell & Suter (1980); Elliott (1995); Flege et al. (1995); Abu-Rabia & Kehat (2004) all found motivation to be significant in achieving accurate L2 pronunciation.

It is perhaps worth distinguishing between instrumental and integrative motivation, although the two cannot always be separated (Brown 2000) and many studies do not attempt to differentiate them. Smit (2002:93) in her study of English language learners in Vienna, suggests that there is '… a mix of different types of motives widely known, and often discussed, in the language teaching profession: integrative and instrumental but also intrinsic and extrinsic'. She argues that it is this 'conglomerate of motives' that informs the way in which the students view the pronunciation teaching module in question:

> …intrinsically motivated students argue that it is simply fun to do, a challenge they enjoy; and extrinsically motivated ones accept and see the necessity of doing what the curriculum asks them to do and do it very well when compared with the rest of the class.
>
> (Smit 2002:95)

However, integrative motivation and 'cultural empathy' (Moyer 1999) are specifically addressed in Purcell & Suter (1980) and Moyer (1999). Schumann (1978) also addressed this question with his 'Acculturation Model' suggesting that a learner's acquisition of the L2 is related to his or her level of acculturation within the target community.

Interestingly, Elliott (1995) found attitude towards acquiring native-like pronunciation (i.e. motivation) to be one of the variables most related to pronunciation accuracy, and this is also the study which most fully investigated individual attitude/motivation through its 'Pronunciation Attitude Inventory', which is composed of 12 questions. Again though, the question of separating motivation from other factors is relevant, with Elliott (1995:366) acknowledging that:

> Although this study provides indications that attitude is significantly related to pronunciation accuracy, it did not measure underlying factors that might have originally contributed to this concern. It is possible that this might be the juncture at which the subjects' total number of years of formal instruction in Spanish, Spanish grades, and foreign travel come into play. Subsequent studies should attempt to determine which factors promote the development of positive attitudes.

Despite being much more than a study into L2 pronunciation, motivation will be addressed in the present study, primarily due to the possibility that when in an L2 environment, local variants may be unconsciously (or consciously) acquired in the desire to improve L2 pronunciation accuracy.

2.5.6 Aptitude and proficiency

Again, this is generally a feature of L2 research rather than L1 research, although proficiency is a far more frequently investigated factor than aptitude. It is unclear whether aptitude as such can be measured, although several studies have used mimicry ability as an indication of some kind of aptitude for accurate pronunciation, e.g. Purcell & Suter (1980); Thompson (1991); Flege et al. (1999); Abu-Rabia & Kehat (2004), which all found mimicry ability to have at least some effect. In addition, there is the concept of 'talent', an innate ability which is part of an individual's biological make up, in the same way as a physical ability might be. Jilka et al. (2010) offer an overview and details of a preliminary study into this idea.

Of the L2 variation studies discussed previously, none looked at aptitude, and proficiency was only commented on in one, Bayley (1996), which found the predictable correlation between proficiency and increased use of target variants. Others did make a note of proficiency levels, but these were then either not mentioned in the analysis (Mougeon et al. 2004) or else found to be insignificant (Schleef et al.forthcoming).

In the L2 dialect studies, only Sharma (2005) and Rindal (2010) go into any detail with regard to how proficiency and acquisition of dialectal features correlate, although as

mentioned previously, the relationship for Sharma only held for syntactic rather than phonetic features. Rindal (2010) makes the point that some of her subjects simply did not have the capacity to be able to choose between accents, some commenting that they had chosen AmEng because BrEng was too difficult. Baker (2008) used a system of self-rating for proficiency, but does not comment on any relationship. However, she did investigate participants' ability to imitate sounds (reflecting the mimicry ability described above) and shows it to have a slight influence in the acquisition of local forms.

Degree of English proficiency will be considered in the present study, with a focus on speaking ability. Participants will be asked to assess their own level of English both on arrival and at the time of the interview, and their overall level will be assessed by the researcher. Psycholinguistic techniques for assessing language aptitude will not be used.

2.5.7 Formal instruction

According to Piske et al. (2001:200) in their own review of the literature, 'Many studies examining the influence of formal instruction on degree of L2 foreign accent have not produced encouraging results for language teachers'. Indeed, it is unclear whether general L2 instruction has any effect on L2 pronunciation at all. Thompson (1991), Elliott (1995) and Flege et al. (1999) all found formal instruction to be insignificant, and MacDonald et al. (1994), while researching specifically what type of pronunciation teaching (not simply language teaching) was the most beneficial for L2 pronunciation improvement, had to conclude that none of the four teaching techniques lead to any significant change, citing individual learner variables as being much more important. However, it should be pointed out that the techniques were used very briefly, in some cases involving only one session of 10 minutes. Arguably this is not nearly enough to gain a proper insight.

On the other hand, there are some studies which have found that specific pronunciation teaching does have a measurable effect on L2 pronunciation. In two of the studies mentioned earlier in relation to motivation, Bongaerts et al. (1997) and Moyer (1999), both groups received special training in the perception and production of English sounds, and both studies identify this is a relevant factor. However, of the two, the Moyer study shows more actual evidence of this. Similarly, Derwing et al. (1997; 1998) and Couper (2003) all found specific pronunciation teaching to be beneficial.

In terms of L2 dialect acquisition, the question of formal instruction is relevant with regard to the model supplied by the teacher. If speakers are exposed to a pronunciation model which reflects the local variety, then there is a possibility this might be acquired. Of the five L2 dialect acquisition studies discussed, only Wolfram et al. (2004) mentions formal instruction as being relevant, making the point that the majority of teachers seemed to be from outside the area, thus not using the local variant in their own speech. They suggest this 'may serve as a mitigating effect in the acquisition of a local dialect norm' (p.255), but acknowledge that much more examination is required.

Formal instruction will play a part in the present study, but more in relation to participants' experiences in Poland rather than the UK. It is anticipated that very few of the participants will have received much in the way of formal English tuition since arriving in the UK, and those that have will have received little if any specific pronunciation instruction.[20] Conversely, it is anticipated that the vast majority of participants will have had some degree of formal English instruction in Poland. In addition, it is possible that a small number of participants, depending on their background, may have been exposed to detailed pronunciation instruction above and beyond what is normally provided in English language classes.

2.5.8 Social Class

Of the five areas highlighted as influencing the present study, social class is generally only discussed in relation to L1 variation research, in which it often plays a central role. The very general established finding is that 'the class continuum correlates with a linguistic continuum from standard to vernacular, with vernacular forms most prevalent for members of lower social classes' (Foulkes 2006:639). Despite this central role, it is only included very briefly here. This is due to the difficulty in applying notions of social class to immigrant populations such as the one under investigation in the present study, where the majority of people are living in a different social environment (in terms of social class) in the UK than they were in Poland. It therefore becomes unclear which social class should be taken into account, assuming that it is even possible to discuss the concept of social class in the same way in relation to two different countries. It might be the case that an individual is in an occupation and environment (in the UK) which would

[20] This supposition is based on the researcher's extensive experience of the type and general content of English language tuition available in the area.

suggest one class, yet their previous life experience, attitudes, level of education and so on (in Poland) suggest quite another (see section 1.2).

This is not to suggest that investigating social class is much more straightforward in a single community. Variationist methods have been criticized for a tendency to borrow models of social stratification from other disciplines without appreciating the theoretical framework that underpins them. This results in a simplistic approach to social class divisions which focuses on shared rather than conflicting values and is largely based on occupations and their perceived status (Milroy & Gordon 2003). Alternative approaches have been suggested, such as the concept of the 'Linguistic Market' (Sankoff & Laberge 1978) which has in turn been developed by e.g. Woolard (1985) and Eckert (2000). For an overview of variationist studies involving social class see Chambers (1995:34-101) and Ash (2002).

Despite the problems mentioned above in examining social class in relation to immigrant populations, it is still relevant to the present study in terms of type of exposure to English the participants will have. Regardless of any attempt to it categorise the participants themselves on the basis of their (past or present) socio-economic background, it is important to consider the social situation of those they interact with.

2.5.9 Gender

The majority of L2 phonology research which has discussed gender has done so in the context of pronunciation accuracy, with most not identifying a significant relationship between the two (e.g. Purcell & Suter 1980; Elliot 1995; Piske et al. 2001), although a few have (e.g. Asher & Garcia 1969; Thompson 1991; Flege et al. 1995). Of those that did, two (Asher & Garcia 1969; Flege et al. 1995) concluded that the extent of the influence of gender can be affected by other factors such as LOR. In all three studies which identified gender as having an influence, it was females who had more accurate pronunciation than males. According to Ehrlich (1997:426), much of this research, largely experimental in design, can be criticised by virtue of its 'biological and dualistic conceptions of gender' which 'exaggerate and overgeneralize differences between women and men in addition to ignoring the social, cultural, and situational forces that shape gender categories and gender relations'. This is a theme which is explored further in the following section.

One L2 phonology study which does adopt a more social approach to gender is Ohara's (2001) work on the use of pitch levels in Japanese. She found that while some English-Japanese bilinguals adopted the NS Japanese female pitch patterns, others did not, representing a difference in the extent to which the individuals wanted to project a female Japanese identity.

Gender has always been a central concern in studies into L1 variation and continues to be a much debated, and often controversial, theme. Early variationist research seemed to point to a consistent pattern of gender differences, summed up by Labov (2001) thus:

> Perhaps the broadest and most widely instantiated sociolinguistic generalization concerns the careful behaviour of women with stable sociolinguistic variables. It can be stated as Principle 2, the linguistic conformity of women:
>
> For stable sociolinguistic variables, women show a lower rate of stigmatized variants and a higher rate of prestige variants than men.
>
> (p.266)

Perhaps because the idea itself is so accessible, the claim that women show a higher rate of prestige variants became widely accepted, and is sometimes presented as 'a fundamental tenet of sociolinguistics' (Cheshire 2002:426)[21], with various explanations provided to explain the pattern. However, this claim has since been thoroughly questioned and investigated, and shown to be 'an oversimplification' (Foulkes 2006:640). Cheshire (2002) questions the empirical basis of the generalisation, pointing out the lack of objectivity both in accepted notions of social class (particularly in the practice of assigning women to different classes) and in what constitutes a 'standard' or 'prestige' form.

Research into t-glottaling has provided a different picture of the role of gender in language variation, particularly in relation to this generalisation that women tend to favour the prestige form of a variable. Studies in Cardiff (Mees 1987; Mees & Collins 1999), Newcastle (Milroy et al. 1994) and New Zealand (Holmes 1997) amongst others showed that (middle-class) women were leading the way in the spread of the glottal variant, a variant that would not normally be classed as 'prestige' in most contexts. This is seen as evidence in support of the idea that class-based influences are secondary to gender-based influences. Milroy & Gordon (2003:103) sum it up thus:

[21] To be clear, Cheshire was referring to an earlier version of this principle, stated in Labov (1990).

> The generalization that best accounts for the interacting effects of social class and gender so widely reported in the literature may then not be that women favour prestige variants; rather, they create them, as the variants that females prefer become ideologized as prestige variants.

Milroy et al.'s (1994) subsequent identification of t-glottaling as a supra-local form led them to argue that it is this type of change that women are instrumental in spreading, and the issue of whether or not the supra-local form also happens to be the prestige form is largely incidental.

On a similar theme, Holmes (1997) points to research showing that women tend to style-shift in their language to a greater extent than men, a tendency she relates to the increased level of interaction women have with a wide range of social contacts. This in turn leads women to accommodate their own speech to the speech of others, thus acquiring different dialectal features (Woods 1997). This ties in with Chambers' (1995:125-6) claim that

> In societies where gender roles are sharply differentiated such that one gender has wider social contacts and greater geographical range, speech of the less circumscribed gender will include more variants of the contiguous social groups.

Central to the development of ideas on the relationship between gender and variation is the work of Penelope Eckert (e.g. Eckert 1989; Eckert & McConnell-Ginet 1992; Eckert & McConnell-Ginet 2003). Eckert goes further than dismissing the generalisation of women using more standard forms by questioning the practice of looking for any such generalisations in the first place. Citing the 'exceedingly complex' nature of gender differences, Eckert (1989:247) observes that

> ...there remains a tendency to seek a single social construction of sex that will explain all of its correlations with variation. This is reflected in the use of a single coefficient for sex effects in variable rule or regression analyses of variation.

She goes on to suggest that the tendency for sociolinguists to allow their survey categorisation of male and female speakers to 'guide their thinking about the effects of gender in variation' (p.248) has led to men and women being perceived as opposite in their use of linguistic variables, when in fact, such a binary opposition might not be the most effective way to look at issues of gender at all. This idea is developed further in Eckert (1998) where the point is made that seeing gender as existing in binary opposition is to disassociate it from other aspects of identity, resulting in the belief that being male or female will have the same effect on people's behaviour regardless of other factors such

as age, social class and so on. Linguistic gender differences arrived at in this manner are then generalised to other contexts, despite the fact that '…gender practices differ considerably from culture to culture, from place to place, from group to group, living at the intersection of all the other aspects of social identity.' (Eckert 1998:66)

A central theme to Eckert's work is the concept of a Community of Practice (CofP) (Lave & Wenger 1991) – 'an aggregate of people who come together around mutual engagement in an endeavor' (Eckert & McConnell-Ginet 1992:464) in which participants 'develop activities and ways of engaging in those activities, they develop common knowledge and beliefs, ways of relating to each other, ways of talking' (Eckert & McConnell-Ginet 2003:57). The fundamental concept behind a CofP is that of shared practice, it focuses on what people do. In terms of gender, it forces us to rethink the idea that people can be assigned to independent categories of 'male' or 'female', and instead looks at ways in which gender and gender differences are constructed through our participation in various CofPs.[22] After all, gender is not a property of individuals; it is not something we 'have' or 'are', but it is something that we *do* (West & Zimmerman 1987:126).

Of the L2 Type 2 variation studies discussed previously, only two look at gender in any detail. Adamson & Regan (1991) provide a fascinating insight into gender differences in the acquisition of (ing) forms by Vietnamese and Cambodian immigrants. They found that NNs replicated the gender variation pattern of NSs, with males tending to use the alveolar form [ɪn] more frequently than females. But interestingly, while the rate of [ɪn] showed the predictable reduction in the monitored speech of the NS males, in the monitored speech of the NNS males the rate actually increased. Adamson & Regan discuss this finding in terms of covert prestige, with the NNS males desiring to match the NS male norm. The monitored environment simply gave them the opportunity to better achieve this variant, missing the point that for the NS males, this same environment favours a different variant.

[22] For a detailed account of how a CofP framework differs from other frameworks such as The Speech Community and Social Identity Theory, see Holmes & Meyerhoff (1999).

Major (2004:172) looked at the acquisition of four widespread (in US English) phonological processes[23] by native Japanese and Spanish speakers and asked three questions:

1. Are gender differences acquired by NNs?
2. Are stylistic differences acquired by NNSs?
3. Which factor, gender or style, is more salient?

He found that while there was unambiguous support for the acquisition of gender differences by both groups of NNSs, the same could not be said for stylistic differences. While the Spanish group showed some significant stylistic differences, (although much less than in the NSs), the Japanese group showed no significant stylistic differences at all. Major therefore concluded that NS gender differences are more salient, and acquired more readily than NS stylistic differences, by NNSs of English.

Studies into both L1 and L2 dialect acquisition have tended not to look at gender in any detail. Straw & Patrick (2007) do note the possibility of a reflection of the local/supralocal pattern of acquisition described above, but state the need for further research. Wolfram et al. (2004) discuss the differences between the acquisition patterns of a boy and girl, but do this in terms of identity rather than gender.

It is anticipated that gender will play an important role in the present study. Despite the obvious binary categorisation necessitated by the research design (the participants are balanced equally for sex), a less binary approach will also be explored in the patterning of any variation. In doing so, the present study will attempt to accommodate some of the views on gender which have been discussed in this section. As has been mentioned, the situation is made more complex by virtue of the fact that in L2 studies there are not one but two (possibly competing) established gender identities in play. Throughout, the following thoughts of Ehrlich (1997:440) will be borne in mind:

> … individuals construct themselves as "gendered" by habitually engaging in the social practices of a speech community that are symbolically and practically associated with masculinity or femininity or some mixture thereof. It is not gender per se, then, that interacts with linguistic practices, but rather the complex set of "gendered" social practices that individuals participate in. Given that gender is a social construction, … investigations of gender-differentiated second language acquisition must consider the

[23] 1. Palatalization in four environments, e.g. *got you, did you, this year, raise your*. 2. Deletion of /v/ in *of*. 3. '-ing' pronounced as [ɪn]. 4. Assimilation of /n/ in *can* e.g. *can be, can go*.

> way in which gender is locally constructed and constituted in specific speech communities.

It is hoped that the present study will provide insights into the little-researched area of gender-based variation patterns in L2.

2.5.10 Identity

The clearest connection between identity and SLA is in the context of L2 pronunciation, particularly with regard to accuracy. In the case of advanced speakers, the issue of 'passing' becomes relevant; that is, the extent to which an individual is able to pass as a native speaker, or, more importantly, the extent to which an individual *wants* to pass as a native speaker (c.f. Piller 2002). Marx (2002) describes six phases of her own personal experience of living in an L2 context (Germany) and then returning to the L1 context (Canada), the fourth of which is the 'construction of an L2 identity and attrition of the L1' (p. 273). During this phase she appropriated the L2 accent and 'deemed it a great success when [she] could 'fool' someone into believing [she] was indeed German' (p. 273).

In contrast, there is research to show that individuals might consciously avoid acquiring native-like pronunciation so as to reinforce their L1 identity. Gatbonton et al. (2005) studied the relationship between ethnic group affiliation and L2 pronunciation accuracy. The general findings were that 'the more learners sound like the speakers of their target language, the less they are perceived by their peers to be loyal to their own group' (Gatbonton et al. 2005:504). This was found to be true both in a situation where the L1 and the L2 were in conflict (French and English in 1970s Quebec) and in a situation where there was no conflict (Chinese and English in Montréal).

Clearly this has an impact on second language teaching, something which has not been lost in the ongoing discussion surrounding Jenkins' (2005) research into the attitudes towards pronunciation of non-native teachers of English. She found that the question of using a native speaker model as a target is a complex one, and it should be assumed neither that a language learner wants to achieve native like pronunciation, nor that they want to maintain their L1 identity through their accent. However, both desires can exist, even within the same person.

Lybeck (2002) used elements of Schumann's Acculturation model (Schumann 1978) along with elements of social network theory (Milroy 1987; 1992) in her study of the L2 pronunciation accuracy of Americans living in Norway. Those speakers with the lowest

level of cultural distance (developed through 'supportive engagement in exchange networks' (p.179)) were the ones who had the highest level of pronunciation accuracy. They were also the ones who felt they had accepted a new identity. This contrasts with the group with the highest level of cultural distance, who had the lowest level of pronunciation accuracy, and who felt that to lose one's foreign accent was to risk losing one's American identity (p.181).

The relationship between a person's L1 and their identity is a fundamental one that has always been recognized (see Tabouret-Keller (1997) for a historical overview), yet it is a relationship that is exceedingly complex. Much of this complexity stems from the multivalent nature of identity itself. This multivalency stands in contrast to the essentialist nature of much of the research involving identity in both sociolinguistics and anthropology (Mendoza-Denton 2002; Bucholtz & Hall 2004) which maintains that members of an identity category are 'both fundamentally similar to one another and fundamentally different from members of other groups' (Bucholtz & Hall 2004:374). In sociolinguistic terms, essentialism

> includes the analytic practice of using categories to divide up subjects and sort their linguistic behaviour, and then linking the quantitative differences in linguistic production to explanations based on those very same categories provided by the analyst.
>
> (Mendoza-Denton 2002:477)

Mendoza-Denton goes on to explain how essentialism in sociolinguistics can be seen as being related to the difference between analysts' categorization and participants' categorization of a given population, particularly when we try to impose Euro/American identity categories on other communities.

Also relevant to the issue of identity is the existence of accommodation, where a speaker's speech may change stylistically in relation to that of the interlocutor. Whether that change can be seen as convergence (as a sign of positive identification with the interlocutor), or as divergence (as an assertion of the speaker's own identity), the fact that there is any type of change is potentially problematic. This 'mutual co-construction of participants' and researchers' identities' (Mendoza-Denton 2002:479) has implications for the replicability of a study, illustrating quite clearly the ever-present challenge of the observer's paradox.

Crucially, the approach towards identity has changed considerably since the early days of variationist research. Mendoza-Denton (2002) describes three broad types of studies which, though not entirely separate, exist on a continuum from analysts' categories to participants' categories. The three types represent studies based on: 1) sociodemographic category-based identity, e.g. Labov's work in New York City; 2) practice-based identity, e.g. Eckert & McConnell-Ginet's (1992) interest in how identities are constructed by individuals' participation in various Communities of Practice ; 3) practice-based variation, in which identity is seen as shifting during interaction e.g. Johnstone & Bean (1999). Similarly, Eckert (2010) identifies three waves of variationist studies, the third of which puts stylistic practice in the centre of the process of constructing and negotiating identity, rather than seeing identity as being reflected by the variables people use.

The part which identity plays in the conclusions drawn by Adamson & Regan (1991) can be seen as an extension of the comments made earlier in relation to their thoughts on gender. The fact that men showed a greater frequency of [ɪn] even in the monitored style, suggests that the form carries the covert prestige (for the Vietnamese and Cambodian speakers) of stereotypical 'maleness', and is therefore desirable. The notion of identity here is not as complex as those outlined above, but nevertheless, this can be seen as an example of personae construction.

Identity does not feature explicitly in the other L2 type 2 studies, although Major (2004) does suggest in passing that one of the reasons gender differences appeared to be acquired before stylistic differences in his study could be that gender 'plays an important role in the formation of self-concept' (p.179).

The importance of dialect to the construction of identity cannot be overstated. As Wells (1982:1) points out when describing the importance of 'accent':

> An accent … is something every speaker has. To some small extent it will be special to him or her as an individual: it is part of one idiolect. To a very much greater degree it is characteristic of people belonging to some geographical region and/or social class; and it may well be typical of the speaker's sex, age group, or level of education.

This relationship between identity and dialect has been explored in many studies, a recent example of which can be seen in the work carried out as part of the AISEB

project[24] (e.g. Llamas et al. 2009). Studies into the acquisition of a second dialect in an L1 cannot therefore fail to involve issues of identity, although the extent to which this involvement is made explicit varies. A full investigation of L1 dialect acquisition research in which all the aspects of identity are teased out is beyond the scope of the present review, so a brief mention of some which do deal more explicitly with identity will have to suffice.

Dialect acquisition studies involving children often report on the need to fit in with peers. For example, one of the children in Chambers' (1992) study spoke of trying harder to sound English when around his friends in order to 'fit in with everyone' (p.676). Similarly, Kerswill & Williams (2000) illustrate the relevance of the changes in social orientation that come with reaching adolescence in their finding that older children acquired local dialect features before the younger 'home-oriented' children. Stanford (2008) develops the parent/peer influence idea in his study of Sui children from south west China. Being an exagomous culture, when Sui women marry they move to their husband's clan, which speaks a different dialect. Children therefore have conflicting parental dialectal influences – the 'matrilect' and the 'patrilect'. Stanford aligns this contrast with the more traditional parent/peer contrast by seeing at as a contrast between two groups, even though 'the 'peer group' is much more than peers, and the 'parent group' does not include both parents' (Stanford 2008:592). Eventually, one group wins, and 'a Sui child eventually constructs his or her linguistic identity around the patrilect and filters out the matrilect' (p.592).

Although coming from a study into L1 variation rather than specifically dialect acquisition, the findings of Ito & Preston (1998) provide a good illustration of the importance of identity in relation to the acquisition of new variants. Studying the spread of the Northern Cities Vowel Shift into non-urban northern Michigan, Ito & Preston found that the degree of shift in individuals is determined in part by the sense of loyalty towards, and identification with, their local rural setting. In other words, their degree of acquisition was directly related to their sense of social identity.

Four of the five L2 dialect acquisition studies all mention identity, but again, to varying degrees. As mentioned earlier, Wolfram et al. (2004) discuss the differing degree of

[24] Accent and identity on the Scottish-English border - http://www.york.ac.uk/res/aiseb/ [Accessed July 2010]

dialect acquisition between a brother and a sister as a result of the difference in their emerging identities, with the boy identifying with one social group and the girl another. Wolfram describes this as an example of how members of the same family 'mould their identities in relation to those around them and for themselves' (p.354).

Baker's (2008) findings concerning the relationship between attitude towards the local culture and acquisition of local variants has already been described. These results can also be viewed from the perspective of identity, however, further thought would need to be given to explain the negative correlation between attitude and acquisition. One would expect a negative attitude towards the target culture to strengthen a sense of identity with the L2 culture, which in turn should discourage the use of local variants. However, this needs further exploration.

Identity is central to Sharma's (2005) study, describing as it does the process of 'negotiating an identity that can encompass a dual Indian and American cultural investment' (p.119). The aligning of syntactic variation with English proficiency and phonetic variation with style led to the speakers 'inhabiting two distinct linguistic spaces simultaneously' (p.219), with the phonetic variation central in the display of allegiance and the construction of identity, be that consciously or subconsciously.

Rindal (2010) argues strongly that accent choice is relevant in the construction of individual identity, providing persuasive qualitative data to illustrate this. Certainly, her subjects seem very aware of the choices they are making and the reasons behind them. They are also very aware of what their classmates' choice of accent says about them:

> S19 In our class there are many people who take school very seriously, and these people speak British.
>
> S21 I think you are perceived as (…) a clever pupil if you speak British.
>
> (Rindal 2010:252)

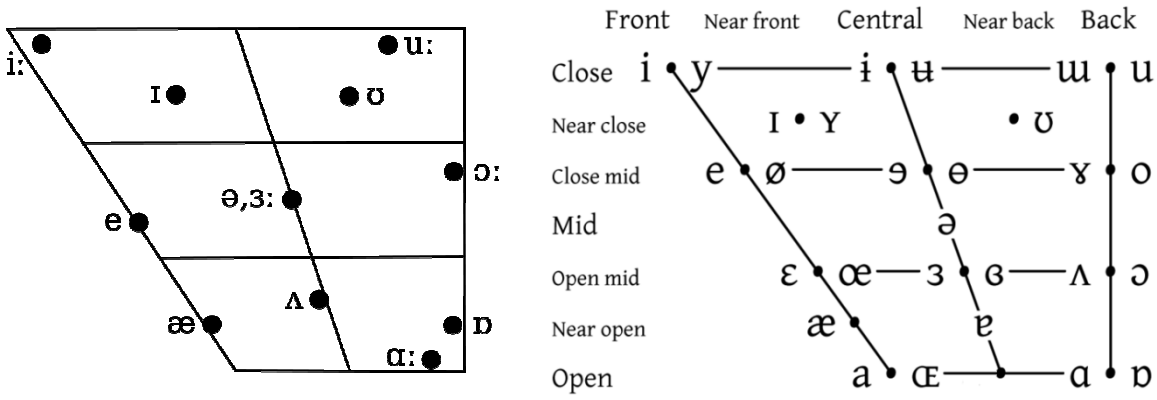
The relevance of identity to the present study is clear. The acquisition of features of the local accent could be viewed as indicative of a growing sense of local identity, especially in the case of the local STRUT vowel. The salience of this feature offers the possibility of its acquisition representing a conscious construction of a local (L2) identity. By the same token, lack of acquisition may signal resistance to the local culture and a determination to maintain one's L1 identity.

3: The linguistic features

3.1 STRUT

The STRUT vowel is described by Wells (1982:131) as 'a relatively short, half-open or slightly opener, centralized-back or central, unrounded vocoid'. In modern SSBrEng it occupies the area marked by /ʌ/ in the vowel diagram in Figure 2 on the left. While this is the symbol commonly used in the phonemic representation of the STRUT vowel, a more accurate phonetic representation is [ɐ], as can be seen from the IPA vowel chart in Figure 2 on the right. This is the symbol that will be used in the present study to represent the SSBrEng realization of the vowel.

Figure 2: SSBrEng vowel chart from Roach (2004) and IPA vowel chart from the International Phonetic Association (2005)

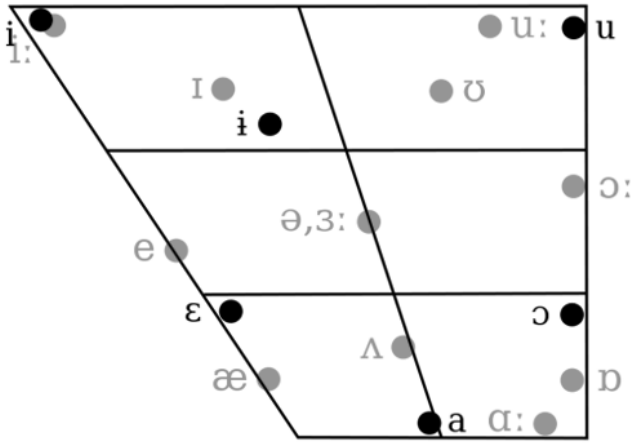


The reason this particular vowel is the focus of the present study is that in Manchester, and indeed in the North of England in general, there is no phonemic opposition between the STRUT vowel and the FOOT vowel. This lack of a so-called FOOT/STRUT split (Wells 1982:351-353) is in marked contrast to the pedagogical model of English the Polish speakers will have been exposed to, a model which is based on the SSBrEng vowel system described in Figure 2. The result of this lack of split in the north of England is that words such as *put* and *putt* are homophonous for many local NSs. There is, however, a degree of variation amongst speakers in the realisation of STRUT, even within these areas. This is particularly true in the speech of those higher up the socioeconomic scale, where the STRUT vowel is often found to be intermediate between the two extremes, and to varying degrees. Wells (1982) discusses a few possible realisations for an intermediate

sound, including a mid, central, unrounded [ə]. From personal experience, this is the most common outcome of any STRUT variation in the speech of people in the Manchester area: a sound somewhere between (and including) [ʊ] and [ə] but almost never any more open than that.

The relevance and interest of this for the current study is that due to the fact that the local vowel system differs from the pedagogical system the Polish participants will have been exposed to, it is possible to measure whether the existing vowel system is influenced by exposure to the new system. Indeed, a pilot study demonstrated that individual (but not all) speakers did show evidence of a change in the quality of their STRUT vowel towards the local variant, thus creating a need for further investigation into the factors behind this variable acquisition

Figure 3: Polish vowel chart from Jassem (2003).



.

Of course, in addition to the pedagogical vowel system and the local vowel system, the L1 vowel system is also relevant, particularly when we bear in mind the predictions discussed earlier with regard to the Speech Learning Model. Figure 3 shows the SSBrEng system outlined above with the Polish vowels added (Polish vowels in black, SSBrEng vowels in grey). Notice how the closest vowel to SSBrEng STRUT is Polish /a/ which is somewhat more open than the pedagogical target [ɐ]. According to Flege's (1995) SLM, the proximity of these two vowels has the potential to cause difficulties, as the perception of the two would be very similar. Whether or not this is the case amongst the speakers involved in the present study is of interest, but does not interfere with the focus in terms of movement towards the local STRUT variant. This is because even if the

original STRUT vowel in the speech of the Polish participants is slightly more open than [ɐ] due to influence from Polish /a/, movement towards [ə] and [ʊ] would still be as a result of local influence. That is to say, because the Polish influence is working in the opposite direction to the local influence, the two processes are very much separate, and cannot be confused. Possible influences of the L1 vowels on L2 vowel production will be discussed in a later section.

3.2 Glottal variation in /t/

Glottal variation in /t/ is a well-researched feature within sociolinguistics, and one that continues to yield interesting and useful findings. The term itself covers a variety of phenomena with a variety of labels which sometimes overlap. Wells (1982:260), under the general heading 'Glottalization' describes a process of preglottalization or glottal reinforcement in which a glottal stop masks the approach phase of the oral closure before /t/ (and /p, k, tʃ/) in certain syllable final environments. He then goes onto describe t-glottaling, which he defines as the complete replacement of the oral articulation by [ʔ]. Straw & Patrick (2007:388) note that "Glottalisation' is sometimes used vaguely in the literature to refer to one or more such elements (e.g. now including complete stops, now excluding them), especially when generalising across studies.'

Much of the research into glottal variation in /t/ considers the feature in word final position, although as it is a syllable-final phenomenon, it also occurs word-medially. However, the 'sharp stigmatization' (Wells 1982:261) associated with word medial glottal replacement and its subsequent low frequency amongst many groups of speakers means that this environment is not well-represented in existing research (although see Mathieson 1999). The focus then tends to fall on the pattern of variation in word final /t/ with regard to the following sound, which is usually categorized as a consonant (usually providing the highest rate of glottal variants), a vowel (usually the lowest rate) or a pause (usually between the two) (e.g. Docherty & Foulkes 1999; Tollfree 1999; Straw & Patrick 2007). Straw & Patrick (2007:390) describe this pattern as the diffusion pattern: PreC > PreP > PreV, and provide a table (reproduced here in Table 1 including notes) of selected studies into glottal variation in urban areas of Britain which support this pattern.

Table 1: Glottal variation by following environment in British urban dialects (Straw and Patrick 2007)

Variety	Pre-C	Pre-P	Pre-V	Speakers	Variants
Southeast					
SE London RP[a] (Tollfree 1999)	Frequent	Slight	Slight	Older	[ʔ] + [ʔt]
	Frequent			Young	
SE London Eng (Tollfree 1999)	Near-categorical	Near-categorical	High	All	[ʔ] + [ʔt]
Reading (Williams and Kerswill 1999)[b]	Categorical	n.d.	100%	WC boys	[ʔ] only
	Categorical	n.d.	92%	WC girls	
	Frequent	n.d.	14%	MC boys	
	Frequent	n.d.	30%	MC girls	
Reading (Williams and Kerwsill 1999)[b]	Categorical	n.d.	83%	WC boys	[ʔ] only
	Categorical	n.d.	75%	WC girls	
	Frequent	n.d.	49%	MC boys	
	Frequent	n.d.	25%	MC girls	
Midlands and north					
Derby (Docherty and Foulkes 1999)	Near-categorical	81%	60%	Young	[ʔ] only
		61%	9%	Older	
Hull (Williams and Kerwsill 1999)	Categorical	n.d.	83%	WC boys	[ʔ] only
	Categorical	n.d.	72%	WC girls	
	Frequent	n.d.	20%	MC boys	
	Frequent	n.d.	31%	MC girls	
Sandwell[c] (Mathisen 1999)	26-54%	16%	13-19%		[ʔ] only
Southwest					
Cardiff[d] (Mees and Collins 1999)	79%	51%	n.d.	MC girls 1976	[ʔ] + [ʔt]
	85%	83%	n.d.	MC girls 1981	
	32%	45%	12%	WC girls 1990	

a Tollfree distinguishes between a regionalised form of RP ('SE London Regional Standard') and the local vernacular. We [Straw and Patrick] refer to the former as 'SE London RP'.

b It is unclear whether data for Reading, Milton Keynes and Hull combine word-final pre-vocalic with wordmedial intervocalic. Pre-consonantal environments 'favour the process the most' (Williams and Kerswill, 1999: 147) everywhere, but the authors give no figures for them or for pre-pausal environments.

c Data summed over all informants (WC and MC, ages 16–70). Mathisen examined a range of consonantal and vocalic environments.

d Data for WC girls show the highest levels of three time periods sampled (1976, 1981, 1990).

As well as the fairly consistent linguistic constraints, glottal variation in /t/ is also subject to social constraints such as social class, age, and gender. The effect of age is generally very consistent with older speakers less likely to use glottal variants than younger

speakers. This pattern has been repeatedly shown in a number of studies (e.g. Milroy et al. 1994; Docherty & Foulkes 1999; Mathisen 1999; Mees & Collins 1999). The effects of social class and gender are not so consistent. One of the clearest discussions of this finding can be found in Milroy et al. (1994), who show that far from being the preserve of working-class males, the spread of certain glottal variants[25] is led by young middle class female speakers. This finding is also reflected in Mees & Collins' (1987; 1999) study into Cardiff English.

It was mentioned above that the terminology surrounding t-glottaling can be inconsistent. In the present study, *glottal variation in /t/* will be used to refer to the general concept of there being some kind of variability between different realizations of /t/ and *glottal replacement* will be used to refer to the substitution of a glottal stop for /t/. When referring to existing studies the original terminology will be used, but this will be commented on if it differs from the above. A detailed description of the /t/ variants and environments under investigation can be found in section 4.3.2.

3.3 (ing)

'A staple of sociolinguistics' (Hazen 2006:581), the variable (ing) has been studied in a wide variety of contexts since the 1950s. As a sociolinguistic variable, the focus has generally been on the pattern of variation between [ɪn] and [ɪŋ] in unstressed syllables; as such, monosyllabic words such as *sing* are always excluded on the basis of there being no variation to observe. Other common exclusions in previous studies have been place names and proper nouns, the tri-syllabic *everything* and *anything*, and sometimes *nothing* and *something.* Place names and proper nouns are excluded on the basis that they tend to consistently exhibit [ɪŋ] (Labov 2001); *everything* and *anythin*g are excluded due to the fact that the final <-ing> carries secondary stress; and *something* and *nothing* are excluded due to the observation that they tend to exhibit a greater frequency of [ɪn] than their grammatical category would predict, thus suggesting the possibility of a different process at work. The present study aims to be inclusive rather than exclusive with regard to these considerations, but the full details will be discussed in section 4.3.3.

[25] Their study looked at glottal variants in Tyneside, an area which has additional glottal features. The general finding was that while men favour the local glottalized variants, females are leading the way in the use of the supralocal glottal replacement.

Labov (2001:86) claims (ing) to be 'the first sociolinguistic variable to be studied quantitatively, [having] the widest range and most uniform pattern of all variables in English'. Central to this uniformity is the constraint of grammatical category, which has shown itself to be consistent across studies. The underlying nature of this constraint is described as some kind of nominal-verbal continuum (e.g. Houston 1985; Adamson & Regan 1991; Labov 2001; Abramowicz 2007) with the more verbal structures showing a greater occurrence of [ɪn], and the more nominal structures favouring [ɪŋ]. Labov (2001) makes the point that it is difficult to determine the level of detail along the continuum, due to the large number of possible syntactic categories, some with very low frequency. This is compounded by the difficulty in first determining the boundaries of these categories. While some categories sit neatly at the two ends of the continuum, for example, progressive verbs such as *he is running* and simple nouns such as *ceiling*, others, such as the status of so-called gerunds, are more problematic. This has led to a variety of solutions and categorizations, with different studies opting for more or less detailed categories[26]. However, few would argue that their own system of categorization is perfect, instead perhaps accepting that the precise details are not the most important factor, rather it is the observation that 'there are two distinct groups: a verbal and a nominal use of /ing/, which cluster at radically different levels' (Labov 2001:88).

One notable exception to the recurring nominal–verbal finding is Schleef et al. (forthcoming). The study compared (ing) variance in the speech of local and Polish-born adolescents in Edinburgh and London and found that only one group, the Polish-born adolescents in London, actually replicated the established pattern. Grammatical category was not even statistically significant for the local-born London group, and for the other two groups there was a reordering of the categories. Schleef et al. offer two possibilities to explain these (and other) differences between both their results and those of previous studies, and between their Polish and local speakers. Firstly, they suggest that supra-local constraints are influencing the speech of the Polish-born speakers, rather than the local constraints. This, they argue, is especially likely for the instances where the Polish-born teenagers have acquired a pattern that is common in the wider environment, but which the local adolescents do not exhibit. Secondly, they suggest that the differences result from imperfect learning. Polish-born adolescents, by definition, will not have been

[26] For example, Adamson & Regan (1991) used six categories, Abramowicz (2007) used four, and the Philadelphia study described in Labov (2001) used eight.

exposed to the same depth and variety of sociolinguistic information as their locally-born peers, and thus will not have had the opportunity to refine their own production. They argue that the complexity of the task of replicating these established patterns renders the (ing) variable a very different type for L2 speakers. What is seen very much as a stable variable for NSs, might in fact not be so stable for NNSs who are, after all, language learners. The imperfect learning therefore shows itself in the 're-ordering or non-replication of variable constraints' (Schleef et al. forthcoming: section 5.3).

While grammatical category is seen as one of the most consistent constraints at work on the (ing) variable (with the exception of the study described above), other constraints are equally well-researched, often with equally consistent results. From a linguistic point of view, two important constraints are those of priming, and regressive/progressive assimilation/dissimilation. Priming describes the idea that the realisation of one (ing) can then affect the realisation of a subsequent (ing). For example, in a phrase such as *she was watching the swimming,* if a speaker produces [ɪŋ] in *watching* then they are more likely to produce [ɪŋ] in *swimming,* all things being equal. Abramovicz (2007) found this to be a powerful constraint, although cautions against drawing strong conclusions, citing the need for more detailed research. A phonological constraint which might at times work against priming is that of regressive homorganic assimilation and progressive homorganic dissimilation, as described in Houston (1985). Regressive homorganic assimilation describes the process whereby the sound immediately following (ing) affects its realisation, so that a following velar (e.g. *doing cartwheels)* encourages the use of [ɪŋ] and a following alveolar (e.g. *doing tests)* encourages the use of [ɪn]. Progressive homorganic dissimilation describes the process whereby the consonant sound preceding (ing) affects its realisation, so that a preceding velar (e.g. *walking home)* discourages the use of [ɪŋ], and a preceding alveolar (e.g. *hiding away)* discourages the use of [ɪn]. These tendencies, however, are not as consistent as the grammatical category constraint appears to be, with Labov (2001:87) finding 'no strong phonological conditioning before following velars or apicals'.

There are also social constraints at work in the realisation of (ing) which also appear to be consistent across studies[27], such as social stratification, style, and gender. Generally speaking, one would expect a higher rate of [ɪn] lower down the socioeconomic scale, in

[27] For an overview, see Labov (2001) or Hazen (2006).

more informal speech, and in the speech of men. Although social class is not a consideration in the present study, and style will play a peripheral role, gender is central to this research. For this reason it is important to note Labov's (2001:266) statement that 'For stable sociolinguistic variables, women show a lower rate of stigmatized variants and a higher rate of prestige variants than men.' In the case of (ing), which is, at least in L1 speech, a stable sociolinguistic variable, this would indeed suggest that men are likely to produce more examples of [ɪn] than women.

3.4 h-dropping

Described as 'the single most powerful pronunciation shibboleth in England' (Wells 1982:254) h-dropping (also referred to as h-loss) refers to the zero realization of [h] in syllable initial position[28]. The most likely context for h-dropping is closed-set items such as auxiliary verbs (e.g. *have, has, had)* and personal pronouns (e.g. *him, her, his, he*) (Tollfree 1999:173). In fact, because the likelihood of h-dropping is so high in these contexts in many varieties of English, sociolinguistic research into the feature often discards these tokens as near categorical and therefore of little interest to variationist studies (e.g. Bell & Holmes 1992). The general finding of those studies carried out into h-dropping varieties is that lower socioeconomic groups are more likely to exhibit h-dropping than higher socioeconomic groups (e.g. Trudgill 1974; Petyt 1985). There are conflicting findings with regard to the effect of age on h-dropping, with Cheshire et al. (1999) showing a reduced level in younger speakers in Milton Keynes and Reading, but Tollfree (1999) showing a slightly higher rate in some of her younger speakers in London. There is also a tendency for men to h-drop to a greater extent than women (Horvarth 1985; e.g. Petyt 1985; Bell & Holmes 1992)[29]. Most areas of the north of England have been reported as displaying h-dropping in line with the socially stratified patterns found elsewhere (Beal 2004:127), with the only exception being the North-East. As such, the area around Manchester in the North-West of England falls well within isoglosses marking the existence of h-dropping (e.g. Trudgill 1999:29).

[28] For a discussion of two possible synchronic phonological accounts of h-dropping see Wells (1982:253-254).
[29] Horvarth (1985) and Bell & Holmes (1992) are studies into Australian English and New Zealand English respectively.

4: Methodology

4.1 Selecting the participants

Having already defined the 'sampling universe' (Milroy & Gordon 2003) as Polish people living in Manchester who grew up in Poland, potential participants were identified and selected through the approaches of social networks and judgement sampling (Milroy & Gordon 2003; Tagliamonte 2006) whereby people who represented previously identified categories were sought in order to fill an appropriate quota for each. Some categories, such as sex, were strict, in that equal numbers were sought; other categories, such as occupation, were less so, in that a variety of job types was sought, but without a pre-defined checklist of this or that job. Length of residence (LOR) and age were both judged to be important, and both necessitated more detailed consideration. A pilot study had highlighted the problems of using older participants who had been in Manchester for 40 years or more, as their life experiences and their relationship with the English language was so varied it was extremely difficult to control some of the variables. To take one example, a participant in her 70s left Poland at 17, but arrived in the UK only after a few years in India, before going on to spend varying amounts of time in different areas of England. In this situation it is very difficult to even begin investigating the various influences on her speech. For this reason, it was decided to concentrate on a subset of the Polish community in Manchester for the main quantitative analysis, and then describe the speech of one of the older speakers to serve as an illustration of what can happen when someone has lived in the area for a long time. The subset under investigation comprised people who fulfilled the following criteria:

- they grew up in Poland and came to England as adults;
- they are aged between 18 and 40;
- they had some knowledge of English language before coming to England;
- they had ideally lived nowhere else in the UK apart from in the Manchester area.
- as a group they represent a range of occupations and a range of LORs.

In the initial stages of research a variety of methods was employed to recruit participants including the displaying of flyers in Polish shops, personally visiting cafes, shops and hotels where Polish people were known to be working, and announcements on Facebook and on Polish discussion forums. All had some degree of success, but the most effective

method was by word of mouth recommendation after a few interviews had been carried out. At the end of almost every meeting, the participant would recommend someone who would be happy to be contacted. Initially, all leads for potential participants were followed up, regardless of age, length of residence, and situation. However, as the judgement sample began to take shape, certain sections of the community were targeted more than others in order to fill the necessary quotas. The final sample consisted of 40 individuals (see Table 2).

Table 2: Participants

ID	Sex	Age	LOR (m)	Occupation
9	m	19	6	student – UG medicine
12	m	21	22	student – UG business
28	m	22	40	student – UG maths, part time work in office.
11	m	23	2	student – UG economics.
40	m	23	4	student – UG business.
16	m	24	30	student – computer programming
20	m	24	32	factory
38	m	24	42	student – PG photography, part time work in café.
31	m	26	37/61[30]	student – PG politics
27	m	27	53	student – UG physics, part time work in hospital
4	m	28	20	warehouse
32	m	28	56	bus driver
21	m	31	46	University canteen
34	m	31	37	office – small software company
1	m	32	41	student – PG translation studies
29	m	32	64	hospital – mental health nurse
14	m	33	48	mechanic
26	m	34	61	welder
33	m	35	65	warehouse
6	m	37	46	security guard – industrial estate
7	f	19	8	student – UG languages
5	f	22	2	student – UG business
8	f	22	6	student – UG photography
37	f	22	42	student/shop – PG photography, part time shop work
10	f	24	8	PG - microbiology
15	f	26	21	café
22	f	26	59	student – UG economics
39	f	26	31	café
2	f	27	47	shop manager – department store
18	f	28	72	bar manager
35	f	28	39	office
36	f	28	42	bookmakers
3	f	29	8	office
17	f	30	24/48	waitress
30	f	31	64	office – hotel admin
25	f	32	63	university researcher
19	f	33	45/72	shop assistant - department store
13	f	34	40	housewife
23	f	36	25	polish office
24	f	37	46	housewife and part time classroom assistant

[30] Where two LORs are given, this indicates that time was spent in the UK, but outside Manchester. The first value gives LOR in Manchester, the second gives LOR in the UK in total.

4.2 Gathering data

Meetings were arranged with individuals at a variety of locations. Some took place in a university office, some at individuals' homes, and some in cafes. Although a degree of consistency was arguably lost by using different locations, the fact that participants chose the location and time that suited them best suggests that they were relatively comfortable in the situation. This was seen as most important in order to access more natural speech.

Each individual meeting with a speaker consisted of up to five different elements, three primarily concerned with collecting linguistic data:

- the conversation
- the picture task;
- the word list;

and two primarily concerned with collecting sociolinguistic data:

- the written questionnaire;
- the matched guise test.

All 40 participants took part in the conversation, the word list and the questionnaire; 34 took part in the matched guise test (MGT), and 31 took part in the picture task. The omission of the picture task on these nine occasions was due to time constraints on the part of the participant, and the omission of the MGT on these six occasions was due to the unsuitability of the location. At the beginning of each interview participants were given a brief outline of the research area, and any questions were answered before a consent form was signed.

4.2.1 The conversation

The term 'conversation' is used intentionally here, as the idea was to replicate an informal chat. Every effort was made to elicit as much speech as possible from the participant, resulting in the conversations being desirably one-sided, but they remained conversations rather than interviews. The reason for this approach was an awareness that the participants were not using their first language, which for many would be a

challenging task. It was therefore important to ensure that the meeting in no way resembled any kind of language test, where an interlocutor would ask a series of questions and offer little in return.

The purpose of the conversation was to elicit speech that was as natural as possible by accessing information, explanations, and most importantly stories, that might usually be shared between friends. Certain core topics such as the participant's life in Poland, life in Manchester, problems faced when living in a different country and future plans were covered with each participant through leading questions. Other topics developed naturally depending on the individual. Although the primary purpose of the conversation was to elicit natural speech on any topic, a secondary purpose was of course to gather useful data on areas such as educational background, socio-economic status and so on. The recorded conversation was also used to assess the participants' level of spoken English (LoE). This was an impressionistic score made by the researcher and a colleague (both qualified teachers and teacher trainers of ESL with over 10 years experience) on overall fluency, accuracy and use of vocabulary. A numerical scale from 1 to 10 was used, which relates to standard ESL labels for proficiency as outlined in Table 3.

Table 3: Level of English scale (LoE)

1	Elementary -
2	Elementary +
3	Pre-intermediate -
4	Pre-intermediate +
5	Intermediate -
6	Intermediate +
7	Upper Intermediate -
8	Upper Intermediate +
9	Advanced -
10	Advanced +

The length of the conversations varied with each speaker, with the shortest being 18 minutes and the longest 1 hour and 10 minutes (average 34 minutes). The most important factor determining length was level of English, with some speakers finding it

understandably challenging to maintain a conversation in a second language for an extended period.

4.2.2 The picture task

The purpose of the picture task was to elicit speech of a more formal style than in free conversation in which more attention might be paid by the participant to what was being said. This follows what has been labelled an 'Attention to Speech' approach (Schilling-Estes 2002) in which the sociolinguistic interview is designed to 'yield a range of types of speech, from the casual to the highly formal, that could be fairly readily delimited by the analyst' (Schilling-Estes 2002:378). The tasks usually used to elicit more self-conscious speech might include a word list, a reading passage, and a list of minimal pairs. Results of this approach seem to show that:

> ...for the most part, when investigating features that can be arranged along a vernacular-standard continuum, speakers show lower usage levels for vernacular features, and higher levels for their standard counterparts, as they move from casual situations, in which they are relatively unselfconscious, to more formal situations, in which they are carefully monitoring their speech.
>
> (Schilling-Estes 2002:379)

However, in this case it was felt that a reading passage would not be appropriate due to the fact that participants would be using a second language. Given the potentially wide-ranging levels of English amongst the participants it would be difficult to supply a reading passage that would be accessible to all. Coupled with this is the issue of orthographical influence on pronunciation, particularly with unfamiliar words. This is not to say that the influence of orthography on the pronunciation of a reading passage is not an area of interest, rather it is that in a second language situation, a reading passage cannot be viewed as simply another point on a casual to formal scale of speech. It was for this reason that a picture task was chosen instead.

The task itself took the form of a variety of cartoon strips, each with four pictures, each telling a different story. The participant was simply asked to describe what they thought was happening in the pictures. The pictures were designed to encourage the use of certain target variables, such as the STRUT vowel and 'ing' forms. The former was achieved by the inclusion of certain objects such as *sun, duck, trumpet, hut*, and so on; the latter was achieved more by the nature of the task itself, which encourages the present progressive structure. Each participant was asked to describe either one or two

cartoon strips, depending on how much speech was elicited. In the first five meetings participants were asked to describe three or four strips, but this was reduced to one or two in later meetings as the task sometimes led to confusion, affecting the momentum of the meeting as a whole. The two strips used in later interviews were chosen for their greater success in eliciting speech in previous interviews. All four strips are included in appendix 1.

4.2.3 The word list

The final task was a word list consisting of 70 words, initially chosen to provide a range of vowel sounds, with a particular focus on the STRUT vowel. Participants were asked to read the word aloud from a printed list (appendix 2).

In summary, the three tasks were designed to elicit speech of three levels of formality, from the casual speech of the conversation, to the slightly more formal speech of the picture task, to the formal speech of reading a list of words. Running parallel to this is the idea that as the level of formality increases, so does the level of attention to speech on the part of the speaker.

There are limitations to this Attention to Speech approach (see Schilling-Estes (2002:382-3) for an outline) which should be mentioned at this point. Perhaps the primary concern is that the approach is too one-dimensional, that speech styles do not fit neatly onto a continuum in this way, that even within one style such as 'casual' there are numerous possible types within it, depending on the particular context. Neither is it certain that level of formality and attention paid to speech are as well-correlated as previously thought. However, for the purposes of this study it was decided that the traditional approach would suffice, both for reasons of practicality and of potential comparison with existing research.

4.2.4 The interview

The conversation was recorded using a Zoom H2 Handy Recorder placed unobtrusively on a surface near the participant. Recordings were made as .wav files using a 44.1 kHz sampling rate with 16-bit precision, saved onto an SD memory card then transferred onto a PC. After the conversation section participants were given the picture task followed by the wordlist, at which point the recorder was switched off. Participants were then given the questionnaire to complete while the MGT was set up, which was started as soon as

the questionnaire had been completed. The recordings for the MGT were played on a netbook computer through a USB external speaker. The end of the MGT signalled the completion of the meeting, at which point any further questions were answered.

4.2.5 The questionnaire[31]

The questionnaire was divided into two main sections, with the first designed to gain information in the following areas:

- self-assessed English language level;
- amount of English instruction;
- use of English and Polish (amount);
- future plans (timescales for returning to Poland, settling in UK etc).

The second section represented the main bulk of the questionnaire, consisting of 42 questions on the following aspects of attitude and motivation:

- anxiety about pronunciation;
- attitude towards Manchester, its people, and living there;
- awareness of a Manchester accent;
- attitude towards a Manchester accent;
- desire to lose one's Polish accent and sound like a native speaker (not specifically Manchester English);
- instrumental motivation to improve pronunciation;
- integrative motivation to improve pronunciation.

The underlying format of the second section was influenced by Gardner's (1985a) Attitude/Motivation Test Battery, an established element of much of the existing research into L2 motivation. Although Gardner's own theories on integrative and instrumental motivation have been questioned (Dornyei 2001; 2005) it was felt that these two aspects of motivation were sufficiently identifiable as to warrant their inclusion in the present study.

The 42 questions in the second section were all in the format of a statement followed by a seven point Likert scale, with 'strongly disagree' and 'strongly agree' at numbers 1 and 7, and numbers 2 to 6 remaining unlabelled in between. Multi-item scales, as described

[31] The questionnaire can be found in full in appendix 3.

in Dörnyei (2002) were employed so that each main area under investigation was covered by more than one question. In fact, each area was assessed by six questions, although the two sections involving the awareness of, and attitude towards the Manchester accent were originally grouped together, so these areas were subsequently covered by two and four questions respectively. One 'distracter' area was included, consisting of questions on other aspects of language learning such as reading and writing. These questions were included simply to draw attention away from the real focus, that of speech and pronunciation. It was decided to have the entire questionnaire translated into Polish so as to avoid both possible misunderstanding and fatigue on the part of the speakers. The internal consistency of the questions was measured using Cronbach's Alpha, and the existence of correlations amongst the factors was checked by calculating a Pearson correlation coefficient for each combination, with any problematic factors being discarded[32]. As a result, the following aspects were retained:

- attitude towards Manchester, its people, and living there (ATT);
- awareness of a Manchester accent (AW);
- desire to lose one's Polish accent and sound like a NS (not specifically Manchester English) (CHA);
- motivation (both instrumental and integrative) to improve pronunciation. (MOT).

4.2.6 The Matched Guise Test

The main purpose of the MGT was to investigate the ability of the speakers to perceive the differences between a Manchester accent and a Southern Standard British English (SSBrEng) accent. Two actors, one male one female, were asked to read a prepared text (a short weather forecast) once in a Manchester accent, and once in a SSBrEng accent. This was repeated several times, until it was felt that there was a usable version of each accent from each actor. The resulting four recordings could be described as representing 'conservative' varieties of the two accents, with few salient differences. In fact, the differences between the two accents could largely be explained by the predictable variation in the STRUT and BATH vowels. Four further recordings were made by different people: a male and a female from Manchester, and a male and female from the southeast of England.

[32] All calculations and results can be found in appendix 4.

The participants were given sheets of paper on which they had to rate each voice on various characteristics. For each characteristic they were asked to circle a number between one and seven indicating their feeling that the voice was, for example, less or more friendly. In total, participants were asked to rate the voices as being more or less intelligent, self-confident, kind, well educated, friendly, polite, interesting, honest, and physically attractive. The participants were then played the eight voices one by one, with a pause between each voice to enable them to complete the task. The order of play was mixed so as to ensure there were at least two other recordings between each matched pair.

The design of the test was deemed to have been effective, as at no point did any participant make a comment that might suggest they were aware that they were listening to the same person. In a pilot study of the test the actors were asked to produce a third version of the text in which only one feature differentiating the two accents was changed. In this case, despite separating the three recordings, the participants did ask whether they were listening to the same person. This third version was therefore discarded for the actual study.

4.2.7 Summary of data collection methods

Table 4 outlines the method used to gather data on each of the sociolinguistic variables under investigation:

Table 4: Methods used for data collection

Variable	Method
Age	Questionnaire
Gender	Questionnaire
Date of arrival	Questionnaire
Level of English on arrival/now[33]	Questionnaire
Amount of English language tuition	Questionnaire
Use of English compared to Polish	Questionnaire
Intentions regarding staying in the UK	Questionnaire
Attitudes and motivation with regard to spoken English	Questionnaire
Level of education	Conversation

[33] Self-assessed

Marital status and family situation	Conversation
Employment history	Conversation
Future plans	Conversation
Level of spoken English[34]	Conversation
Ability to perceive northern/southern BrEng accents	MGT
Attitudes towards different accents	MGT

4.3 Identifying and coding the linguistic variables

Each recording was transferred to a laptop computer and the conversation element was isolated. The first 5 or first 10 minutes of every conversation (depending on overall length) was disregarded as this might be seen as a period during which participants settle into the situation and hopefully lose their awareness of the microphone. The remainder of the conversation was analysed in stages, depending on initial findings and taking into consideration the findings of a pilot study.

4.3.1 STRUT

4.3.1.1 Auditory analysis

Every instance of a word which might potentially include the STRUT vowel was identified as a token and the vowel was coded according to the following system:

Table 5: Auditory categories for STRUT analysis.

STRUT variant		**code**		
weak form (e.g. *but then*)		w		weak
RP	[ɐ]	0	target	full
Raised RP	[ɐ̝]	1		
Schwa	[ə]	2		
Lowered NBrEng	[ʊ̞]	3		
NBrEng	[ʊ]	4		
	[ɔ]	6	non-target	
	[ɒ]	7		
	[ɯ]	8		
	[a]	9		
	[ɑ]	10		

[34] Assessed by researcher

Weak forms were identified on a word by word basis on the actual absence of stress rather than by what might be predicted by standard patterns of native speaker stress placement. This is because words which would usually be weak in native-speaker speech (high-frequency monosyllabic function words such as *but*, *just*, auxiliary *does*) were often given their full form in the speech of the participants. When this occurred, tokens were deemed to be full and were coded accordingly. True weak forms were coded separately due to the fact that the vowel is likely to be something close to schwa whatever the underlying accent, so therefore they reveal nothing about the acquisition or otherwise of a NBrEng variant for STRUT. Categories 6-10 consist of realisations which fall outside the scope of what might be thought of as native-speaker BrEng variation for STRUT, so therefore could be viewed as pronunciation errors, as they are not in line with either the pedagogical model or the local variety. This does not render them irrelevant by any means, and it would undoubtedly be of great interest to study these tokens in more depth in relation to Flege's (1995) SLM. However, for the purposes of this study these categories were conflated and viewed simply as non-target realisations of STRUT[35]. Due to the fact that these tokens do not play a central part in the study, the categorizations are not necessarily intended to be phonetically precise. Instead, the symbols used represent the nearest cardinal vowel to what was heard, without the use of diacritics.

What remained for each participant was a numerical value showing the total for each of the five variants of the STRUT vowel under investigation (coded as 0, 1, 2, 3 and 4), the total number of weak forms (w) and the total number of non-standard forms (NS). The five standard variants actually lie on a continuum between the two extremes, so the categories are in some ways arbitrary, but categorising them in this way help to make sense of a continuous variable of this kind (Milroy & Gordon 2003). The decision to use five auditory categories was based on a process of trial and error during which it was found that the researcher could confidently distinguish more than three variants, yet not as many as six or seven.[36] The accuracy of the auditory analysis was checked during the acoustic analysis (see below).

In the first instance, 50 full STRUT tokens were identified for each individual speaker, with all weak forms being identified when they occurred within this time. If those 50

[35] Although non-target realisations are dealt with briefly in a later section on style.
[36] The five variants were treated as existing on a continuum between the typical southern and northern pronunciations. This technique is along similar lines to Gordon (2001).

tokens were all auditorily categorised as 0 or 1, then no further tokens were sought, as these two variants could be seen as being within the pedagogical target. However, if two or more tokens were auditorily categorised as 2, 3, or 4, indicating a possible move towards the local variant, then a further 20 full tokens were sought, bringing the total to 70. If those 70 tokens included five or more tokens auditorily categorised as 2, 3 or 4, indicating a possible substantial move towards the local variant, then a further 30 full tokens were sought, bringing the total to 100. Table 6 shows how this process works with three imaginary speakers, A, B and C, all of whom have had 50 tokens analysed.

Table 6: The token identification process

	Auditory category						
Speaker	**0**	**1**	**2**	**3**	**4**	**Total tokens in cats 2,3,4**	**Action**
A	46	4	0	0	0	0	Stop
B	38	11	1	0	0	1	Stop
C	28	18	2	2	0	4	Go to 70
After collecting 70 tokens the results for speaker C are as below:							
C	38	21	6	5	0	11	Go to 100

In the case of four particular speakers 100 full tokens were analysed when, according to the process described above, only 70 were necessary. This was due to the fact that these four were involved in testing the effectiveness of this process, and it was felt that the additional tokens should be retained rather than discarded. In the case of one speaker, the number of stressed tokens available in total fell below 50 (44). In all, 4158 STRUT tokens were analysed (3146 full tokens), an average of just over 103 tokens per participant.

4.3.1.2 Acoustic analysis

Acoustic analysis was used to complement the findings of the auditory analysis. While it must be borne in mind that there is no direct one-to-one relationship between the auditory and acoustic analyses of vowels, particularly when restricting analysis to the first and second formants (Foulkes et al. 2010)[37] it can be beneficial to use both

[37] Foulkes et al provide a useful critique of the reliance on formant frequencies (especially F1/F2) in the analysis of vowel systems, providing numerous examples of research in which the explanatory power of these two formants is questioned.

techniques in tandem (Labov 1994). Indeed, Milroy and Gordon (2003), in a useful discussion of the merits of each technique, point to various studies which have used acoustic analysis on data which has already been coded auditorily (e.g. Watt & Milroy 1999; Gordon 2001). It is often the case that the acoustic analysis helps clarify auditory analysis and vice versa. At the very least, using the two techniques together helps to guard against the incorrect analysis of individual tokens.

On completion of the auditory analysis for an individual speaker, a selection of the tokens were subjected to acoustic analysis using *Praat* (Boersma & Weenink 2010). Tokens where the vowel sound was followed by either a nasal consonant or a lateral approximant were excluded, due to possible coarticulation effects; all other tokens were measured. However, as the purpose of the acoustic analysis was to test the accuracy of the results of the auditory analysis, it was important that only clear examples were used. For this reason, those tokens whose F1 and F2 frequencies were ambiguous in any way were also disregarded. For the remainder of the tokens, F1 and F2 readings were taken from a visible steady state in the middle of the vowel. The results were plotted onto a scatter diagram using Microsoft Excel. By labelling the points in the scatter diagram with the numbers 0 to 4 from the auditory analysis it was possible to visually check the consistency between the two techniques, as instances of each number would ideally be grouped together in the diagram. Similarly, plotting the mean F1/F2 readings for all members of each auditory category would ideally show 5 points covering the target area from SSBrEng [ɐ] to NBrEng [ʊ]. However, this should not be taken to mean that an entirely neat patterning was either expected or desired, it was simply a way of highlighting tokens that might need to be re-visited. Those tokens that did show a discrepancy between auditory category and acoustic F1/F2 reading were re-checked. If the two results remained inconsistent after re-checking, the auditory categorisation was deemed to be the final decision due to the centrality of the idea of perception in this part of the study.

4.3.2 Glottal variation in /t/

Although consonantal variables such as t-glottaling have in the past tended to be analysed auditorily, acoustic analysis is being used more and more in this area. Perhaps this is in part due to Docherty and Foulkes' (1999) comment on the scarcity of studies in which instrumental techniques have been used on consonantal variables. While

acknowledging that this state of affairs owes much to the fact that auditory discrimination between consonantal variants is often sufficiently reliable, they go on to illustrate the extent to which instrumental analysis can uncover finer relevant detail in their description of their own research into glottal and glottalised variants of Newcastle /t/. Indeed, the result is a convincing description of sociolinguistically patterned types of glottalisation that simply cannot be discriminated auditorily, even when the data is revisited (Docherty & Foulkes 1999:57).

However, it was decided that auditory analysis of t-glottaling would be sufficient for the present study. This decision was made for the same reason expressed by Fabricius (2000:80), namely that the present study 'is more concerned with the sociolinguistic character of t-glottaling than with its acoustic 'profile''. This reasoning is especially valid in this case due to the fact that t-glottaling is but one of several features under investigation, and there is simply not the scope to carry out a detailed acoustic analysis.

Previous research into glottal variation in /t/ shows a variety of approaches in terms of what constitutes the envelope of variation, with differences existing in both the linguistic environment of /t/ and in the nature of the variants themselves (see Straw & Patrick (2007) for a useful summary list of previous studies into word final glottal variation in England, showing which variants were studied). The present study follows the lead of Fabricius (2000; 2002) and Straw and Patrick (2007) by focusing on glottal replacement alone and not on any possible examples of glottal reinforcement. It is concerned with word final /t/ preceded by a vowel (V/t/#), and word medial intervocalic /t/ (V/t/V). Each word final /t/ is categorised as being either pre-consonantal (PreC) *(..tha**t** **c**ountry..)*, pre-vocalic (PreV) *(..tha**t** **i**dea..),* or pre-pausal (PreP) *(..this ca**t**.),* with the PreC category being further divided into pre-stop (PreS) /p, b, t, d, k, g, m, n/, pre-fricative and affricate (PreF) /f, v, θ, ð, s, z, ʃ, ʒ, tʃ, dʒ/, and pre-approximant (PreA) /r, l, w, j/.

In total this gives six environments under investigation:

- V/t/#S 'ho**t** potato'
- V/t/#F 'abou**t** seven'
- V/t/#A 'wha**t** would'
- V/t/#V 'no**t** even'
- V/t/#P 'did i**t**.'
- V/t/V 'ma**tt**er'

The three PreC environments were coded only for two variants – released [t] or 'other'. This was done for two reasons: firstly, it is often very difficult to reliably discriminate auditorily between certain variants of /t/ in this context in spontaneous speech (for example, deciding whether *'that man'* is in fact [ðætˀ mæn] or [ðæʔ mæn] when spoken at normal speed). Of course, place of articulation is also relevant here, with some following sounds making identification more or less difficult, but the decision was made to treat all following consonants in the same way for the present study. Secondly, a pilot study had shown that a recently arrived Polish speaker appears to produce released [t] in this environment far more frequently than would a native speaker, irrespective of their level of English. It was therefore felt that a reduction in the frequency of released [t] would in itself constitute a valid sign of change. The focus therefore is on the absence or presence of released [t], not on the particular variant that might take its place.

The other two word final contexts, PreV and PreP were each coded for five possibilities, and the word medial intervocalic context was coded for four possibilities. These are summarised in Table 7. Due to the fact that the primary aim here is to investigate rates of glottal replacement in these environments, the variants in PreV and PreP environments were later reduced to two possibilities: glottal replacement or 'other'.

Table 7: Details of variants coded for each environment

/t/ variant	code	PreC	PreV	PreP	V/t/V
V/t/#C other[38]	0	✓	×	×	×
released [t] [39]	1	✓	✓	✓	✓
glottal replacement [ʔ]	2	×	✓	✓	✓
elided [ø]	3	×	✓	✓	✓
flap/tap [ɾ]	4	×	✓	×	✓
unreleased [tˀ]	5	×	✓	✓	×

In the first instance, 50 usable /t/ tokens were identified for each individual speaker. A usable token was deemed to be a clearly audible realisation of /t/ in any of the 6 environments outlined above. Due to the fact that glottal replacement is the primary focus of this part of the study, it was upon the occurrence of this realisation which the decision to continue identifying tokens was based. If the initial 50 tokens contained no

[38] For the PreC environment, the 'other' category included anything that was not released [t].
[39] This includes any variant with an audible release, however slight.

examples of glottal replacement in V/t/#V, V/t/#P, and V/t/V, then no further tokens were sought. However, if the first 50 tokens contained one or more examples of glottal replacement, then a further 50 tokens were identified where possible. In the case of one speaker, the number of tokens available in total fell below 50. In all, 3450 /t/ tokens were analysed, an average of just over 86 per participant.

4.3.3 ing

As described earlier, the interest of the (ing) variable usually lies in the alternation between [ɪŋ] and [ɪn] in unstressed syllables. However, the present study includes two other variants, [ɪŋg] and [ɪŋk]. The first of these was included on the basis that it is a common variant amongst the native speakers of the local area (Wells 1982); it was initially felt that the use of [ɪŋg] by the Polish speakers might possibly indicate an acquisition of a local form. However, in a pilot study it soon became clear that a fourth variant, [ɪŋk], was common amongst the Polish speakers. This is perhaps not surprising, given that in Polish, the velar nasal only occurs before a velar plosive (Gussman 2007). The nature of this velar plosive (voiced or voiceless) generally depends on the following sound. In coda position, obstruent voicing is not always contrastive in Polish; the stop will assimilate to what follows. This would suggest that [ɪŋk] is to be expected before a voiceless obstruent or a pause, and [ɪŋg] is to be expected before a voiced obstruent[40]. Before nasals, approximants, and vowels, the situation is more complex as it is dialect dependent to an extent[41]. This made it impossible to determine if any realisations of [ɪŋg] were as a result of a move away from standard [ɪŋ] towards the local variant, or as a result of L1 interference. Nevertheless, the four variants were coded separately with a view towards looking briefly at the [ɪŋk] / [ɪŋg] alternation in addition to the main focus of the use of [ɪn]. All examples were categorised according to five linguistic features:

- variant - [ɪŋ], [ɪn], [ɪŋg], [ɪŋk];
- preceding consonant – alveolar, velar, other;
- following segment – alveolar, velar, other, pause;
- grammatical category (see Table 8);
- previous variant [ɪŋ], [ɪn], [ɪŋg], [ɪŋk].

[40] There are difficulties, however, in distinguishing between different velar variants when there is a following velar. This will be addressed briefly in the (ing) results section.
[41] Thanks to Jarosław Weckwerth of Adam Mickiewicz University in Poznań [personal communication] for clarifying these points.

Table 8: Grammatical categories for (ing)

Category	**Example**
Pronoun	*I know everything about it.*
Progressive verb	*He is watching TV.*
Present participle	*Considering he is not English…*
Gerund (verbal)	*He's started working there.*
Gerund (nominal)	*A big swimming pool.*
Noun	*I liked the beginning…*
Adjective	*It is more exciting than…*
Preposition	*I went during the holidays.*
Discourse marker	*…for three years or something.*

The difficulty in categorising certain (ing) forms was mentioned earlier, particularly with regard to the gerund, which has been identified in different ways by different people for many years (if it has been identified as a separate form at all). When it is identified as a separate category, it is usually described as simultaneously exhibiting properties of a verb and properties of a noun. The approach taken in the present study is to use two categories for gerund: 'gerund (nominal)' and 'gerund (verbal)' to indicate this separation. It should also be noted that unlike much previous research, all *–thing* words (*something, nothing, anything, everything)* have been included. This decision was based on the understanding that it is perhaps unwise to automatically assume similarities with previous findings, especially when the data come from such a different group of speakers (NNSs rather than NSs). However, these words were categorised separately as pronouns, so as to separate them from simple nouns. This allows a possible comparison with the findings of Schleef et al. (forthcoming), who also included *–thing* words. In fact, Schleef et al. went one step further and categorized certain instances of *–thing* words as discourse markers, but this was not replicated here due to the very small number of such examples in the current data. These few examples were therefore excluded from the analysis.

Initially, 30 tokens were identified for each speaker where possible, and were categorised into the four variant types auditorily. This was felt to be a satisfactory process, despite a

certain degree of subjectivity in distinguishing between [ɪŋg] and [ɪŋk]. If those 30 tokens showed no variation from [ɪŋ], then no further tokens were sought. However, if there was evidence of any variation from [ɪŋ] then a further 20 tokens were identified where possible. Unfortunately, in the case of a few speakers the number of tokens available fell below the numbers just mentioned. In total, 1677 tokens of (ing) were analysed, an average of just under 50 tokens per participant.

4.3.4 'h' dropping

In any description of or study into h-dropping (e.g. Bell & Holmes 1992), the phenomenon is usually discussed in relation to the presence or absence of [h] in stressed syllable initial position. This excludes unstressed function words such as auxiliary *have, has, had*, and pronouns such as *he, her, his,* and so on, which are generally subject to h-dropping even in the most standard or prestigious varieties of English. However, during a pilot study it soon became clear that in the speech of the Polish participants, h-dropping was not common even in these function words. It was therefore decided to include all instances of syllable initial /h/ no matter what the context, although unstressed function words were labelled as such. 30 tokens of /h/ were identified for each participant and coded for the presence or absence of [h]. Due to the general lack of h-dropping amongst all participants, with many speakers showing a categorical [h], no further tokens were sought. Unfortunately, one speaker produced only eight tokens of /h/, but otherwise there were 30 tokens per speaker, making a total of 1178 /h/ tokens under analysis.

Table 9 shows the overall number of tokens being analysed in this study.

Table 9: Total number of tokens collected for each linguistic feature

Feature	**tokens**
STRUT	4158
t-glottaling	3450
(ing)	1677
h-dropping	1178
Total	**10463**

4.4 Native speakers

In addition to the 41 Polish speakers, four local NSs were also recorded. This was specifically to enable comparison with regard to the STRUT vowel. It is outside the scope of this study to collect enough NS data to be able to usefully compare patterns of variation in all four features, but STRUT was felt to be a special case. What makes STRUT different is the fact that the variant that would be used by the Polish speakers on arrival to the UK (something close to [ɐ]) simply does not exist in the speech of the vast majority of local NSs, who all use something between [ʊ] and [ə]. There is variation in local NS speech between these possibilities, but any pattern behind it is not relevant in terms of the Polish speakers acquiring local forms, certainly at the level of dialect acquisition being focussed on here. In contrast, the patterns of variation for the other three features is more complex, with NSs themselves showing a great deal of variation. In order to properly compare the variation in the NNS speech with the variation of NS speech, more NS participants would have been needed, which simply was not possible at this stage. However, it is an avenue which warrants exploration in the future[42].

4.5 Statistical analysis

As discussed previously, a fundamental aspect of the present study is to develop and strengthen the link between the two research areas of variationist sociolinguistics and SLA, and to contribute to the growing body of research into interlanguage variation. Central to this idea is use of natural speech data rather than artificial wordlists and reading passages, and the importance of looking for multiple rather than single factors influencing any observed variation. The present study embraces both these ideas, a fact which encourages the use of multiple logistic regression analysis as a tool to assist in making sense of the data.

Multiple regression analysis has been used in studies of sociolinguistic variation since the 1970s, most often in the form of what is known as a variable rule programme, the most well-known of which is the VARBUL (Cedergren & Sankoff 1974) suite of programs[43] (see Paolillo (2002) for a detailed account of where multiple regression

[42] At the time of writing, a significant study into variation in Manchester English is being carried out by Dr Maciej Baranowski at The University of Manchester, so useful comparisons will soon be possible.
[43] The most recent incarnation of VARBUL is Goldvarb X (Sankoff et al 2005)

analysis and VARBRUL fit in with the wider world of statistical analysis). The strength of the variable rule program for investigating sociolinguistic variation lies in its ability to consider multiple influences on the occurrence of particular variants in samples of speech.

> A variable rule program evaluates the effects of multiple factors on a binary linguistic 'choice' - by the presence or absence of an element, or any phenomena and treated as an alternation between two variants. The factors can be internal (linguistic), such as phonological or syntactic environment, or external (social), for example, speaker gender or social class. The program identifies which factors significantly affect the response variable of interest, in what direction, and to what degree.
>
> (Johnson 2009:359)

The popularity of variable rule analysis in variationist research becomes clear during even the briefest look through existing research. Indeed, Johnson (2009) claims that approximately 40% of the articles published in *Language Variation and Change* during the period 2005-2008 employed variable rule analysis in their methods. Although its use is not as common in SLA research, there has been a steady growth in this area, with studies such as Rehner et al. (2003); Bayley (1996); Regan (1996); Hansen (2001) all examples of variable rule analysis being used to good effect in a second language context. In fact, an often cited instruction guide to using VARBUL (even within L1 research circles e.g. Paolillo 2002 ; Tagliamonte 2006) is Young & Bayley's (1996) '*VARBRUL analysis for second language acquisition research*'.

Clearly, variable rule analysis, in the guise of VARBRUL, is a staple of L1 variationist research, and an increasingly common feature of L2 variationist research. However, VARBRUL is not the only sociolinguistics-specific tool for carrying out the relevant regression analysis need for variationist research. Rbrul (Johnson 2008) is an R-based program which has been developed to replicate the functionalities, but rectify some of the potential problems, associated with using VARBRUL. The main difference is Rbrul's use of mixed-effects modelling, whereby a distinction is made between fixed effect factors which could be replicated in a future study, and random effect factors, which cannot usually be replicated. An example of the former would be linguistic context of a variable under investigation, an example of the latter would be the individual speakers taking part in the study. By including individual speaker as a random effect, Rbrul takes into account that not all tokens are independent, they are grouped by individual speaker. The model is therefore able to account for the fact that some speakers may favour a

particular variant to a greater or lesser degree than their relevant fixed factors would predict. The result is a model which 'can still capture external effects, but only when they are strong enough to rise above the inter-speaker variation' (Johnson 2009:365). This is arguably a more desirable situation than the alternative, VARBRUL, which has a tendency to overestimate external effects (Johnson 2009:363). Rbrul expresses coefficients in log-odds rather than factor weights, although both are given in the analysis presented here to enable ease of understanding for those who are more familiar with Goldvarb output.

There is not the scope or the inclination in the present study to embark on a thorough comparison of the two programs, VARBRUL and Rbrul. Johnson (2009) puts forward a convincing argument for Rbrul's implementation, and there will undoubtedly be further debate as to the benefits of each. Whatever the outcome, it must be remembered that both are simply tools with which to help us in the analysis of our data, they do not create the data themselves. With this in mind, it was decided that for the purposes of the present study Rbrul offered the most meaningful approach to the data, so was used in preference to VARBRUL. Therefore, as one part of the analysis, data from all four features under investigation were subjected to multiple regression analysis using Rbrul, with individual speaker included as a random effect.

4.6 Social factors: coding

Table 10 shows each social factor in terms of how it was coded for the regression analyses. Rbrul can handle continuous dependent variables, giving the option to maintain the gradual nature of some of the factors.

Table 10: The complete list of social factors in relation to their coding for regression analyses.

Factor		Measurement	Type
Gender		Male/female	Factor
Age		18-40	Continuous
Length of Residence (LOR)[44]		2-72	Continuous
Level of English (LoE)		2-10	Continuous
Formal English instruction aged	7-10	yes/no	Factor
	11-14	yes/no	Factor
	15-18	yes/no	Factor
Formal English tuition after leaving school		yes/no	Factor
Formal English tuition in the UK		yes/no	Factor
Use of Polish	at work	0/25/50/75/100%	Continuous
	at home	0/25/50/75/100%	Continuous
	socially	0/25/50/75/100%	Continuous
Use of Polish (mean)		0-100%	Continuous
Future plans		no plans/stay in UK/return to Poland	Factor
Attitude towards Manchester		1-7	Continuous
Awareness of local accent		1-7	Continuous
Desire to change accent		1-7	Continuous
Motivation to improve pron.		1-7	Continuous
Matched Guise Test	Fem speaker	Mean difference between ratings for Manchester speaker and ratings for SSBrEng speaker[45]	Continuous
	Male speaker		Continuous
Native speaker partner		yes/no	Factor
Local native speaker partner		yes/no	Factor

[44] For those three speakers who had two LOR values, a UK value and a Manchester value (see Table 2 in section 4.1) the Manchester value was used for the analysis of STRUT, and the UK value was used for the analysis of the other three features. This is because the local variants of the other three features are not limited to the Manchester area, so it is likely that the three participants who have spent time elsewhere in the UK will already have been exposed to them.

[45] See MGT section (5.11) for more details on this measurement.

5: Results

5.1 STRUT - Results

Table 11 shows the overall results of the auditory analysis for the conversation element, with all tokens for all speakers (40 Polish participants, 4 local native speakers).

Table 11: Total auditory analysis results from the conversation element for all speakers

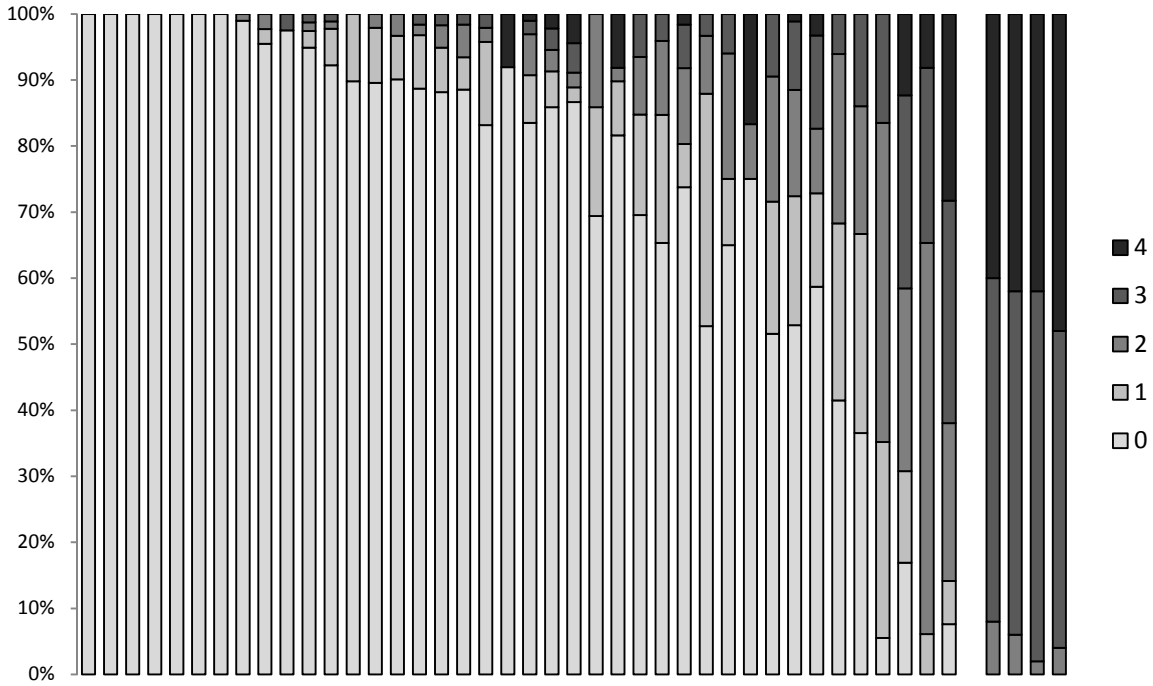
Speaker	target					Mean target (0-4)	non target[46]	total (full)	weak	total
	0 [ɐ]	1 [ɐ̟]	2 [ə]	3 [ʊ̟]	4 [ʊ]					
1	83 83.0%	5 5.0%	1 1.0%	1 1.0%	0 0.0%	0.1	10 10.0%	100 100.0%	42	**142**
2	65 65.0%	10 10.0%	19 19.0%	6 6.0%	0 0.0%	0.66	0 0.0%	100 100.0%	36	**136**
3	79 79.0%	5 5.0%	3 3.0%	3 3.0%	2 2.0%	0.3	8 8.0%	100 100.0%	46	**146**
4	82 82.0%	6 6.0%	3 3.0%	0 0.0%	0 0.0%	0.13	9 7.0%	100 100.0%	69	**169**
5	48 96.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0	2 4.0%	50 100.0%	0	**50**
6	54 54.0%	13 13.0%	9 9.0%	13 13.0%	3 3.0%	0.89	8 8.0%	100 100.0%	35	**135**
7	52 74.3%	4 5.7%	2 2.9%	1 1.4%	0 0.0%	0.19	11 15.7%	70 100.0%	52	**122**
8	42 84.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0	8 16.0%	50 100.0%	16	**66**
9	48 96.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0	2 4.0%	50 100.0%	11	**61**
10	42 84.0%	1 2.0%	1 2.0%	0 0.0%	0 0.0%	0.07	6 12.0%	50 100.0%	23	**73**
11	95 95.0%	0 0.0%	1 1.0%	0 0.0%	0 0.0%	0.02	4 4.0%	100 100.0%	0	**100**
12	48 96.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0	2 4.0%	50 100.0%	8	**58**
13	74 74.0%	2 2.0%	1 1.0%	1 1.0%	0 0.0%	0.09	22 22.0%	100 100.0%	4	**104**
14	18 40.9%	0 0.0%	2 4.5%	0 0.0%	4 9.1%	0.83	20 45.5%	44 100.0%	10	**54**
15	55 78.6%	5 7.1%	1 1.4%	1 1.4%	0 0.0%	0.16	8 11.4%	70 100.0%	14	**84**
16	54 77.1%	3 4.3%	3 4.3%	1 1.4%	0 0.0%	0.2	9 12.9%	70 100.0%	34	**104**
17	64 64.0%	19 19.0%	11 11.0%	4 4.0%	0 0.0%	0.54	2 2.0%	100 100.0%	22	**122**
18	7 7.0%	6 6.0%	22 22.0%	31 31.0%	26 26.0%	2.68	8 8.0%	100 100.0%	69	**169**
19	46 46.0%	17 17.0%	14 14.0%	9 9.0%	1 1.0%	0.87	13 13.0%	100 100.0%	60	**160**
20	32 58.2%	7 12.7%	4 7.3%	3 5.5%	0 0.0%	0.52	9 16.4%	55 100.0%	16	**71**
21	40 57.1%	4 5.7%	1 1.4%	0 0.0%	4 5.7%	0.45	21 30.0%	70 100.0%	3	**73**
22	43 86.0%	4 8.0%	1 2.0%	0 0.0%	0 0.0%	0.13	2 4.0%	50 100.0%	20	**70**
23	41 82.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0	9 18.0%	50 100.0%	2	**52**

[46] See Table 5 in section 4.3.1.1 for a reminder of the non-target categories.

24	45 69.2%	4 6.2%	7 10.8%	4 6.2%	1 1.5%	0.56	4 6.2%	65 100.0%	18	**83**
25	44 88.0%	5 10.0%	0 0.0%	0 0.0%	0 0.0%	0.1	1 2.0%	50 100.0%	31	**81**
26	11 13.8%	9 11.3%	18 22.5%	19 23.8%	8 10.0%	2.06	15 18.8%	80 100.0%	16	**96**
27	5 5.0%	27 27.0%	44 44.0%	15 15.0%	0 0.0%	1.76	9 9.0%	100 100.0%	38	**138**
28	48 48.0%	32 32.0%	8 8.0%	3 3.0%	0 0.0%	0.63	9 9.0%	100 100.0%	34	**134**
29	0 0.0%	6 6.0%	58 58.0%	26 26.0%	8 8.0%	2.37	2 2.0%	100 100.0%	68	**168**
30	34 34.0%	28 28.0%	18 18.0%	13 13.0%	0 0.0%	1.11	7 7.0%	100 100.0%	23	**123**
31	81 81.0%	7 7.0%	6 6.0%	2 2.0%	1 1.0%	0.3	3 3.0%	100 100.0%	39	**139**
32	78 78.0%	2 2.0%	2 2.0%	4 4.0%	4 4.0%	0.38	10 10.0%	100 100.0%	1	**101**
33	57 81.4%	0 0.0%	0 0.0%	0 0.0%	5 7.1%	0.24	8 11.4%	70 100.0%	11	**81**
34	79 79.0%	12 12.0%	2 2.0%	2 2.0%	0 0.0%	0.23	5 5.0%	100 100.0%	23	**123**
35	39 78.0%	0 0.0%	0 0.0%	1 2.0%	0 0.0%	0.08	10 20.0%	50 100.0%	12	**62**
36	49 49.0%	19 19.0%	18 18.0%	9 9.0%	0 0.0%	0.86	5 5.0%	100 100.0%	34	**134**
37	34 34.0%	22 22.0%	21 21.0%	5 5.0%	0 0.0%	0.96	18 18.0%	100 100.0%	30	**130**
38	48 96.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0	2 4.0%	50 100.0%	30	**80**
39	59 59.0%	14 14.0%	12 12.0%	0 0.0%	0 0.0%	0.45	15 15.0%	100 100.0%	15	**115**
40	50 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0	0 0.0%	50 100.0%	2	**52**
Total	**1973**	**298**	**313**	**177**	**67**		**316**	**3144**	**1017**	**4161**
NS1	0 0.0%	0 0.0%	4 8.0%	26 52.0%	20 40.0%	3.32	0 0.0%	50 100.0%	27	**77**
NS2	0 0.0%	0 0.0%	3 6.0%	26 52.0%	21 42.0%	3.36	0 0.0%	50 100.0%	29	**79**
NS3	0 0.0%	0 0.0%	2 4.0%	24 48.0%	24 48.0%	3.44	0 0.0%	50 100.0%	22	**72**
NS4	0 0.0%	0 0.0%	1 2.0%	28 56.0%	21 42.0%	3.4	0 0.0%	50 100.0%	25	**75**

Of the 40 speakers, 8 showed no target tokens in anything other than the first two categories (0 and 1), suggesting no significant change from their original variant of something close to the pedagogical target [ɐ]. Figure 4 shows the distribution of target tokens following auditory analysis for all speakers ordered by the mean value across all five categories. The four bars on the right represent the four native speakers.

Figure 4: Bar chart showing distribution of target STRUT tokens for all speakers (auditory analysis).

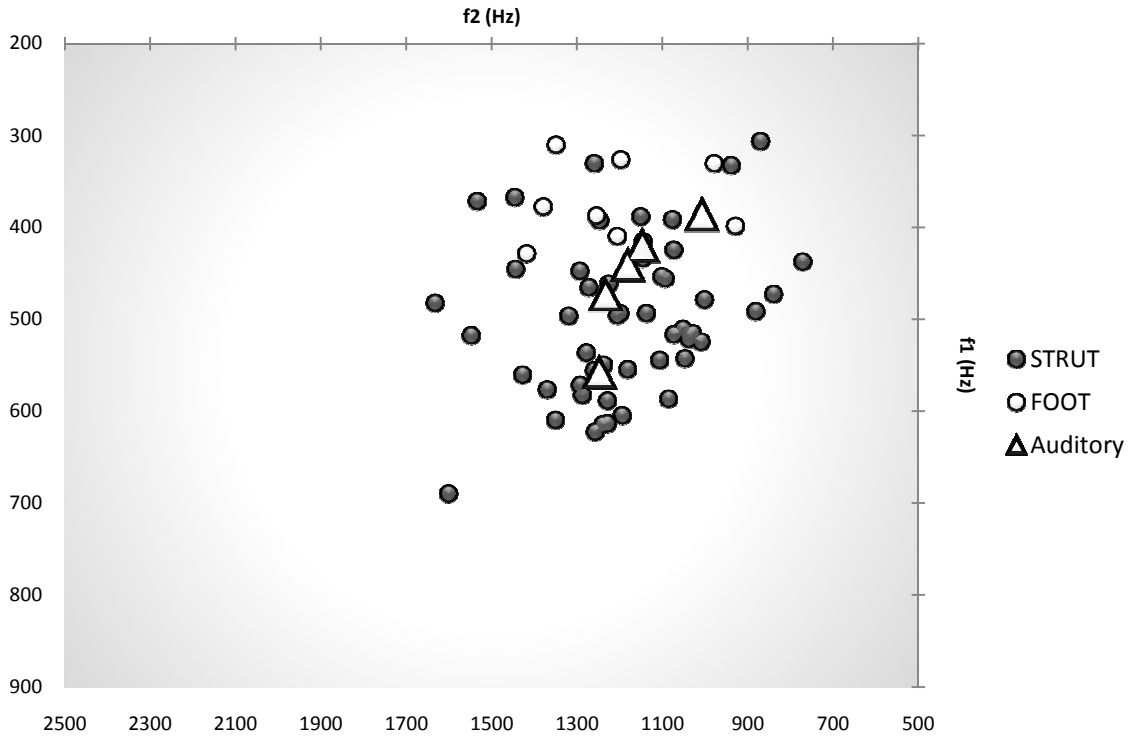


What is immediately clear is that none of the Polish speakers displays consistent local NS-like pronunciation of STRUT. As expected, all 200 tokens from the four NSs fall within categories 2, 3 and 4, with the means ranging from 3.32 to 3.44. Compare this to the four most extreme NNSs (speaker no.s 27, 26, 29 and 18), who all but one show the full range of categories and have means ranging from 1.76 to 2.68. However, what is also clear is the fact that there is indeed some evidence of a change in pronunciation amongst the speakers, with 31 individuals showing at least one example of a variant that could be viewed as having been influenced by the local accent.

Acoustic analysis was carried out on a subset of the speakers. The primary purpose of the acoustic analysis was to provide a way of checking the auditory analysis, using the process described in section 4.3.1. A good example of how this works can be seen in the results for speaker 6. Having auditorily categorised all the relevant STRUT tokens, all clear tokens which were not followed by a nasal or lateral approximant were then analysed acoustically using Praat. The results were plotted onto a scatter diagram with each point labelled in relation to its auditory category. If any individual points looked out of place, these were then analysed again both auditorily and acoustically. As a final check, the mean f1 and f2 values for each of the five auditory categories were plotted onto the chart. The results can be seen in Figure 5 in which the dark circles represent

individual STRUT tokens, and the white triangles represent the mean f1/f2 readings for each auditory category (in order from bottom to top: 0,1,2,3,4). The fact that the five triangles are in the expected order of '0' being the most open with f1 of 558Hz, '4' being the least open with f1 of 387Hz and '1', '2', and '3' in between, suggests that the auditory analysis is reliable. FOOT tokens taken from the word list have been included for reference and are represented by the white circles.

Figure 5: Formant chart showing auditory analysis confirmation (speaker 6)



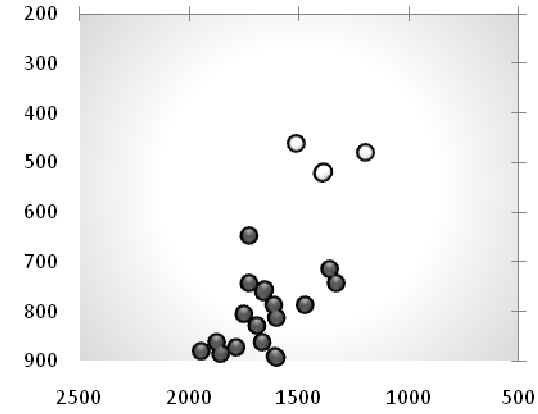
It was decided that the subset of speakers to undergo acoustic analysis should include a selection of those who showed no movement towards the local variant as well as those who showed the greatest degree of movement towards the local variant. The aim was to analyse the tokens of 20 speakers (half the total), which resulted in 5 speakers with a mean auditory value of 0 and 15 speakers with a mean auditory value of 0.52 – 2.68 being analysed. Although the stated aim of the acoustic analysis was to confirm the auditory findings, the acoustic results themselves provide a useful illustration of the status of STRUT for each speaker. The charts in Figure 6 show the plotted STRUT tokens for each of the 20 speakers. In addition to this, FOOT tokens[47] have also been plotted for each speaker in order to show the degree of separation between the two. Recall that speakers

[47] The FOOT tokens are taken from the word list.

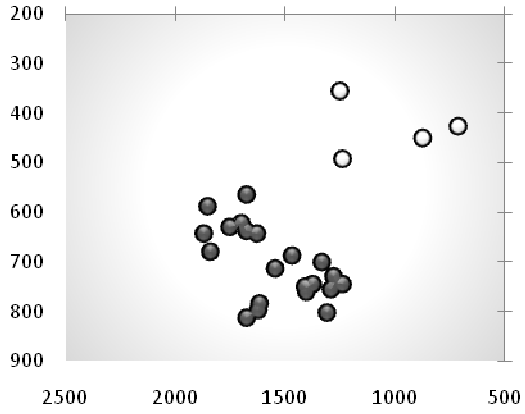
whose pronunciation has not been influenced by the local accent are expected to demonstrate a FOOT/STRUT split, whereas speakers whose pronunciation has been influenced are likely to show signs of a reduction in that split. Local NSs show no split at all (see Figure 7). In each of the charts, the x-axis represents f2 in Hz, the y-axis represents f1 in Hz, the dark circles represent target STRUT tokens, and the white circles represent FOOT tokens. It should be borne in mind that only clear tokens not followed by a nasal or lateral approximant were analysed, so the charts might not give the full picture for an individual speaker. For example, a speaker might have produced tokens that were auditorily judged to be '3' or '4', but if they happened to be in words such as 'money' or 'dull', they will not be included in the acoustic analysis.

Figure 6: Acoustic analysis results for 20 speakers

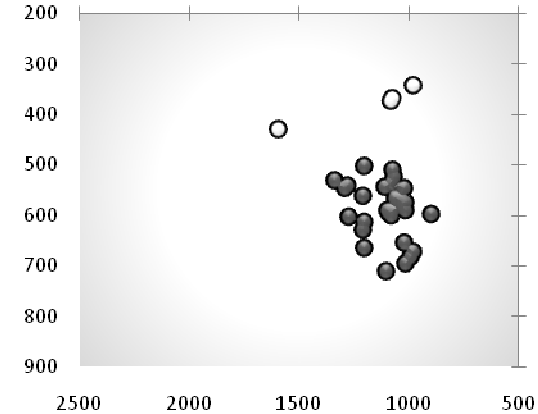
Speaker 5. Mean auditory value = 0



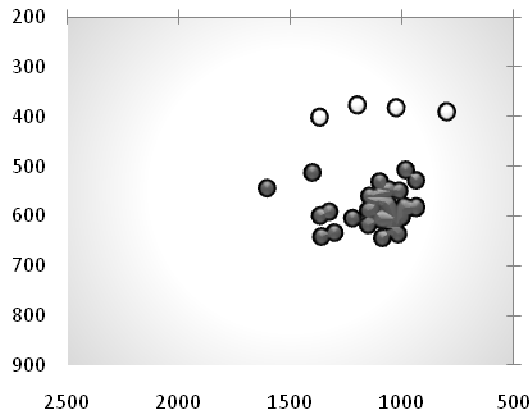
Speaker 8. Mean auditory value = 0



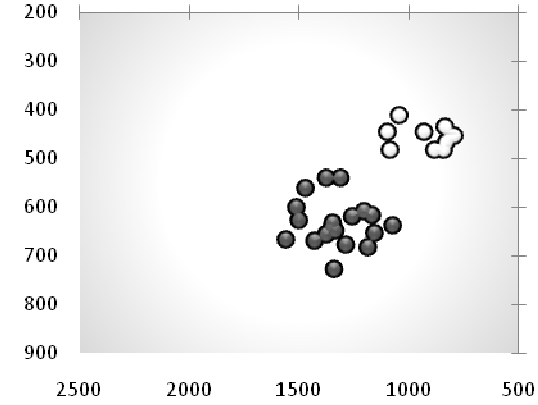
Speaker 9. Mean auditory value = 0



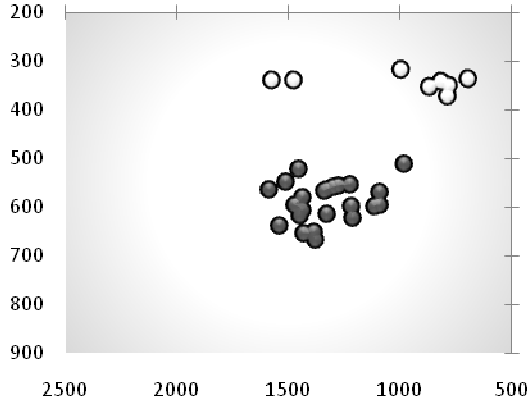
Speaker 12. Mean auditory value = 0



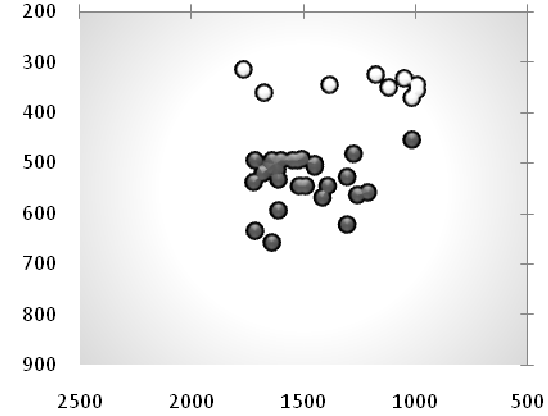
Speaker 23. Mean auditory value = 0



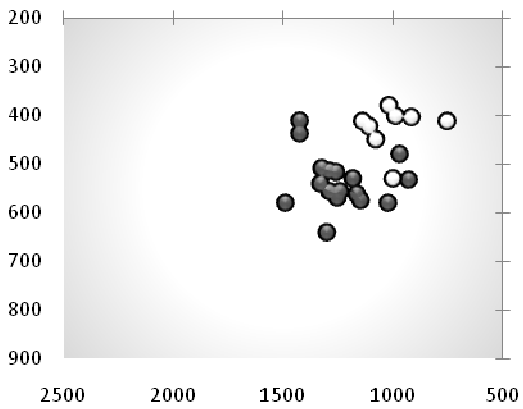
Speaker 38. Mean auditory value = 0



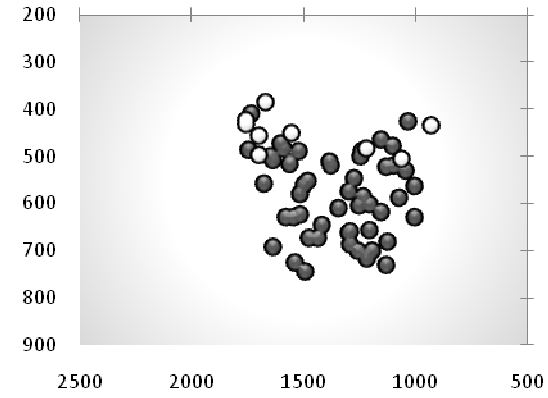
Speaker 40. Mean auditory value = 0



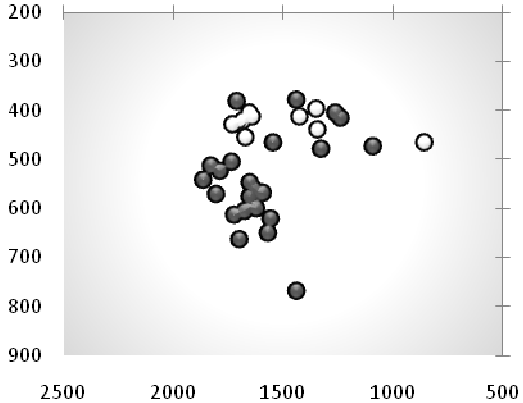
Speaker 20. Mean auditory value = 0.52



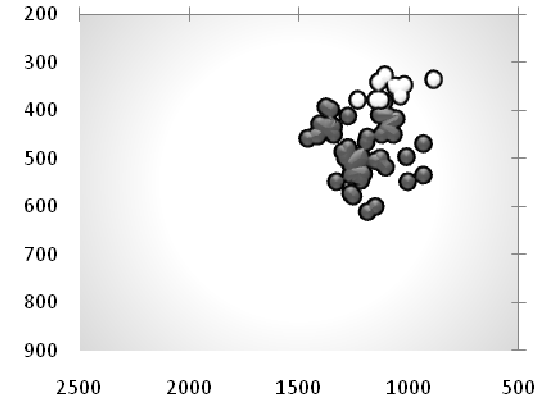
Speaker 17. Mean auditory value = 0.54



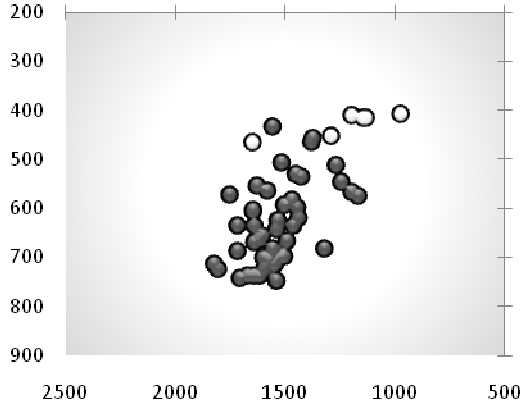
Speaker 24. Mean auditory value = 0.56



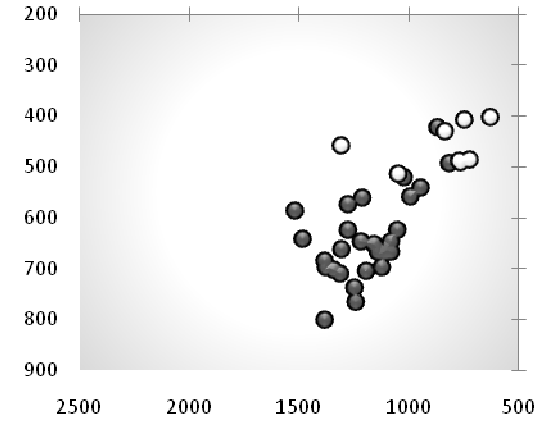
Speaker 28. Mean auditory value = 0.63



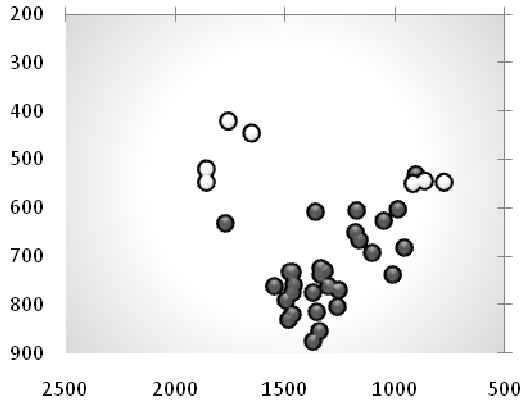
Speaker 2. Mean auditory value = 0.66



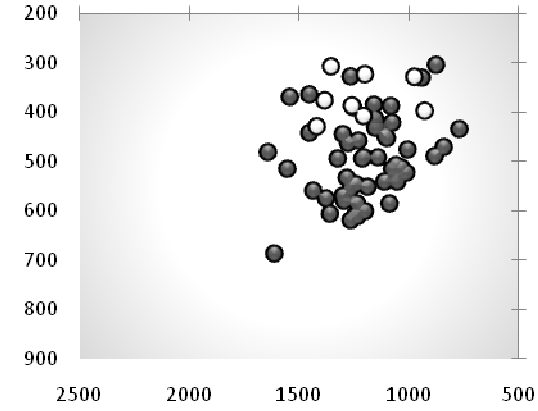
Speaker 36. Mean auditory value = 0.86



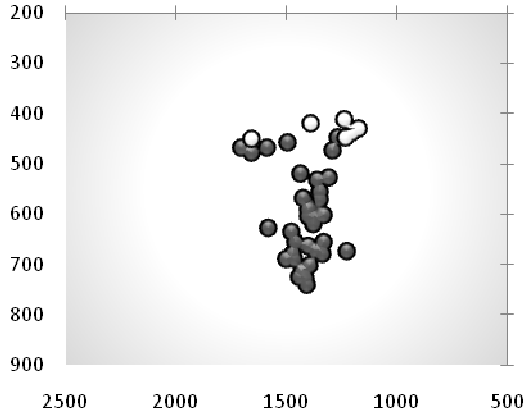
Speaker 19. Mean auditory value = 0.87



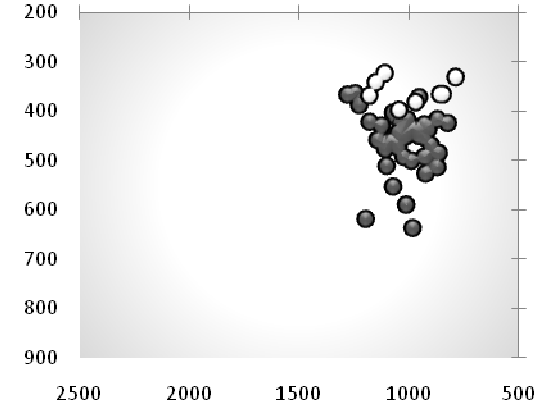
Speaker 6. Mean auditory value = 0.89



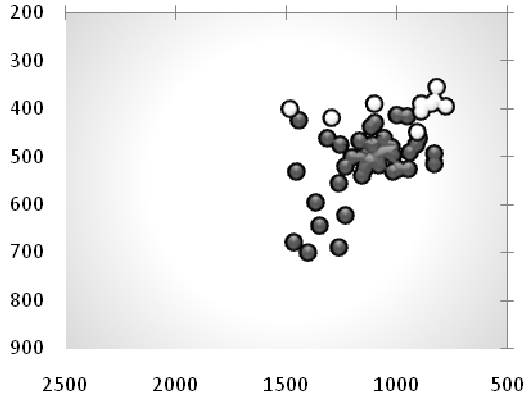
Speaker 30. Mean auditory value = 1.11



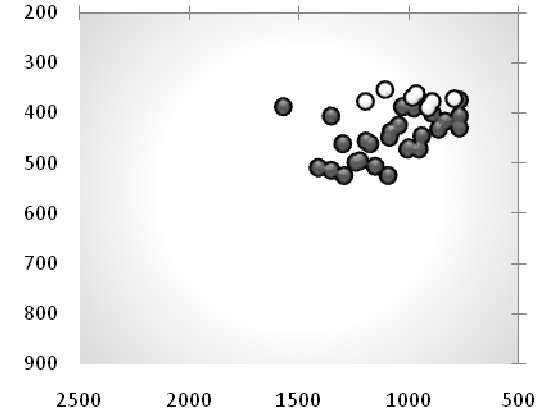
Speaker 27. Mean auditory value = 1.76



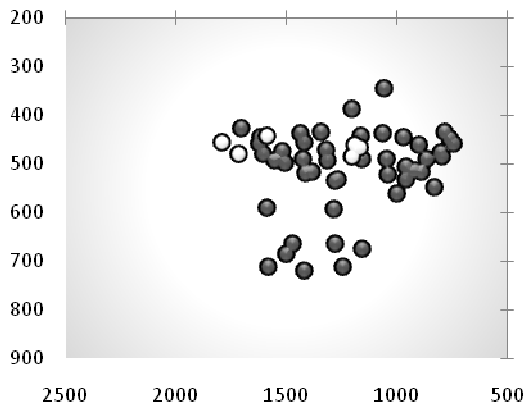
Speaker 26. Mean auditory value = 2.06



Speaker 29. Mean auditory value = 2.37

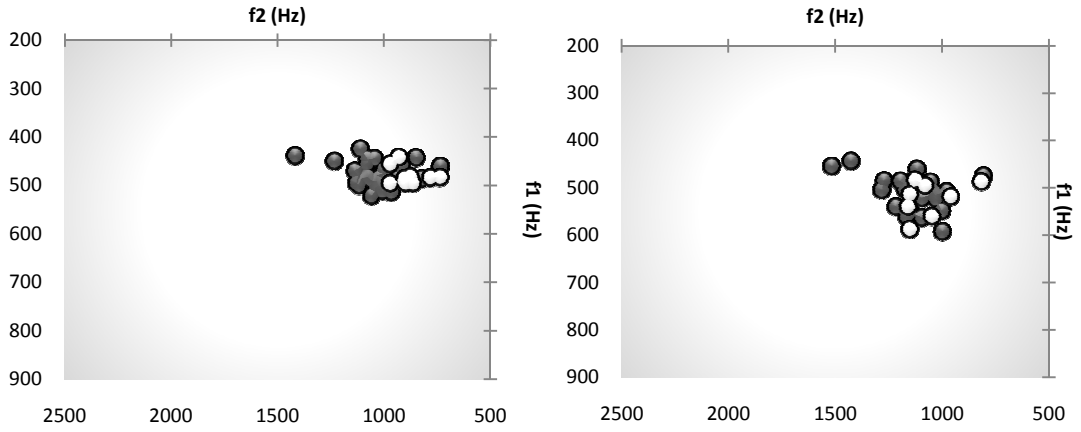


Speaker 18. Mean auditory value = 2.68



What is immediately clear is the expected evidence of a FOOT/STRUT split in the charts for speakers 5, 8, 9, 12, 23, 38 and 40. All these speakers have a mean auditory value of 0, signifying that none of their target tokens was judged to be anything other than close to RP [ɐ]. The remaining charts show how the STRUT tokens are, to varying degrees, beginning to encroach on the vowel space for the FOOT tokens, resulting in a varying amount of overlap between the two vowels. The most extreme example is perhaps speaker 29, as his STRUT tokens are neatly grouped up towards the FOOT area, with no tokens as far down as would be expected for RP [ɐ]. In fact, speaker 29 is the one person whose auditory analysis contained no tokens categorised as '0'. However, despite this neat grouping and degree of overlap, the distribution of tokens does not match that of either local NS, who both demonstrate the completely predictable patterning of a speaker with no FOOT/STRUT split at all.

Figure 7: Acoustic analysis results for two NSs



5.1.1 Regression analysis

Multiple regression analysis was carried out using Rbrul (Johnson 2008). Due to the fact that Rbrul can handle continuous dependent variables (unlike Goldvarb) STRUT variation was initially inputted as a continuous scale from 0 – 5. However, a comparison of the deviance (how well the model fits the data)[48] between the model using a continuous variable and a model using a binary variable suggested that the latter would be more effective. The five auditory categories were therefore conflated into two (Table 12).

Table 12: Binary categories for the STRUT variable

RP	[ɐ]	0	Southern Standard British English (SSBrEng)
Raised RP	[ɐ̝]	1	
Schwa	[ə]	2	Northern British English (NBrEng)
Lowered NBrEng	[ʊ̞]	3	
NBrEng	[ʊ]	4	

Before this change was finalised, the relationship between the two methods (5 categories and 2 categories) was tested to ensure that subsequent analyses would be measuring the same effect. This was done by calculating a Pearson correlation coefficient for the mean auditory value (calculated from the 5 categories) on the one hand, and the proportion of

[48] In Rbrul the deviance measure corresponds to -2 times the log-likelihood as reported in GoldVarb. The closer this value is to zero, the better the model fit.

NBrEng tokens on the other. The result showed that there is a very strong correlation between the two ($r=0.991$ $p<0.01$) suggesting that either approach is valid.

One additional adjustment was made to the data with regard to LOR. In the data collected from the 5 speakers who had LORs of 6 months or less (Speakers 5, 11, 40, 8, 9), only one individual target token was categorised as anything other than 'o' [ɐ] . This was in the speech of Speaker 11, and it took the form of a correction. When saying *study* he initially pronounced it as /ˈstədi/ before self-correcting to /ˈstʌdi/. Clearly an isolated incident in addition to being a 'mistake' in the mind of the speaker, it was decided that this token should not be considered as an example of NBrEng STRUT. The result of excluding this token from consideration was that there were no examples of NBrEng STRUT in the speech of anyone with LORs of 6 months or less. It was fully expected that there would be an LOR below which there was no acquisition of the local variant, as there must be some degree of contact with the local speech community for any acquisition to be possible. Indeed the LOR ≤ 6 months speakers themselves confirmed what was found in a pilot study, that people who have only recently arrived in Manchester simply do not have anything close to a NBrEng STRUT. Instead, their STRUT vowel is either pedagogical target [ɐ] or else influenced by Polish vowels, resulting in something close to [ɐ̟], [a] or [ɑ]. What was not known before analysing the data was precisely where this LOR watershed would be.

As a result, LOR can be seen as the most important explanatory factor in the whole analysis, as without it, there is simply no acquisition (and therefore no variation). This is not to say that a long LOR automatically leads to a degree of acquisition, simply that a short LOR of 6 months or less precludes any chance of acquisition. It is therefore of no value to look for other explanatory factors in the speech of anyone who does not have the pre-requisite LOR of more than 6 months; they might score highly on every other factor that makes acquisition likely, but without the prerequisite LOR, these factors mean very little. It is for this reason that the regression analysis that follows was carried out having excluded the tokens gathered from the 5 speakers with an LOR of 6 months or less.

The remaining data was explored thoroughly, checked for coding errors and interactions, and a stepwise multiple regression analysis was carried out with STRUT as the dependent variable (NBrEng as the application value) and individual speaker as a

random effect. The results can be seen in Table 13. At this stage a note is required on the way in which Rbrul deals with continuous independent variables. Because it makes no sense to report factor weights for continuous variables (as they are not factors), Rbrul reports the effect of continuous variables in log-odds only. Log-odds can be added together along with the intercept, which itself is a log-odds value for the overall proportion of the application value of the dependent variable. In Table 13 for example, the results of the LOR variable indicates that for every +1 increase in LOR (in this case 1 month), 0.058 can be added to the overall log-odds coefficient. So a LOR of 2 years would create a log-odds value of 1.296. To ascertain the model's prediction for a certain type of speaker we can simply take the sum of the different log-odds coefficients for each relevant category (when the variable is a factor) or score (when the variable is continuous), plus the value for the intercept. (See Johnson 2009 for further details).

Table 13: Rbrul output for STRUT variation, 35 speakers.

Application value: NBrEng	***Factor***	***Log-odds***	***Tokens***	***Response proportion***	***Factor weight***
NS partner *p* <0.05	yes no	0.617 -0.617	517 2028	0.362 0.182	0.65 0.35
LOR *p* <0.01	continuous scale 7-72 months	+1 0.058	2545		
ATT (Attitude) *p* <0.01	continuous scale 1-7	+1 0.724	2545		
Not significant:	*Gender, Age, LoE, AW, CHA, MOT, Use of L1/L2, Future plans, Formal English instruction, Matched Guise Test results.*				
Model	deviance 1877.778 Speaker ID random standard deviation: 1.167	df 5	intercept -7.737		mean 0.218

The fact that LOR is statistically significant is to be expected – the longer a speaker has been in Manchester, the more likely they are to use the local variant of STRUT. The increased likelihood of the local STRUT variant in those speakers who have an English partner is also expected to an extent; however, in the coding used for the analysis above, there was no indication of where the partner is from. This is likely to be important for this particular variable, as a non-local NS partner would not necessarily use the local variant themselves. Indeed, on revisiting the conversation data it was found that of the six speakers who had an English partner, three could be identified as having partners from the local area, and three could be identified as having partners who come from

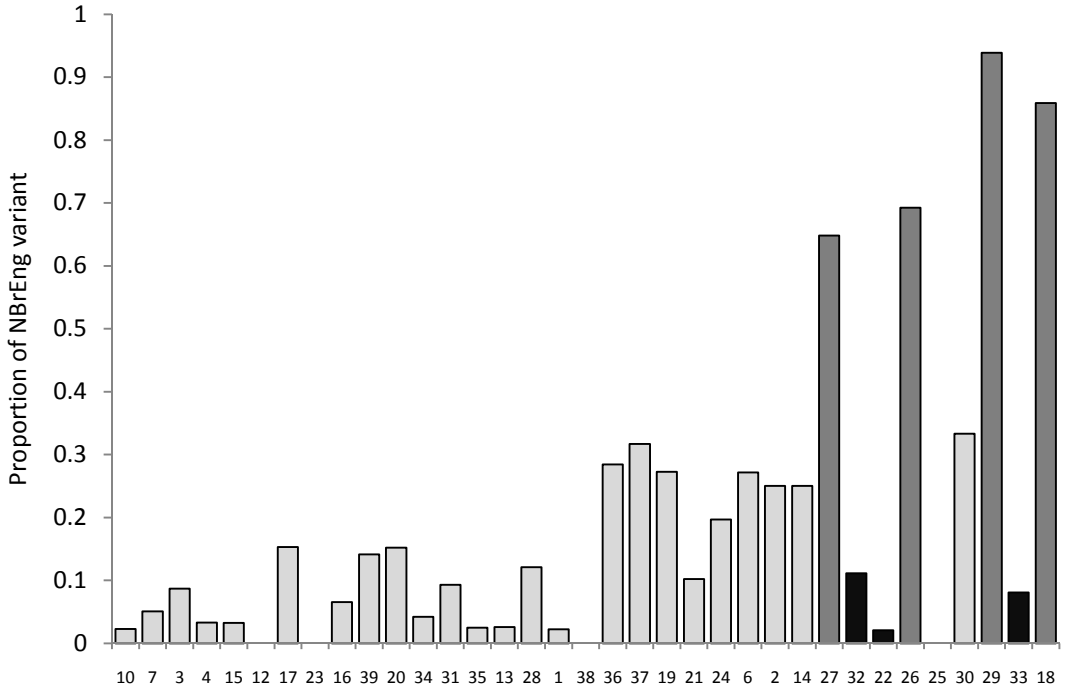
areas in which a FOOT/STRUT split would be the norm. Clearly nothing specific is known about the speech of the partners, but a comparison of the two possible influences provides an interesting picture. The three speakers with local NS partners have a mean NBrEng STRUT proportion of 0.49, whereas the three speakers with non-local NS partners have a mean NBrEng STRUT proportion of 0.09. However, when the regression analysis is re-run with only those speakers with a local NS partner being separated, the results are similar not only in terms of factor weights and log-odds, but also in terms of model fit (

Table 14). In other words, the model is not significantly better when only considering local NS partners. This would suggest that despite the evidence of individuals, when other factors (including individual variation) are considered, it is the existence of a NS partner that affects STRUT variation rather than specifically whether the partner is from the local area. This may simply be due to the fact that the local partners in question, for whatever reason, may or may not exhibit the local STRUT variant, something that cannot in this instance be explored. Alternatively, it may be due to the fact that people with NS partners are probably more likely to spend time with other NSs, some of whom will be local to the area. Implications of the significance of NS partner will be explored in more detail in the discussion section.

Table 14: Rbrul output for STRUT variation, 35 speakers. Focus on 'local' NS partner.

Application value: NBrEng	***Factor***	***Log-odds***	***Tokens***	***Response proportion***	***Factor weight***
Local NS partner ***p = 0.05***	**yes**	**0.767**	**283**	**0.576**	**0.683**
	no	**-0.767**	**2262**	**0.174**	**0.317**
LOR *p <0.01*	continuous scale 7-72 months	+1 0.046	2545		
ATT (Attitude) *p <0.01*	continuous scale 1-7	+1 0.791	2545		
Not significant:	*Gender, Age, LoE, AW, CHA, MOT, Use of L1/L2, Future plans, Formal English instruction, Matched Guise Test results.*				
Model	deviance 1878.254	df 5	intercept -7.727		mean 0.218
	Speaker ID random standard deviation: 1.178				

Figure 8: Proportion of NBrEng STRUT for 35 speakers, ordered by LOR.



In addition, one of the four attitudinal variables reaches statistical significance. Recall that ATT (Attitude) measures 'attitude towards Manchester, its people, and living there'. The log-odds show that the more positive a speaker's attitude towards Manchester is, the more likely they are to use the local STRUT variant. Indeed, this certainly appears to be the case when certain individuals are observed. Figure 8 shows the proportion of NBrEng STRUT variants for each speaker, ordered by LOR. The four speakers who show relatively low levels of STRUT variation in relation to their LORs (speakers 32, 22, 25, 33 in black) actually have some of the lowest attitude scores of all the speakers, with one speaker (22) having the lowest attitude score of all, and all four falling below the mean (one each in the 5th, 10th, 25th and 50th percentiles). Compare this to speakers 27, 26, 29 and 18 (mid grey) who all show a high degree of STRUT variation and who all have high attitude scores (two in the 75th percentile, and one each in the 90th and 95th percentiles). This will be explored in more detail in the discussion section.

As has already been alluded to, by employing mixed-effects modelling and including individual speaker as a random effect, Rbrul's conservative approach leads to the danger that 'in some situations, Rbrul is more likely than Goldvarb to make a Type II error by failing to identify an effect that really does exist.' (Johnson 2009:365). With this in mind,

it was decided to carry out an additional regression analysis without using individual speaker as a random effect (thus replicating traditional VARBUL output) to see if there are any addition potential patterns to the data. In this case, several additional factors became significant (Table 15 in bold).

Table 15: Additional Rbrul output for STRUT variation without individual speaker as a random effect.

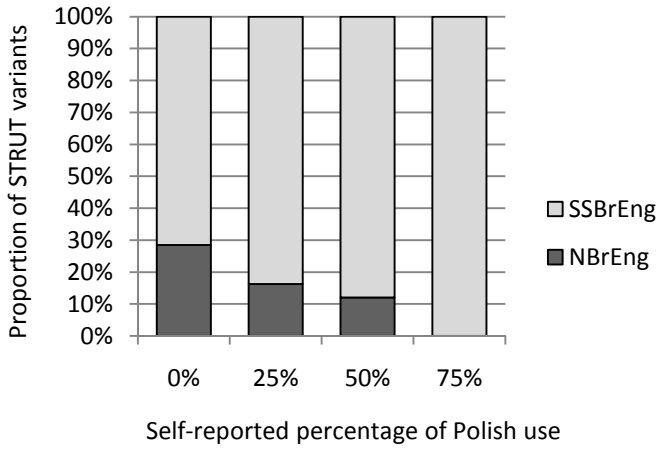
Application value: NBrEng	*Factor*	*Log-odds*	*Tokens*	*Response proportion*	*Factor weight*
Gender	**female**	**0.241**	**1307**	**0.206**	**0.56**
***p* <0.01**	**male**	**-0.241**	**1238**	**0.232**	**0.44**
Local NS partner	yes	0.561	283	0.576	0.637
p <0.01	no	-0.561	2262	0.174	0.363
LOR	continuous scale (7-72 months)	+1 0.065	2545		
p <0.01					
Level of Eng	**Continuous scale (1-10)**	**+1 0.195**	**2545**		
***p* <0.01**					
ATT (Attitude)	continuous scale (1-7)	+1 0.791	2545		
p <0.01					
Polish at work	**Continuous scale (0-100)**	**+1 -0.016**	**2545**		
***p* <0.01**					
MOT (Motivation)	**Continuous scale (1-7)**	**+1 0.527**	**2545**		
***p* <0.01**					
Not significant:	*Age, AW, CHA, L1 at home, L1 socially, Future plans, Formal English instruction, Matched Guise Test results.*				
Model	deviance 2049.064	df 8	intercept -11.872		mean 0.218

While it is tempting to explore the reasons why females may be more likely than males to acquire the local STRUT variant, the gender effect is so slight that it is perhaps not wise to assume there is much behind it. It is possible that with more data the pattern might strengthen, in which case it is interesting to note that females are slightly more likely to acquire the local variant than men, especially when the other features are considered (see later sections). But this remains a tentative interpretation.

One of the three variables dealing with use of Polish becomes statistically significant (use of Polish at work) although the effect is again quite small. In addition, the measurement itself is somewhat crude, based as it is on self-reported proportions of an individual's use of Polish and English in different contexts. It is, however, working in the direction one

would expect, with greater use of Polish compared to English inhibiting the acquisition of the local STRUT variant. This is perhaps especially true for Polish at work, an environment which is more likely to involve exposure to the new variant. In fact, if this variable is isolated, it is possible to see the extent of the effect. Figure 9 shows the gradual decrease in proportion of NBrEng STRUT tokens as the self-reported use of Polish at work increases. Even if the 75% column is excluded on the basis of it only containing the tokens of an individual speaker, there is a clear pattern. The absence of a fifth category representing 100% use of Polish is due to the expected fact it was not selected by any participants.

Figure 9: Chart showing proportion of NBrEng STRUT tokens in relation to self-reported use of Polish at work.



The effect of Level of English is also quite small, although it is perhaps working in the direction one might expect, with more proficient speakers most able to produce what they hear around them. However, it could just as easily be argued that the more proficient a speakers is, the more able they are to consciously resist acquiring the local variant.

MOT measures an individual's motivation (both instrumental and integrative) to improve pronunciation. This is not accent-specific (unlike the final two attitudinal variables, AW and CHA, which do not reach statistical significance), but it might be the case that this increased desire to improve pronunciation will, by default, refer to the local NS variety as a model. This is especially plausible when we consider the integrative aspect of motivation.

5.1.2 Lexical frequency

In order to test for the effects of lexical frequency on the change in STRUT pronunciation towards the local variant, it was first necessary to identify a suitable account of lexical frequency in spoken English. Leech et al. (2001) provides a valuable resource for this purpose, based as it is on the 100,000,000 words of the British National Corpus. What makes the BNC so useful for the present study is the fact that 10,000,000 of those words have been transcribed from spoken English, with 4,000,000 coming from spontaneous conversation[49]. Leech et al. (2001) provides word frequency lists for the spoken section of the corpus for all words with a frequency of 10 or more per million words.

In order to be able to use the lists effectively, data from both sources (the Polish speakers and the BNC) needed to be arranged into base forms. For example, the individual words *under, understand, understandable, understanding, understands,* and *understood* were all collapsed into the category *under.* Full details can be found in appendix 5. A similar process was then carried out with relevant words from the BNC frequency lists. If the base word did not appear in the list (due to it having a frequency of less than 10 per million words) it was discarded. Similarly, if a base word was used by fewer than three different speakers, it was also discarded. The result was a list of 72 base words, each with a corresponding BNC frequency value (frequency per million words), its frequency within the Polish dataset[50] (total count), and the number of individual speakers who used that particular word. In addition to this, each word's mean auditory STRUT value was calculated, as well as each word's proportion of NBrEng STRUT variants. The complete list can be seen in Table 16. The final (shaded) column in the table shows the words in order of proportion of NBrEng STRUT from highest to lowest.

[49] Further details can be found at www.natcorp.ox.ac.uk/docs/URG/BNCdes.html#spodes [Accessed July 2010]

[50] The Polish dataset refers to the corpus gathered in the course of this research from the 40 Polish participants.

Table 16: List of STRUT base words with lexical frequency details, ordered by BNC frequency.

Word	*BNC freq*	*Polish freq*	*No. of speakers*	*Mean STRUT*	*Proportion NBrEng STRUT*	*Words in order of Proportion of NBrEng STRUT*
but	6380	322	36	0.3	0.09	publish
some	4279	560	40	0.59	0.20	structure
just	3847	101	24	0.14	0.02	subject
up	3042	66	28	0.53	0.18	unemployed
come	2587	103	36	0.74	0.23	company
other	1587	85	27	0.42	0.14	bus
does	1549	43	21	0.91	0.30	brother
much	1196	153	31	0.7	0.20	sunday
us	1059	46	22	0.04	0.02	love
hundred	1054	38	16	0.92	0.29	month
done	931	16	10	0.75	0.25	plus
another	640	61	24	0.38	0.18	cousin
number	638	22	12	0.59	0.18	drunk
money	637	39	20	0.74	0.23	husband
must	589	18	8	0.44	0.17	jump
mum	569	49	17	0.9	0.31	stuck
love	498	26	14	1	0.38	mum
nothing	403	31	17	0.39	0.10	does
blood	390	3	3	0	0.00	hundred
month	372	58	23	1.17	0.38	london
enough	366	20	13	0.35	0.05	stuff
run	351	13	7	1.08	0.23	discuss
government	312	12	8	1	0.25	done
country	294	42	18	0.31	0.12	government
stuff	274	55	16	0.85	0.25	trust
under	272	4	4	0	0.00	come
cut	266	3	3	0	0.00	money
understand	255	46	23	0.396	0.17	run
once	245	11	10	0.45	0.18	fun
company	232	34	13	1.38	0.50	pub
such	225	10	6	0.4	0.00	russia
couple	220	29	11	0.43	0.10	rubbish
fun	208	36	16	0.67	0.22	summer
mother	198	13	7	0.54	0.15	much
discuss	165	4	4	1.25	0.25	some
worry	160	6	4	0.67	0.17	struggle
sunday	143	15	9	1.47	0.40	number
young	142	43	23	0.58	0.16	once
plus	139	8	4	0.88	0.38	up
london	132	18	10	0.72	0.28	another
bus	122	27	14	1.44	0.44	culture
results	117	7	5	0.43	0.14	must
fund	114	4	3	0	0.00	sun
brother	102	48	18	0.98	0.43	understand
current	85	3	3	0	0.00	worry
son	85	5	4	0.2	0.00	young

subject	85	18	8	2	0.67	mother
luck	84	22	16	0.27	0.05	results
husband	80	15	8	0.8	0.33	unfortunate
structure	80	3	3	2	0.67	other
stuck	79	3	3	0.67	0.33	country
study	79	107	27	0.32	0.09	couple
trust	75	8	5	1.13	0.25	customer
double	72	5	5	0	0.00	nothing
summer	69	29	14	0.79	0.21	study
touch	69	6	5	0.17	0.00	but
wonderful	66	7	4	0.43	0.00	enough
unfortunate	65	7	4	0.57	0.14	luck
unemployed	62	3	3	2	0.67	us
customer	59	10	7	0.4	0.10	just
rough	57	4	4	0	0.00	blood
rubbish	55	14	5	0.57	0.21	current
sun	55	6	5	0.5	0.17	cut
jump	54	3	4	0.75	0.33	double
pub	46	9	7	0.56	0.22	fund
russia	26	23	15	0.65	0.22	rough
publish	21	4	3	2.75	0.75	son
tough	19	5	4	0	0.00	such
culture	15	12	11	0.58	0.17	touch
drunk	14	6	5	1.33	0.33	tough
cousin	13	3	3	1	0.33	under
struggle	13	5	5	0.6	0.20	wonderful

The frequency data were normalized using the log10 transformation[51] and a Pearson correlation coefficient was calculated to assess the relationship between the BNC frequency values and the Polish dataset values; there was found to be a strong correlation between the two *($r=0.703$ $p<0.01$)*.

In order to explore a potential relationship between lexical frequency and use of the local STRUT variant, Pearson correlation coefficients were calculated for both frequency measures (BNC and Polish dataset) and both STRUT variation measures (mean auditory score and proportion of NBrEng variant). The results can be seen in Table 17.

[51] A standard procedure for normalizing skewed data, especially when dealing with lexical frequency. See e.g. Clarke & Trousdale (2009)

Table 17: Results of a Pearson correlation coefficient calculation between lexical frequency measures and STRUT variation.

Measures	r value	p value	N
BNC freq and mean auditory STRUT	-0.190	0.110	72
BNC freq and proportion of NBrEng STRUT	-0.160	0.179	72
Polish dataset freq and mean auditory STRUT	-0.060	0.614	72
Polish dataset freq and proportion of NBrEng STRUT	-0.020	0.865	72

The results suggest that there is no correlation, and therefore no linear relationship between the two variables.

The frequency data was then added to the regression analysis as an independent variable to see if it had any noticeable effect when working alongside other factors.[52] Having established that there was no linear relationship between frequency and use of NBrEng STRUT, it was decided to use three categories for frequency instead of the raw or log-transformed values: low (10-100 words per million); medium (101-1000 words per million); and high (more than 1000 words per million. Although the categories are somewhat arbitrary, it was felt that this might uncover a pattern that would be missed when frequency is treated as a continuous variable. It should be borne in mind that this and subsequent regression analyses would necessarily involve fewer tokens than the first (2422 compared to 2545) due to the fact that those words which were spoken only by fewer than 3 individual speakers were discarded. The results of this analysis can be seen in Table 18.

[52] The reason lexical frequency was added to this subsequent regression analysis rather than the initial analysis was due to the necessary exclusion of tokens described above. It was felt that he advantages of including lexical frequency from the beginning did not outweigh the disadvantages of leaving valuable data unanalysed.

Table 18: Rbrul output for STRUT variation, 35 speakers, with the addition of lexical frequency.

Application value: NBrEng	*Factor*	*Log-odds*	*Tokens*	*Response proportion*	*Factor weight*
Frequency ***p* <0.05**	**med (101-1000)**	**0.200**	**772**	**0.263**	**0.55**
	low (10-100)	**-0.039**	**311**	**0.203**	**0.51**
	high (>1000)	**-0.239**	**1339**	**0.184**	**0.44**
Local NS partner *p* = 0.05	yes	0.747	255	0.569	0.679
	no	-0.747	2167	0.170	0.321
LOR *p* <0.01	continuous scale 7-72 months	+1 0.051	2422		
ATT (Attitude) *p* <0.01	continuous scale 1-7	+1 0.871	2422		
Not significant:	*Gender, Age, LoE, AW, CHA, MOT, Use of L1/L2, Future plans, Formal English instruction, Matched Guise Test results*				
Model	deviance 1723.106	df 7	intercept -7.931		mean 0.212
	Speaker ID random standard deviation: 1.177				

Although there was no relationship evident between lexical frequency and STRUT variation in the correlation tests, when lexical frequency was added to the regression analysis as an independent variable, it came out as statistically significant. This inconsistency can be explained in part when we look at the ordering of the categories of frequency in the regression analysis: medium > low > high. Clearly, as the correlation tests suggest, there is no linear relationship between the two; in other words, it is not possible to say that STRUT variation is either more or less likely in more frequent words. Although it is possible that the results could be interpreted as showing that medium and low frequency words pattern together, and that high frequency words disfavour any change in STRUT. Either way, the regression analysis suggests that there is some kind of (probably non-linear) relationship between the two variables. The details of this relationship will be explored in the discussion section.

5.1.3 Linguistic context

In addition to the relationship between lexical frequency and STRUT variation, it is possible that the phonetic context of the STRUT vowel influences the likelihood of there being a NBrEng variant. In order to test this, the phonetic context for each of the 72 words was identified using the following categories (Table 19).

Table 19: Categories of phonetic context.

Sound category	Code	example sounds
voiced stop	VS	b d g
voiceless stop	S	p t k
voiced fricative/affricate	VF	v ð z ʒ dʒ
voiceless fricative/affricate	F	f θ s ʃ tʃ
nasal consonant	N	n m
approximant	A	ɹ j l w
empty	E	ø

This resulted in 31 individual contexts (using the codes outlined above) (Table 20).

Table 20: List of 31 phonetic contexts under consideration, along with relevant words.

Context	Words
F_N	fun, fund, hundred, some, son, summer, sun, Sunday
A_N	drunk, London, once, run, wonderful, young
S_F	customer, discuss, stuff, touch, tough
A_F	plus, rough, Russia, trust
E_N	under, understand, unemployed, unfortunate
N_F	enough, must, nothing, much
N_N	money, month, mum, number
A_VS	blood, rubbish, struggle
S_N	come, company, country
S_S	couple, cut, stuck
S_VS	pub, publish, study
A_S	luck, structure
A_VF	brother, love
N_VF	another, mother
S_A	culture, current
VS_VF	does, government
A_A	worry
E_F	us
E_S	up
E_VF	other
F_F	such
F_VF	husband
F_VS	subject
S_VF	cousin
VF_A	results
VF_F	just
VF_N	jump
VS_F	bus
VS_N	done
VS_S	but
VS_VS	double

Phonetic context was then added to the regression analysis as an independent variable and was found to be significant at $p < 0.01$. Table 21 shows the Rbrul output for the latest analysis, with the different phonetic contexts in order of likelihood to show STRUT variation. Relevant words are shown for each context.

Table 21: Rbrul output for STRUT variation, 35 speakers, with the addition of phonetic context (using context codes from Table 19)

Application value: NBrEng	*Factor*		*Log-odds*	*Tokens*	*Response proportion*	*Factor weight*
Phonetic context ***p* <0.01**	**F_VS**	**subject**	**2.89**	**18**	**0.667**	**0.947**
	VS_F	**bus**	**2.677**	**26**	**0.462**	**0.936**
	F_VF	**husband**	**2.327**	**13**	**0.385**	**0.911**
	VS_VF	**does, government**	**2.142**	**9**	**0.222**	**0.895**
	S_A	**culture, current**	**2.033**	**49**	**0.327**	**0.884**
	A_F	**plus, rough, Russia, trust**	**1.528**	**41**	**0.244**	**0.822**
	EMP_S	**up**	**1.499**	**61**	**0.197**	**0.817**
	S_N	**come, company, country**	**1.472**	**169**	**0.272**	**0.813**
	VF_N	**jump**	**1.441**	**3**	**0.333**	**0.809**
	F_N	**fun, fund, hundred, some, son, summer, sun, Sunday**	**1.407**	**617**	**0.233**	**0.803**
	A_VF	**brother, love**	**1.338**	**71**	**0.423**	**0.792**
	A_VS	**blood, rubbish, struggle**	**1.275**	**21**	**0.19**	**0.782**
	N_N	**money, month, mum, number**	**0.925**	**160**	**0.312**	**0.716**
	S_VS	**pub, publish, study**	**0.895**	**103**	**0.136**	**0.71**
	VS_S	**but**	**0.887**	**261**	**0.111**	**0.708**
	N_VF	**another, mother**	**0.851**	**210**	**0.21**	**0.701**
	VF_A	**result**	**0.777**	**3**	**0.333**	**0.685**
	VS_N	**done**	**0.766**	**13**	**0.308**	**0.683**
	EMP_N	**under, understand, unemployed, unfortunate**	**0.665**	**57**	**0.193**	**0.66**
	A_A	**worry**	**0.612**	**6**	**0.167**	**0.648**
	S_VF	**cousin**	**0.529**	**3**	**0.333**	**0.629**
	A_S	**luck, structure**	**0.475**	**24**	**0.125**	**0.617**
	A_N	**drunk, London, once, run, wonderful, young**	**0.431**	**88**	**0.216**	**0.606**
	EMP_VF	**other**	**0.247**	**77**	**0.156**	**0.561**
	S_F	**customer, discuss, stuff, touch, tough**	**0.203**	**76**	**0.211**	**0.55**

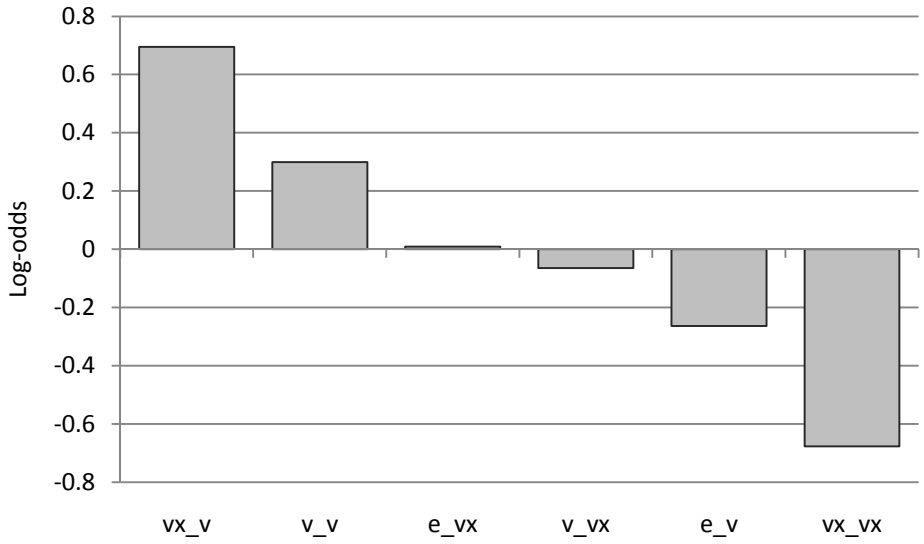
	S_S	**couple, cut, stuck**	**-0.059**	**34**	**0.118**	**0.485**
	N_F	**enough, must, nothing, much**	**-0.789**	**62**	**0.113**	**0.312**
	VF_F	**just**	**-0.891**	**93**	**0.022**	**0.291**
	EMP_F	**us**	**-1.917**	**41**	**0.024**	**0.128**
	F_F	**such**	**-12.657**	**8**	**0**	**<0.001**
	VS_VS	**double**	**-13.977**	**5**	**0**	**<0.001**
Frequency *p <0.05*		med (101-1000)	0.408	772	0.263	0.601
		low (10-100)	-0.130	311	0.203	0.467
		high (>1000)	-0.277	1339	0.184	0.431
local NS partner *p <0.05*		yes	0.858	255	0.569	0.702
		no	-0.858	2167	0.170	0.298
LOR *p <0.01*		continuous scale 7-72 months	+1 0.051	2422		
ATT (Attitude) *p <0.05*		(Scale 1-7)	+1 0.939	2422		
Not significant:	*Gender, Age, LoE, AW, CHA, MOT, Use of L1/L2, Future plans, Formal English instruction, Matched Guise Test results.*					
Model	deviance 1614.891 df 37 intercept -9.311 mean 0.1212 Speaker ID random standard deviation: 1.202					

Although nothing obvious is apparent in helping to explain the pattern of phonetic context above, one possibility is that voicing is having some effect. This is simply based on the very general observation that several of the contexts at the top of the list include a voiced sound after the vowel, and several contexts at the bottom of the list include a voiceless sound. In order to test this, the 31 contexts were reduced to 5, reflecting the presence or absence of voice in the preceding and following consonants. These 5 contexts were: voiced_voiced (v_v), voiced_voiceless (v_vx), voiceless_voiced (vx_v), voiceless_voiceless (vx_vx) and empty_voiced (e_v). In a subsequent regression analysis, this categorization proved to be significant (p <0.01). The results can be seen in Table 22 and Figure 10.

Table 22: Rbrul output for STRUT variation, all speakers, with the addition of phonetic context voice.

Application value: NBrEng	*Factor*	*Log-odds*	*Tokens*	*Response proportion*	*Factor weight*
Context ***p <0.01***	**vx_v**	**0.693**	**932**	**0.240**	**0.667**
	v_v	**0.302**	**629**	**0.270**	**0.575**
	e_vx	**-0.015**	**102**	**0.127**	**0.496**
	v_vx	**-0.057**	**507**	**0.124**	**0.486**
	e_v	**-0.264**	**134**	**0.172**	**0.434**
	vx_vx	**-0.660**	**118**	**0.169**	**0.341**
Frequency *p <0.01*	med (101-1000)	0.343	772	0.263	0.585
	low (10-100)	-0.045	311	0.203	0.489
	high (>1000)	-0.298	1339	0.184	0.426
Local NS partner *p <0.05*	yes	0.751	255	0.569	0.679
	no	-0.751	2167	0.170	0.321
LOR *p <0.01*	continuous scale 7-72 months	+1 0.051	2422		
ATT (Attitude) *p <0.01*	(Scale 1-7)	+1 0.896	2422		
Not significant:	*Gender,Age, LoE, AW, CHA, MOT, Use of L1/L2, Future plans, Formal English instruction, Matched Guise Test results.*				
Model	deviance 1690.739 df 12 intercept -8.397 mean 0.212 Speaker ID random standard deviation: 1.164				

Figure 10: Chart showing log-odds (NBrEng STRUT) for each context.



Although the model which fits the data most closely (according to Rbrul's deviance measure) is the one detailed in Table 21 with the full phonetic context, the latest analysis concentrating on the presence or absence of voice provides some interesting results. The model suggests that voicing does indeed play a part in the likelihood of a word being produced with the NBrEng variant, with words which have a voiced consonant following the STRUT vowel favouring the change. It would appear that the voicing of the sound following the vowel is of more importance than that of the sound preceding the vowel, as a voiceless preceding sound can be found in both the most and least likely contexts for NBrEng STRUT (vx_v and vx_vx). Indeed, if the regression is run again with the context categories conflated into pre-voiced (vx_v, v_v, e_v) and pre-voiceless (e_vx, v_vx, vx_vx), the pre-voiced category is stronger, with no significant changes to any other factors (Table 23).

Table 23: Additional Rbrul output for STRUT variation when context is recoded.

Application value: NBrEng	***Factor***	***Log-odds***	***Tokens***	***Response proportion***	***Factor weight***
Context	pre_voiced	0.324	1695	0.246	0.58
p <0.01	pre_voiceless	-0.324	727	0.132	0.42
Model	deviance 1708.716	df 8	intercept –9.526		mean 0.212

There is, however, one very important point to be made when considering the role that individual words (and their phonetic makeup) play in STRUT variation, and that is the influence of Polish pronunciation in words which are similar in the two languages. This is certainly a possibility in some of the words which show the highest proportion of NBrEng variants. In fact, if we take the top three words from the list in the last column of Table 16: *publish, structure, subject,* it is possible to find Polish words in all three cases which might have an influence. *publish* and *structure* both translate into similar sounding words in Polish *publikować* and *struktura* while *subject* has similarities to Polish *subiektywny* 'subjective'. In all these cases, the first vowel in the Polish words would be /u/, in the same region of the vowel space as English /ʊ/ (although the two are by no means identical). There is the additional possibility that orthography is playing a part, with English <u> being interpreted as Polish <u>. However, the substitution of Polish /u/ for English /ʌ/ is not a common mistake beyond the very early days of Polish speakers learning English. This would suggest that if Polish pronunciation does play a role in the likelihood of a NrBrEng variant being used, it is most likely to be due to the

influence of similar-sounding words than similar-looking words. Unfortunately, the effective measurement of such an influence is virtually impossible.

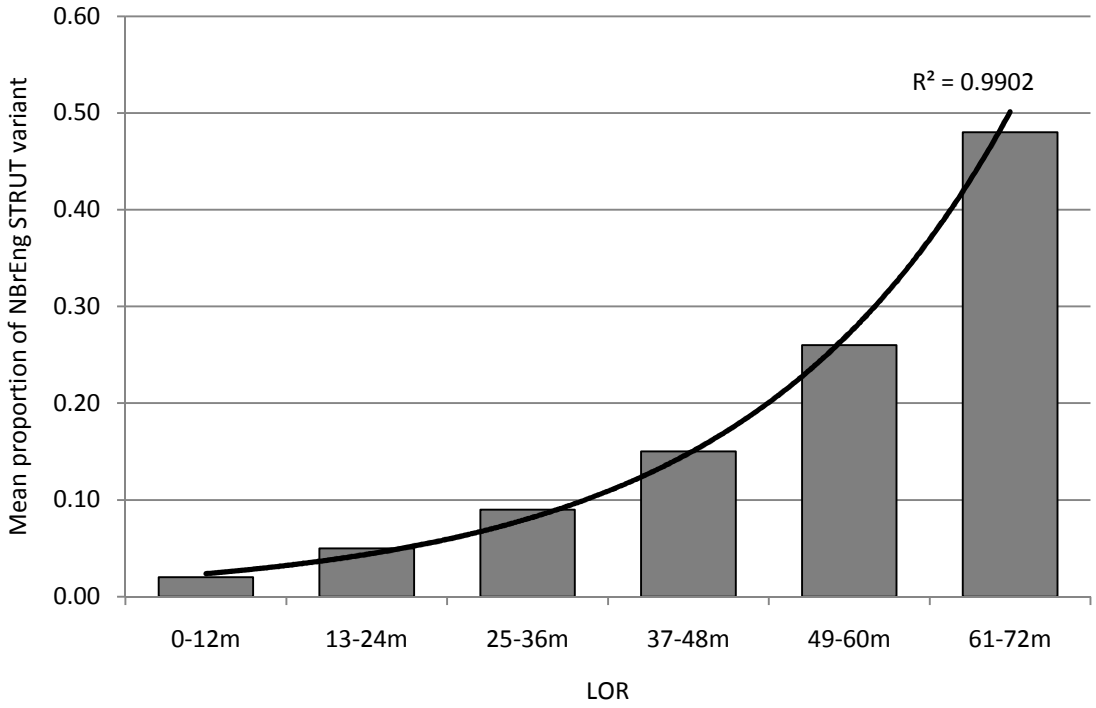
5.2 STRUT - Discussion

The regression analyses suggest that five factors (LOR, Local NS partner, lexical frequency, phonetic context, Attitude towards Manchester) have a significant role to play in the variation of STRUT. These five factors will be discussed in turn.

5.2.1 LOR

While the fact that LOR is statistically significant is not surprising, it is nonetheless interesting, particularly when the degree of acquisition of the local variant over time is explored in more detail. Figure 11 shows LOR broken down into years, with the mean proportion of NBrEng STRUT from all speakers for each year of residence. This is striking not only for its orderliness, but also for the extremely neat fit of the exponential trendline ($R^2 = 0.99$). This might suggest the beginning of an 'S-curve' model of acquisition, whereby the rate is slow at the beginning, before a period of rapid change, and then tails off. Clearly there are other factors at work which will influence the acquisition of the local variant in individuals, but it might be the case that in time, the S-curve model prevails overall. The only way for this to be tested is to increase the sample size to include speakers who have been in Manchester longer than 6 years. However, the point was made in a previous section that when the LOR starts getting higher, so too does the range of influences on a speaker's English, making it very difficult to attach any sort of explanatory power to any particular variables. In addition, the participants in the present study are representative of the wave of immigration to the UK after Poland's entry to the EU in 2004. It is therefore necessary to wait a few more years to find people with longer LORs. Whatever the eventual outcome, it is clear that any change occurs very gradually at first, with no sign of any acquisition in the first 6 months, and very little in the first 2 years of residence.

Figure 11: Mean proportion of NBrEng STRUT variant for all speakers, ordered by LOR.



5.2.2 Local NS partner

The results of the regression analysis suggested that simply having a NS partner was enough to increase the likelihood of exhibiting NBrEng STRUT, regardless of whether that partner was from the local area. This would render the fact that the three speakers who did have local partners displayed greater use of the local variant largely coincidental. This is hard to argue against, as very little is known about the speech of the partners. While they may have been described as 'from the local area' by the participants, nothing is known of their linguistic background. Their accent might reflect an upbringing in a different area of the UK, yet they see themselves as being local. Similarly, those NS partners who are not from the local area might just as easily come from an area of the UK which shares the lack of FOOT/STRUT split. This lack of a split is, after all, a general feature of Northern British English. Furthermore, as mentioned previously, the very fact of having a NS partner makes social contact with other NSs more likely, and the chances of some of these having local speech features is surely quite high.

5.2.3 Lexical frequency

Existing research into the role of lexical frequency in language variation and change has, by default, addressed the issue of changes within the same language. The result is a

fascinating yet complex field of linguistics that spans several smaller areas. The specific issue of dialect acquisition, particularly L2 dialect acquisition, is generally absent from the discussion; however, it is nonetheless valuable to explore whatever insights might be gained by looking at the present context in the light of existing theories.

Three possibilities will be discussed with regard to the relationship between the data presented here and lexical frequency. The first possibility is that there is indeed a frequency effect at work, despite the apparent lack of any linear relationship between increased frequency and increased use of the local variant. The second possibility is that it is not lexical frequency that is influencing the degree of acquisition, but the frequency of broader phonetic contexts. The third possibility is that frequency simply has no effect on the likelihood of the local variant being used at all.

5.2.4 Possibility one – a lexical frequency effect

Crucial to the application of ideas of frequency to the present context is the observation that the change in the STRUT vowel exhibited by these Polish speakers is both phonetically and lexically gradual. It is phonetically gradual by virtue of the fact that it involves 'a continuous shift along one or more dimensions in phonetic space' rather than 'the substitution of one discrete phonological category for another' (Bermúdez-Otero 2007:3). It is lexically gradual (diffusing) by virtue of the fact that 'it affects certain words earlier than others with an equivalent phonological and morphosyntactic makeup' rather than applying 'at the same time to all words that are identical with respect to the relevant phonological, morphological, and syntactic conditions' (Bermúdez-Otero 2007:3). Evidence for its phonetic gradualness can be seen in Table 11 and Figure 4, which clearly show how all five phonetic categories of the vowel are likely in the speech of any individual who shows signs of change. Evidence for its lexical gradualness can be seen in the fact that in the speech both of individuals and of the group there are structurally identical words which show completely different degrees of change.

However, the issue of variability is relevant to both these observations. Although the present study views the change in the STRUT vowel as existing on a continuum from [ɐ] through [ə] to [ʊ], recall that for the regression analysis this was simplified to SSBrEng [ɐ] [ɐ̟] and NBrEng [ə] [ʊ̟] [ʊ]. Arguably, this represents something approaching the substitution of one phonemic category [ɐ] for another [ʊ]. The idea of lexical diffusion is similarly complicated by variability:

> …lexical diffusion can manifest itself through a difference in the relative frequency with which two words display the innovative variant, as long as this difference is not determined by phonological, morphological, or syntactic conditions, or by sociolinguistic factors (e.g. sex, age, social status, style, register, etc.). Accordingly, establishing whether a particular change is regular or diffusing often requires large datasets and powerful statistical methods.
>
> (Bermúdez-Otero 2007:3)

On balance, in spite of these complications, the following discussion will assume the change in the STRUT vowel exhibited by the speakers in this study is both phonetically and lexically gradual.

Bybee (2001) discusses two effects of frequency on phonological change: a 'reduction effect' and a 'conserving effect'. The reduction effect describes the tendency of high frequency words to undergo changes which are the result of the automation of production (reductive changes), whereas the conserving effect describes the concept that the mental representation of high-frequency words is in fact strengthened by that frequency, resulting in them being more resistant to change. Phillips (2006) views the effect of lexical frequency on sound change in terms of the depth of analysis that is required to activate the change. If the change concerns only the surface phonetic realisation of a lexical item (again, usually reductive in nature), then high frequency words, which do not require the same depth of lexical analysis as low-frequency words, will undergo the change more rapidly. Dinkin (2008:104), in his study of frequency effects in the realisation of short vowels in the Northern Unites States concludes that

> more frequent words are more subject, not to (diachronic) change per se, but to lenition—that is, variation in the direction of reduced articulatory effort, whether part of a sound change in progress or not.

The connection between frequency and reductive changes is clear. The question is whether the change in the STRUT vowel in the speech of the Polish participants can be seen as a process of lenition. If the data collected from the 40 speakers showed only a change from [ɐ] towards [ə] then it could be argued that this was a process of lenition, due to the decreased articulatory effort in producing more centralised vowels. However, there is considerable evidence of speakers moving beyond [ə] towards [ʊ], a move which cannot be viewed as involving less articulatory effort. For this reason, it is perhaps not surprising that there is no sign of a greater likelihood of change in more frequent lexical items.

However, we should once again remind ourselves that the context under investigation is different from the contexts within which these theories have been developed. There are two differences in particular which are fundamental to our understanding of the processes at work. The first is the suddenness with which the individuals are exposed to the sound difference in question as they move from one dialect environment to another; the second is the difference in language use between the two environments. This second difference has implications for Bybee's (2001) conserving effect. While a lexical item that is high frequency in one environment is quite likely to also be high frequency in the other, this symmetry is by no means certain, and at times, unlikely. When there is symmetry the situation is, despite the suddenness of the change, not especially different from a traditional sound change situation – the mental representation of the item will be strong, and as such, resistant to change. By the same token, low frequency words in both contexts might be more open to change due to the weaker mental representation (although there will be fewer examples of the 'new' version to encourage this change). However, it is feasible that a low frequency word in context 1 is in fact a high frequency word in context 2. This would mean that the existing mental representation is weak, yet there is increased exposure to the new variant, resulting in a rapid change.

At an individual level, there is a very clear example of this in the data. Speaker 3 has a relatively low value for both the mean auditory STRUT value and the proportion of NBrEng variants (0.3 and 0.09 respectively), ranking 20th of the 32 speakers who showed some use of the NBrEng variant. Although 84% of her STRUT tokens were categorised as [ɐ] or [ɐ̟], she produced two tokens which were categorised as [ʊ]; one was in the word *pumps* and one in *pumping*. *Pump* is a low frequency word, and one which is unlikely to have gained a strong mental representation due to the individual's experience of English in Poland. Similarly, it is not a word often encountered in everyday speech in Manchester. However, the two examples above came up in a conversation about speaker 3's occupation. She works for a company whose sole business is the hiring of industrial pumps to the building trade, used for pumping water. So in her environment, *pump* is a word of high frequency.

More anecdotally, during a pilot study, when arranging a meeting with a participant over the phone, she suggested we meet at /ˈstɑːbʊks/. During our subsequent interview, I was surprised at how little she used a NBrEng variant of STRUT in any other words. She later

told me that when she lived in Poland she was unaware of there being any branches of Starbucks, and only came across the chain when she moved to Manchester. This again suggests a low frequency word in context 1 being a high frequency word in context 2.

In addition to issues of lexical frequency, both these examples highlight the potentially unclear relationship between straightforward SLA on the one hand, and dialect acquisition within a second language on the other. If the words *pump* and *starbucks* were known to these speakers before coming to Manchester (likely as /pʌmps/ and /stɑ:bʌks/, then the use of [ʊ] in these words could be seen as a possible example of dialect acquisition. However, if the words were encountered for the first time in Manchester, then the use of /pʊmps/ and /stɑ:bʊks/ could be seen simply as examples of the learning of a new word.

A theoretical framework that provides insight not only into this issue, but also into the more general issue of lexical frequency is the exemplar-based model discussed by, among others Goldinger (1997); Johnson (1997); Pierrehumbert (2001; 2002; 2006); Bybee (2001; 2002); Foulkes & Docherty (2006). The central belief of exemplar models is that the cognitive representation of a particular word is made up of 'highly detailed memory traces of phonetic episodes experienced by the speaker… linked to one another by a network of connections based on similarity in a high-dimensional phonetic space' (Bermúdez-Otero 2007:15). Within this exemplar 'cloud', exemplars with similar phonetic properties cluster together, while exemplars with dissimilar properties move apart. Crucially, the process is ongoing and fluid, so that as more exemplars are amassed, the clusters adapt and evolve; and as exemplars are repeated, they gain in strength. Foulkes & Docherty (2006:section 4.2) describe how non-linguistic information is simultaneously coded in the exemplar, thus indexing social factors as well as linguistic factors. This results in exemplars clustering together not only around phonetic similarities, but also around socially indexed similarities such as gender, ethnicity, or social class.

But frequency alone cannot account for the strength of an exemplar. Everyday experience tells us that an infrequent event can be just as (or more) salient than an infrequent one. Pierrehumbert (2006:525) makes the point that:

> Clusters of exemplars do not reflect undifferentiated raw experience, but rather experience as it has been encoded and stored. … In between physical experience and

> memory lies a process of attention, recognition, and coding which is not crudely reflective of frequency.

In other words, factors other than frequency can play a role in how exemplars are clustered. An additional issue is that of age. Although not entirely relevant in the current context, as all the participants were adults when they arrived in the UK, it is perhaps still worth questioning how an exemplar model can deal with the fact that children are more likely to acquire a second dialect (and more accurate L2 pronunciation) than adults. Pierrehumbert (2001:149) suggests the possibility that

> ...older people are less likely to add new exemplars than young ones; because the formation of new memories becomes less rapid and robust with age, the production statistics are dominated by exemplars stored at a younger age. Differences in attention or in feelings of social affiliation could impact formation of exemplar memories in an analogous way. [This explanation predicts that] the speech patterns of older adults could shift to some extent, just not as rapidly as for younger people.

This explanation, although simple, makes intuitive sense. It does not add to the debate of *why* adults are less able to acquire a second dialect or L2 speech accuracy than children, but it does suggest a way in which the age-related restricting factors might work.

The production side of the model is not as well-developed as the perception side, although Foulkes & Docherty (2006) with reference to Pierrehumbert (2003) describe a process in which a production goal is established by sampling the distribution of exemplars relating to the target word. This sampling is biased as a result of non-linguistic factors, resulting in a mechanism by which a sociophonetically appropriate production target is generated for a given context (Foulkes & Docherty 2006:430). Of course, underlying the sampling process is the original idea of increased frequency creating stronger exemplars, but the bias mechanism ensures that it is not simply the strongest exemplar overall that is targeted for production, rather it is the strongest given the sociophonetic context. Furthermore, the issue of salience described above ensures that the strongest exemplars are not necessarily the most frequent.

The explanatory potential of applying an exemplar model to the data presented here is considerable. A word such as *much*, to take a random example, will have been perceived many times by an individual while they were still in Poland. Thus, an exemplar cloud will have been formed, with strong clusters of exemplars of the vowel in certain areas of the phonetic space. Presumably, if we consider the f1/f2 dimensions of this phonetic space,

this clustering will be strongest around the area of [ɐ]. Of course the fact that many instances of the word will have been produced by fellow native Polish speakers with various levels of pronunciation accuracy might mean that there is also a strong exemplar cluster around [ɐ̟] or [a] or [ɑ][53]. In addition, it might be that certain exemplars were produced by someone of more contextual importance, such as an English teacher, in which case those exemplars might carry extra weight. When the individual then goes to Manchester, they will be exposed to a different variety of *much*, and these vowel exemplars would cluster around [ʊ]. At first, the cloud of exemplars would still be mainly in the region of [ɐ], as this is where the strongest clusters would be. This would result in any production targets being drawn from this area. However, as the strength of the [ʊ] clustered exemplars increases, due both to their increased frequency and perhaps to other social, non-linguistic factors, the cloud would move, and the distribution sample for a possible production target would have shifted. All things being equal, this would then increase the likelihood of a more [ʊ]-like production.

However, as attractive as an exemplar-based model might be in illuminating the data, it does not in any way help explain the frequency effect found in the regression analysis (Table 18) in which the medium frequency words were found to be the most likely to show NBrEng STRUT. The tendency was not found to be strong, but it was found to be statistically significant, even within Rbrul's conservative nature when using individual speaker as a random effect. The alternative interpretation of the results was that medium and low frequency words pattern together, and high frequency words disfavour any change. Frequency is central to an exemplar based model approach, even when other considerations, such as attention paid to individual experiences and memories, are taken into consideration. As such, a situation in which the most frequent words do not show more evidence of change, is incompatible. Nevertheless, it must again be borne in mind that the situation being investigated here is different from other situations in which an exemplar-based model has been used. It has already been noted that a possible difference in the current situation is the lack of symmetry between the use of language in the two contexts (Poland and the UK). An example was given in which a particular lexical item was more frequent in context 2 than in context 1, leading to the possibility that the cluster created by the local variant exemplars for that word was stronger than the existing cluster. It appears that if frequency is the over-riding force of an exemplar-

[53] These are all common non-target forms in the data.

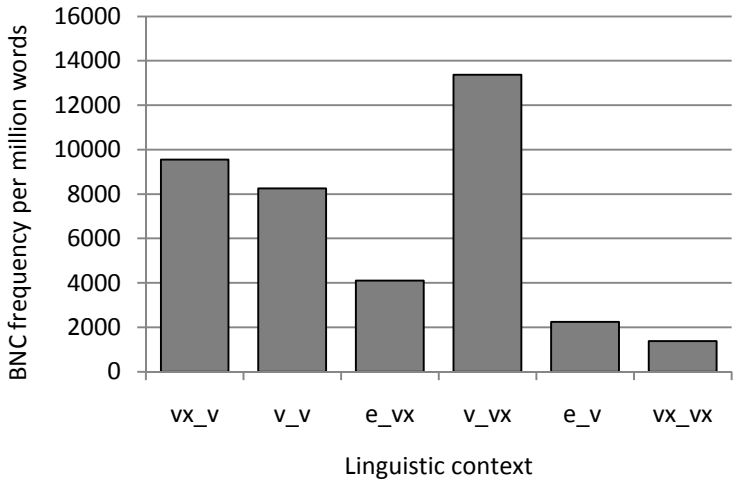
based model, then it is only this kind of lack of symmetry that can explain the lack of correlation between lexical frequency and use of the local variant found in the data presented above. And even that does not necessarily explain why medium frequency words should be more likely to exhibit the local variant.

5.2.5 Possibility two – a phonetic context effect

An exemplar model works equally well when applied to phonetic context rather than lexical frequency[54]. Recall that certain contexts were found to be significantly more likely to exhibit a NBrEng STRUT variant than others. In terms of an exemplar-based model, it might be the case that each instance of a certain CVC context creates an exemplar (in the same way as described above) irrespective of the word in which it is embedded. Repeated exemplars would form clusters, resulting in certain contexts being stronger than others. Of course, this explanation again involves frequency, although this time it is the frequency of each particular context. It is, however, difficult to ascertain the frequency of these contexts. To employ a similar methodology to the present study, using BNC frequency lists, would involve searching the lists for examples of each CVC context. It is not an impossible task by any means, but its time-consuming nature puts it beyond the scope of the present study. The difference between searching for the frequency of individual words and searching for the frequency of individual contexts is that it is not enough simply to find the words in the dataset being considered, as the underlying contexts will exist in other words that the participants will have been exposed to, but which do not appear in the production data. Nevertheless, it is possible to carry out a partial search, by looking at the combined frequency of the words which include each context from the Polish dataset. For example, the 'vx_vx' context includes all the words which have a voiceless consonant either side of the STRUT vowel, so if we take the combined frequency of all the words in our dataset which have this context (*couple, customer, cut, discuss, stuck, stuff, such, touch, tough*) we begin to get an idea of the frequency of that context.

[54] To an extent, this could be viewed as an example of Bybee's (2001) 'Type frequency'.

Figure 12: Chart showing approximate frequency of each phonetic context in order of likelihood of NBrEng STRUT variants.



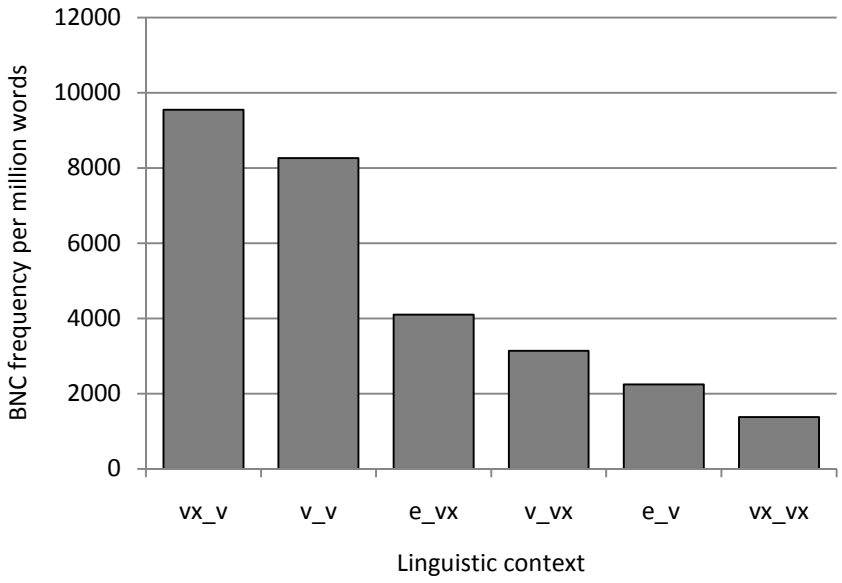
The results are quite striking. Figure 12 shows the combined BNC frequency per million words of each of the identified contexts. The results are ordered by the likelihood of there being a NBrEng STRUT variant as determined by the regression analysis (see Table 22). It is immediately clear that the two most likely contexts for NBrEng STRUT (vx_v and v_v) are far more frequent than the two least likely contexts (e_v and vx_vx). There is also a steady decline in frequency as the likelihood decrease. The anomalous context is v_vx, which, although neutral in terms of likelihood of NBrEng STRUT (log-odds -0.064) has the highest frequency. This is difficult to explain, although it might be pertinent to note that this context includes the single most frequent word of the dataset *but*, as well as another high-frequency word *just*. Both these words were candidates to be removed completely from the analysis due to their tendency to be produced as a weak form, but were kept in on the grounds that they were often given their full value (obviously the data includes only those examples which were deemed to be full). If these two words are removed from the equation, the frequency count for the v_vx context would be 3137, which puts it very neatly between its neighbours.

In order to test this theory properly, the regression analysis (from Table 22) was repeated, but with all *but* and *just* tokens removed. The results can be seen in Table 24. Notice that the ordering of the 6 contexts remains the same, but the revised frequency of v_vx puts it in line with the other contexts (Figure 13). However, this is perhaps somewhat disingenuous, as the two words *were* included in the analysis, and their relevant proportions of NbrEng STRUT do form part of the overall picture.

Table 24: Repeat of Rbrul output for STRUT variation, all speakers, with the addition of phonetic context voice, but without *but* and *just*.

Application value: NBrEng	*Factor*	*Log-odds*	*Tokens*	*Response proportion*	*Factor weight*
Context ***p* <0.01**	**vx_v**	**0.643**	**932**	**0.240**	**0.655**
	v_v	**0.286**	**629**	**0.270**	**0.571**
	v_vx	**0.038**	**153**	**0.209**	**0.51**
	e_vx	**0.015**	**102**	**0.127**	**0.504**
	e_v	**-0.286**	**134**	**0.172**	**0.429**
	vx_vx	**-0.696**	**118**	**0.169**	**0.333**
Frequency *p* <0.01	med (101-1000)	0.342	772	0.263	0.585
	low (10-100)	-0.064	311	0.203	0.484
	high (>1000)	-0.279	985	0.219	0.431
Local NS partner *p* <0.05	yes	0.752	243	0.568	0.68
	no	-0.752	1825	0.188	0.32
LOR *p* <0.01	continuous scale 7-72 months	+1 0.05	2068		
ATT (Attitude) *p* <0.01	(Scale 1-7)	+1 0.811	2068		
Not significant:	*Gender, Age, LoE, AW, CHA, MOT, Use of L1/L2, Future plans, Formal English instruction, Matched Guise Test results.*				
Model	deviance 1546.894 df 12 intercept -7.886 mean 0.233 Speaker ID random standard deviation: 1.141				

Figure 13: Chart showing approximate frequency of each phonetic context in order of likelihood of NBrEng STRUT variants, without *but* and *just*.



In order to test the extent of the apparent correlation, the BNC frequency value was normalised using the Log10 transformation and a Pearson correlation coefficient was calculated to assess the relationship between the transformed BNC frequency and the log-odds likelihood of there being NBrEng STRUT. With *but* and *just* included there was a strong correlation that fell just outside statistical significance ($r=0.772$ $p=0.07$) and with *but* and *just* excluded there was a very strong, highly significant correlation ($r=0.971$ $p<0.01$).

5.2.6 Possibility three – no frequency effect.

Given the difficulty in explaining the pattern suggested by the regression analysis in which words of medium frequency were the most likely to exhibit a NBrEng variant of STRUT, there is undoubtedly a strong possibility that lexical frequency plays no role after all. Yes, the result did rise to statistical significance even within Rbrul's conservative analysis, but the overall effect was somewhat weak. Certainly there is no automatic reason why lexical frequency should be considered as an influencing factor, as Labov (2006) points out. He acknowledges that some sound changes do indeed proceed by lexical diffusion (and hence involve frequency), but with reference to the *Atlas of North American English* he concludes that 'our detailed studies of changes in progress on a continental scale find little evidence of the frequency effects that are essential to the exemplar model' (Labov 2006:509). Labov goes on to provide examples of changes which seem unaffected by frequency, such as the fronting of /uw/ in Columbus, Ohio when the sound is not before a liquid. In this case the lack of frequency effect is illustrated by the fact that the high frequency word *do* behaves in precisely the same way as the low frequency word *dew*. A footnote to these and other changes does acknowledge that 'very few of these changes weaken the phonetic output, and must be classed as involving fortition rather than lenition' (Labov 2006:511) which does make them different from the most likely type of frequency-influenced changes described by Bybee (2001) and others, but it is difficult to argue against the general argument that Labov himself finds little if any role for lexical frequency in describing sound change.

On balance, and once again with the caveat that the context from which these data have been collected differs from the contexts described in the research outlined above, the possibility which is best supported by the data is the second – that frequency does play a part, but at the level of phonetic context rather than lexical item. Furthermore, the part

played by context frequency can be described in terms of an exemplar-based model. Despite the fact that many aspects of an exemplar-based model in terms of lexical frequency make intuitive sense, the lack of any correlation between lexical frequency and use of local variant in this dataset makes it very difficult to support. As with much sociolinguistic research, more data might well provide a clearer and perhaps different picture. However, on the evidence of the current dataset, the most convincing explanation is that while lexical frequency is not influential, contextual frequency is.

5.2.7 Phonetic context (without frequency)

Before frequency was found to play a role in terms of phonetic context, the results suggested that voicing might be important in determining the realization of the vowel. The regression analysis showed that those contexts which included a voiced sound after the vowel were more likely to exhibit a NBrEng-influenced STRUT variant. At this stage it is difficult to determine why this should be the case. There is always the danger it is coincidental, and without an adequate theory behind its occurrence, this is perhaps all that can be concluded. However, it is something that ought to be explored in future research. The first step would be to increase the number of Polish participants, before then looking at similar patterns in the speech of different nationality groups in the area.

5.2.8 Attitude

The regression analysis showed that of the four attitudinal factors, it was only ATT (Attitude towards Manchester, its people, and living there) that reached statistical significance. The observation was made earlier that some of the participants with the longest LORs but with low levels of STRUT variation actually had some of the lowest (most negative) attitude scores. One of these is Speaker 22 (female, aged 26, student), who had the lowest attitude score of all. She has an LOR of 59 months, yet shows almost no acquisition of NBrEng STRUT (average auditory value 0.13, proportion of NBrEng STRUT 0.02). During the conversation part of the interview, Speaker 22 said:

> …I had a lot of bad experience in Manchester. Starting from rape attempts, and stuff like that, so, anything you can, you can only think of. Yeah the crime rate in Manchester is terrible … it's the … I think it's the worst in Europe. […] So basically everybody has experienced something like that. It's not only me. […] I was beaten up on a bus, by some girls, yeah, you basically, you cannot walk alone.

Her negative attitude towards Manchester and its people is, certainly in her mind, completely justified. She sees Manchester as a dangerous place, and has the personal

experience to support this view. Her situation is especially interesting due to the fact that before starting at university in Manchester she spent some time working in a factory alongside people with very strong local accents. She explains how she did not get on at all well with her co-workers and experienced a lot of discrimination, including 'verbal and physical aggressiveness'. Recall that Baker (2008), on finding a correlation between negative attitude towards the target culture and increased use of the local variety suggested that this might be because the subjects in question had spent an increased amount of time within the target culture, thus increasing the likelihood of change due to contact, while at the same time developing a negative attitude. The results from this particular speaker at least do not support this, as despite the increased contact with the local variety, her (very) negative attitude towards the target culture seems to have inhibited any form of acquisition. It is, of course, impossible to say for certain what has led to Speaker 22 not acquiring the local STRUT variant despite aspects of her situation making it likely. However, it is not hard to imagine that her understandably negative attitude towards the people whom she saw as 'vulgar' has influenced the maintenance of her RP-based pronunciation to some extent.

What is not clear in the data from Speaker 22 is the extent to which this lack of acquisition was conscious. The same is not true for Speaker 38 (male, aged 24, student and café worker), who very clearly describes how he acquired a 'Mancunian' accent due to his work in a café at a busy Manchester railway station , before consciously losing it again:

> After two years of working there I've picked up the [local] accent, and other people couldn't understand me at all … the only way I could speak English was Mancunian way. So I've just tried to listen to my wife, how she pronounce things, [rather] than my colleagues at work, and slowly I've killed it. […] My wife just hated the accent, she couldn't stand it. It's like a bad habit, it's just not controlling yourself. It's just, if you don't know how to pronounce things, you listen how other people are trying to pronounce them, and in the end you are sounding the same as they are.

Speaker 38's attitude score is fairly low (just within the 25th percentile), but his LOR is not high enough at 42 months to necessitate looking towards attitude as an explanatory factor in his lack of local acquisition. Nevertheless, it is interesting that he feels he did go through a stage of acquiring local features, despite the fact that he clearly has a negative attitude towards the local accent. It is hard to say for sure that one of these features would have been the STRUT vowel, although it is highly likely, given its salience. Speaker 38's comments are illuminating by virtue of his own explanation for his acquisition of

local features: 'if you don't know how to pronounce things, you listen how other people are trying to pronounce them, and in the end you are sounding the same as they are'. This brings us back to the question of which process is at work here – straightforward second language acquisition or second dialect acquisition within a second language? If the 'Mancunian' accent described by Speaker 38 and his wife was actually confined to new vocabulary that Speaker 38 had acquired at work, this might simply be a case of learning a new word based on the pronunciation model that is available. However, if the accent was noticeable in other existing words, then it is a candidate for dialect acquisition. Unfortunately, in this particular case, it is impossible to know for sure

5.3 Glottal variation in /t/ - Results[55]

Table 25 shows the total count of all /t/ tokens collected for all 40 speakers, divided into the major categories; Table 26 shows the totals for each variant coded; and Table 27 summarises the overall count and percentages for the particular variants under investigation, i.e. (lack of) released [t] in PreC and glottal replacement in PreV, PreP and V/t/V. What is immediately clear is the almost categorical absence of glottal replacement in word medial position (2 examples from 518 tokens). For this reason, no further analysis of this context will be undertaken.

Table 25: Total count of /t/ tokens, all speakers.

speaker	PreC		PreV				PreP		Total
			word final		word medial				
	other	released [t]	other	glottal	other	glottal	other	glottal	
1	35 70.0%	15 30.0%	11 52.4%	10 47.6%	23 100.0%	0 0.0%	6 100.0%	0 0.0%	**100**
2	57 82.6%	12 17.4%	9 56.3%	7 43.8%	7 100.0%	0 0.0%	3 37.5%	5 62.5%	**100**
3	28 51.9%	26 48.1%	27 87.1%	4 12.9%	9 100.0%	0 0.0%	6 100.0%	0 0.0%	**100**
4	6 14.3%	36 85.7%	27 100.0%	0 0.0%	20 100.0%	0 0.0%	11 100.0%	0 0.0%	**100**
5	9 31.0%	20 69.0%	13 100.0%	0 0.0%	6 100.0%	0 0.0%	2 100.0%	0 0.0%	**50**
6	17 37.0%	29 63.0%	17 89.5%	2 10.5%	19 100.0%	0 0.0%	12 75.0%	4 25.0%	**100**
7	16 45.7%	19 54.3%	23 82.1%	5 17.9%	19 100.0%	0 0.0%	16 88.9%	2 11.1%	**100**
8	11 26.2%	31 73.8%	24 96.0%	1 4.0%	21 100.0%	0 0.0%	11 91.7%	1 8.3%	**100**
9	3 21.4%	11 78.6%	25 100.0%	0 0.0%	8 100.0%	0 0.0%	3 100.0%	0 0.0%	**50**
10	3 14.3%	18 85.7%	17 100.0%	0 0.0%	9 100.0%	0 0.0%	3 100.0%	0 0.0%	**50**

[55] Much of the material in this section is contained in Drummond (forthcoming).

11	10 24.4%	31 75.6%	21 100.0%	0 0.0%	27 100.0%	0 0.0%	11 100.0%	0 0.0%	**100**
12	12 50.0%	12 50.0%	13 100.0%	0 0.0%	6 100.0%	0 0.0%	7 100.0%	0 0.0%	**50**
13	0 0.0%	12 100.0%	19 100.0%	0 0.0%	12 100.0%	0 0.0%	7 100.0%	0 0.0%	**50**
14	2 7.7%	24 92.3%	8 100.0%	0 0.0%	6 100.0%	0 0.0%	10 100.0%	0 0.0%	**50**
15	27 45.8%	32 54.2%	16 94.1%	1 5.9%	9 100.0%	0 0.0%	15 100.0%	0 0.0%	**100**
16	25 53.2%	22 46.8%	14 77.8%	4 22.2%	21 100.0%	0 0.0%	13 92.9%	1 7.1%	**100**
17	19 52.8%	17 47.2%	36 94.7%	2 5.3%	12 100.0%	0 0.0%	12 85.7%	2 14.3%	**100**
18	39 73.6%	14 26.4%	16 53.3%	14 46.7%	10 100.0%	0 0.0%	5 71.4%	2 28.6%	**100**
19	46 97.9%	1 2.1%	5 17.9%	23 82.1%	8 100.0%	0 0.0%	4 23.5%	13 76.5%	**100**
20	20 40.8%	29 59.2%	14 93.3%	1 6.7%	16 100.0%	0 0.0%	18 90.0%	2 10.0%	**100**
21	12 44.4%	15 55.6%	8 100.0%	0 0.0%	10 100.0%	0 0.0%	5 100.0%	0 0.0%	**50**
22	16 45.7%	19 54.3%	24 96.0%	1 4.0%	24 100.0%	0 0.0%	16 100.0%	0 0.0%	**100**
23	5 10.4%	43 89.6%	22 95.7%	1 4.3%	16 100.0%	0 0.0%	12 92.3%	1 7.7%	**100**
24	8 20.5%	31 79.5%	33 100.0%	0 0.0%	16 100.0%	0 0.0%	12 100.0%	0 0.0%	**100**
25	28 65.1%	15 34.9%	24 88.9%	3 11.1%	21 100.0%	0 0.0%	8 88.9%	1 11.1%	**100**
26	39 65.0%	21 35.0%	18 94.7%	1 5.3%	4 100.0%	0 0.0%	10 58.8%	7 41.2%	**100**
27	26 76.5%	8 23.5%	31 81.6%	7 18.4%	8 88.9%	1 11.1%	12 63.1%	7 36.9%	**100**
28	13 24.0%	41 76.0%	25 100.0%	0 0.0%	14 93.3%	1 6.7%	6 100.0%	0 0.0%	**100**
29	33 84.6%	6 15.4%	14 50.0%	14 50.0%	12 100.0%	0 0.0%	14 66.7%	7 33.3%	**100**
30	38 84.4%	7 15.6%	6 23.1%	20 76.9%	16 100.0%	0 0.0%	5 38.5%	8 61.5%	**100**
31	22 55.0%	18 45.0%	30 85.7%	5 14.3%	18 100.0%	0 0.0%	5 71.4%	2 28.6%	**100**
32	4 23.5%	13 76.5%	24 100.0%	0 0.0%	3 100.0%	0 0.0%	6 100.0%	0 0.0%	**50**
33	8 38.1%	13 61.9%	12 100.0%	0 0.0%	3 100.0%	0 0.0%	14 100.0%	0 0.0%	**50**
34	22 43.1%	29 56.9%	19 90.5%	2 9.5%	12 100.0%	0 0.0%	15 93.7%	1 6.3%	**100**
35	28 50.9%	27 49.1%	14 73.7%	5 26.3%	14 100.0%	0 0.0%	12 100.0%	0 0.0%	**100**
36	54 96.4%	2 3.6%	7 29.2%	17 70.8%	10 100.0%	0 0.0%	3 30.0%	7 70.0%	**100**
37	9 32.1%	19 67.9%	12 100.0%	0 0.0%	8 100.0%	0 0.0%	2 100.0%	0 0.0%	**50**
38	10 40.0%	15 60.0%	9 100.0%	0 0.0%	6 100.0%	0 0.0%	10 100.0%	0 0.0%	**50**
39	19 40.4%	28 59.6%	32 91.4%	3 8.6%	12 100.0%	0 0.0%	6 100.0%	0 0.0%	**100**
40	18 41.9%	25 58.1%	29 96.7%	1 3.3%	21 100.0%	0 0.0%	6 100.0%	0 0.0%	**100**
Totals	**797**	**806**	**748**	**154**	**516**	**2**	**354**	**73**	**3450**

Table 26: Total distribution of /t/ tokens for all speakers

/t/ variant	PreC				PreV	PreP	V/t/V
	PreS	PreF	PreA	Total			
V/t/#C other	55.1% (270)	53.2% (296)	41.5% (231)	49.7% (797)			
released [t]	44.9% (220)	46.8% (260)	58.5% (326)	50.3% (806)	65.5% (591)	76.8% (328)	90.3% (468)
glottal replacement [ʔ]					17.1% (154)	17.1% (73)	0.4% (2)
elided [ø]					1.2% (11)	0.7% (3)	0
flap/tap [ɾ]					16.2% (146)		9.3% (48)
unreleased [t̚]					0	5.4% (23)	
	490	**556**	**557**	**1603**	**902**	**427**	**518**

Table 27: Total count and percentages for each variant under investigation

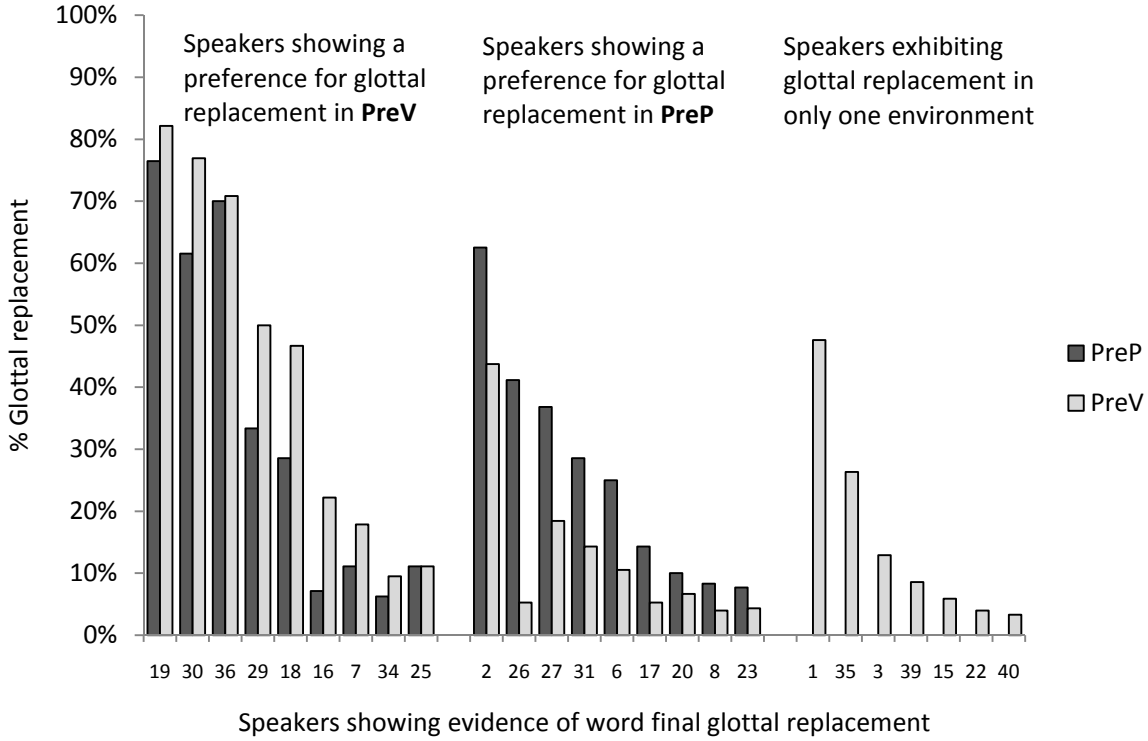
	PreC			PreV			PreP			
	other	released [t]	tot.	glottal	other	tot.	glottal	other	total	
word final	49.7% (797)	50.3% (806)	100% (1603)	17.1% (154)	82.9% (748)	100% (902)	17.1% (73)	82.9% (354)	100% (427)	
word medial	×	×	×	0.4% (2)	99.6% (516)	100% (518)	×	×	×	
totals			**1603**			**1420**			**427**	**3450**

The mean rates of word-final glottal replacement in PreV and PreP environments are relatively low (compared to, for example, Fabricius (2000) which showed rates of 40% and 36% respectively amongst NSs), yet are strikingly similar to each other. Ostensibly this would appear to suggest an absence of any diffusion pattern between PreV and PreP t-glottaling, with neither environment appearing more likely than the other to favour glottal replacement. However, further analysis presents an alternative.

Although the mean figures for glottal replacement for all speakers are equal (17%) across the two environments (PreP and PreV) at the level of individual speakers there are differences. Figure 14 shows that while there is no preference for one environment over the other amongst the 18 speakers who display glottal replacement in both contexts (8

prefer PreV, 9 prefer PreP and 1 is equal), of the 7 speakers who display glottal replacement in one environment only, this is always PreV. This suggests that for these speakers, glottal replacement cannot exist in PreP environment without first existing in PreV, perhaps suggesting a PreV > PreP pattern of diffusion, a pattern different from the most common pattern described in Straw & Patrick (2007:390).

Figure 14: Patterns of variation amongst the 25 speakers showing evidence of glottal replacement.



A word of caution should be mentioned here regarding the small number of tokens collected in PreP position for some of the speakers. However, if the speakers for whom fewer than 10 PreP tokens were collected are excluded, resulting in a modest but usable mean of just over 14 tokens per speaker, the pattern remains. In terms of Figure 14, the following speakers would be excluded: 18, 25, 2, 31, 24, 3, 39.

One additional point to note from Figure 14 is the range between speakers. The point was made above that a mean rate of 17% glottal replacement in PreV and PreP is relatively low compared to NS data, yet it is clear that certain individuals have a rate of over 70%. This figure places these particular speakers at the upper end of the scale in several NS studies (see section 3.1.2).

5.3.1 Regression analysis

Three multiple regression analyses were carried out with PreV, PreP, and PreV + PreP glottal replacement as the dependent variables (with glottal replacement as the application value) and with individual speaker as a random effect. The decision to first separate the two environments was made in order to explore possible differences in their behaviour. The results can be seen in Table 28, Table 29 and Table 30.

Table 28: Rbrul output for glottal replacement in PreV environment for all speakers

Application value: glottal	***Factor***	***Log-odds***	***Tokens***	***Response proportion***	***Factor weight***
Gender *p <0.05*	f m	0.561 -0.561	486 416	0.220 0.113	0.637 0.363
LOR *p=0.01*	continuous scale 1-72 months	+1 0.037	902		
Level of Eng *p <0.01*	continuous scale 1-10	+ 1 0.841	902		
Not significant:	*ATT, AW, CHA, MOT, Age, Use of L1/L2, English partner, Future plans Formal English instruction, MGT results.*				
Model	deviance 588.112 Speaker ID random standard deviation: 1.191	df 5	intercept -9.995		mean 0.171

Table 29: Rbrul output for glottal replacement in PreP environment for all speakers

Application value: glottal	***Factor***	***Log-odds***	***Tokens***	***Response proportion***	***Factor weight***
Gender *p = 0.05*	f m	0.584 -0.584	202 225	0.208 0.138	0.642 0.358
LOR *p<0.01*	continuous scale 1-72 months	+1 0.051	427		
Level of Eng *p <0.01*	continuous scale 1-10	+ 1 0.439	427		
ATT (Attitude) *p<0.01*	continuous scale 1-7	+1 1.477	427		
Not significant:	*AW, CHA, MOT, Age, Use of L1/L2, English partner, Future plans Formal English instruction, MGT results.*				
Model	deviance 294.389 Speaker ID random standard deviation: 1.01	df 6	intercept -15.295		mean 0.171

Table 30: Rbrul output for glottal replacement in PreV + PreP environments for all speakers

Application value: glottal	***Factor***	***Log-odds***	***Tokens***	***Response proportion***	***Factor weight***
Gender *p = 0.05*	f	0.455	688	0.217	0.612
	m	-0.455	641	0.122	0.388
LOR *p=0.01*	continuous scale 1-72 months	+1 0.042	1329		
Level of Eng *p <0.01*	continuous scale 1-10	+ 1 0.727	1329		
Not significant:	*Following sound, ATT, AW, CHA, MOT, Age, Use of L1/L2, English partner, Future plansFormal English instruction, MGT results.*				
Model	deviance 882.358	df 5	intercept -9.309		mean 0.171
	Speaker ID random standard deviation: 1.319				

Of the three significant independent variables, only LOR is directly relevant to the idea of speakers showing increased glottal replacement as a result of their being in Manchester. The log-odds and factor weights clearly show that the greater the LOR, the greater the likelihood of glottal replacement, and Figure 15 shows that two years might indicate a point at which the likelihood begins to increase. Certainly, the mean glottal replacement for PreV and PreP for speakers with an LOR of 0-24 months is very low at 2.9% compared to those with an LOR of 25-48 months where it is 12.7%.

Also of interest is the manner in which LOR and LoE interact. Clearly, both are significant in the regression analyses and both correlate positively with increased glottal replacement. This can be seen when Pearson correlation coefficients are calculated, using the percentage of glottal replacement in PreV + PreP: *LoE r=0.434 p<0.01; LOR r=0.475 p<0.01;* see also Figure 15 and Figure 16. In addition it should be noted that LoE and LOR are themselves not correlated *(r=0.021 p=0.899*[56]*).* However, this obscures some interesting detail. Neither high LoE nor high LOR is enough to increase likelihood of glottal replacement when working alone, i.e. if one is high and the other is low, there tends to be a low level of glottal replacement; it is the combination of the two factors that is important. For example, the 12 speakers who make up the lowest three categories

[56] This lack of correlation between LOR and LoE is somewhat surprising, suggesting that an individual's proficiency in English does not improve after living in the UK. However, it is in fact highly likely that this improvement takes place, but the effect is masked by recently arrived high-level speakers (i.e. high LoE but low LOR).

of LoE (elementary, pre-intermediate and intermediate) show a mean level of glottal replacement of 3.23%, yet they have a mean LOR of 40.7 months. According to Figure 15, this LOR would put them at the upper end of the category averaging 13%. Similarly, the 8 speakers who have LORs of less than 1 year show a mean level of glottal replacement of 3.6%, despite a mean LoE of 7.4 (upper-intermediate). Again, according to Figure 16 this level of English would put them in the category averaging 16% glottal replacement.

Figure 15: Bar chart showing percentage of glottal replacement ordered by LOR.

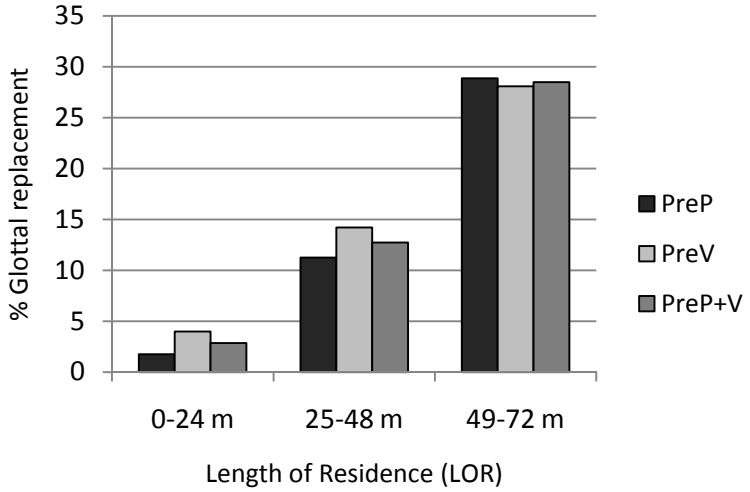
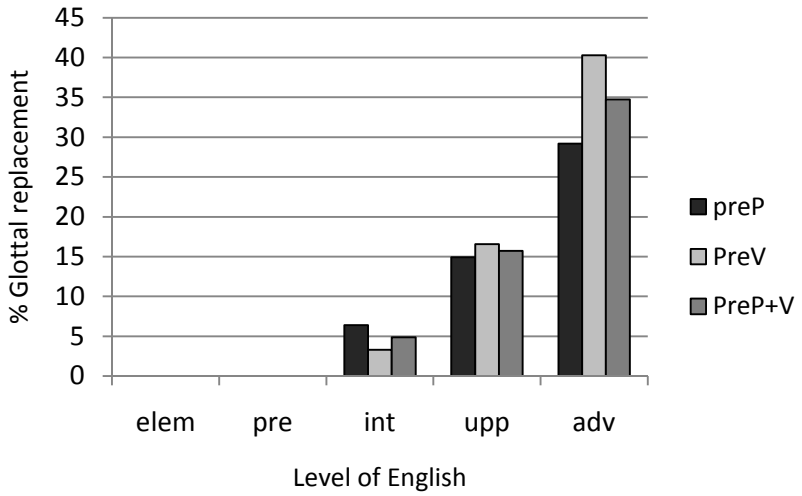


Figure 16: Bar chart showing percentage of glottal replacement ordered by LoE.



In addition to LOR and LoE, two other factors emerged as being statistically significant to differing degrees: gender and attitude. Attitude was statistically significant in just one environment: PreP, and failed to reach significance in the other two. For this reason, it is unwise to attach too much importance to this finding, especially when we recall the

relatively low number of tokens for the PreP environment. There is a chance that it represents the beginning of a pattern which might become clear with more data, but at this stage it is impossible to say. This is probably unlikely, as it would be difficult to suggest reasons why a positive attitude towards Manchester would affect one environment and not another. However, the gender effect, although relatively weak, was consistent in each analysis, with females showing an increased likelihood of using the glottal variant. Possible interpretations of this gender effect will be explored in the discussion section.

One final point that needs to be made on the last of the three analyses above (PreV + PreP) is the fact that 'following sound' was not found to be statistically significant. This is not surprising, given the very similar rates of glottal replacement in the two environments. However, the possibility of the PreV > PreP diffusion pattern still stands, given the fact that those 7 speakers exhibited glottal replacement in PreV and not PreP. Once again, this is a question for which more data provides the greatest chance of a more definitive answer.

One further regression analysis was carried out in relation to the PreC environment. This time the dependent variable was released [t] or other ('other' was the application value), with individual speaker as a random effect. The results can be seen in Table 31.

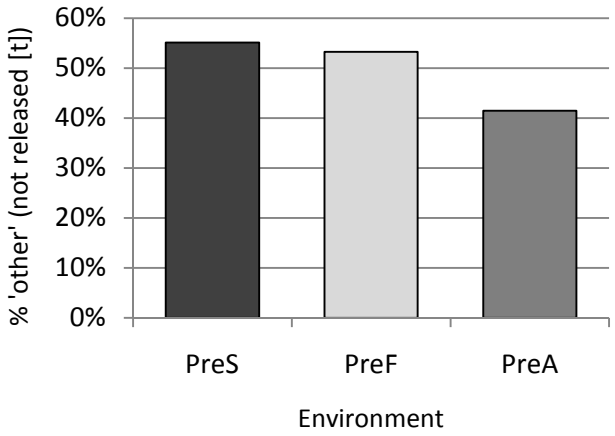
Table 31: Rbrul output for glottal replacement in PreC environment for all speakers

Application value: 'other'	***Factor***	***Log-odds***	***Tokens***	***Response proportion***	***Factor weight***
Following *p <0.01*	Stop	0.279	490	0.551	0.574
	Fricative	0.213	556	0.532	0.553
	Approximant	-0.510	557	0.415	0.375
LOR *p<0.01*	continuous scale 1-72 months	+1 0.029	1603		
Level of Eng *p <0.01*	continuous scale 1-10	+ 1 0.397	1603		
Not significant:	*Gender, ATT, AW, CHA, MOT, Age, Use of L1/L2, English partner, Future plans Formal English instruction*				
Model	deviance 1875.138 df 6 intercept -4.007 mean 0.497 Speaker ID random standard deviation: 0.864				

The first thing to notice is that the LOR and LoE effects are again significant, although at a somewhat reduced strength; secondly, gender is no longer significant. However, when

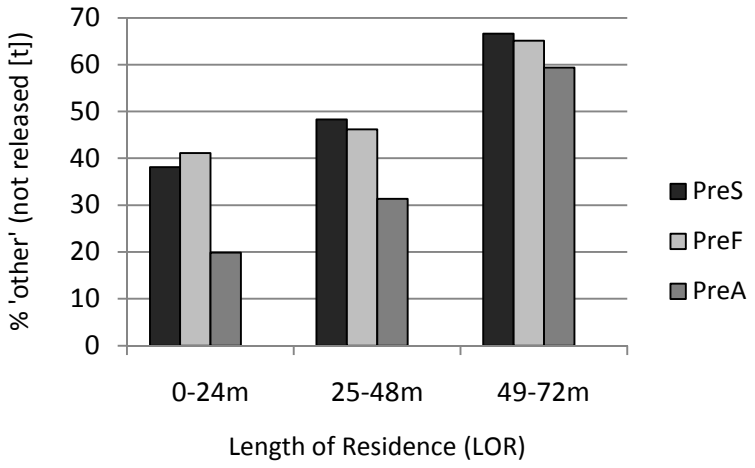
a subsequent regression analysis was carried out without using individual speaker as a random effect (i.e. replicating traditional VARBRUL analysis) the gender pattern of females using the 'new' variant was still apparent and significant, suggesting that it is a pattern which might possibly emerge more strongly with more data. The third significant factor is that of phonological environment. The log-odds and factor weights show that while PreS and PreF seem to pattern together in slightly favouring something other than released [t], PreA disfavours it (thus favouring released [t]). This difference can be seen in Figure 17, where PreS, PreF, and PreA have mean rates of 55%, 53% and 41% respectively in terms of the occurrence of something other than released [t].

Figure 17: Bar chart showing percentage of 'other' in the three PreC environments.



This pattern contrasts with the findings of Fabricius (2000), in which PreS and PreF also patterned together, but PreA showed a rate higher than both of them (PreS 72%, PreF 68%, PreA 83%) . It should be borne in mind that Fabricius' study looked specifically at glottal replacement vs 'other' rather than 'other' vs released [t], but the comparison is still valid from a patterning point of view.

Figure 18: Bar chart showing percentage of 'other' in the three PreC environments, ordered by LOR



Interestingly, when the results are looked at ordered by LOR (see Figure 18), a pattern begins to emerge which might suggest a move towards Fabricius' findings. Figure 18 shows that while the overall pattern of (PreS PreF) > PreA remains, the gap between PreA and the others decreases as LOR increases. If this narrowing of the gap were to continue with LORs of over 6 years, then it might be the case that PreA would eventually overtake PreS and PreF, thus reflecting the NS pattern found by Fabricius. Indeed, the rates of 'other' in the highest LOR are still lower than the rates of glottal replacement in Fabricius' study, suggesting that there is scope for more change.

5.4 Glottal variation in /t/ - Discussion

Clearly there is evidence that native Polish speakers living in Manchester are, to varying degrees, acquiring local patterns of variation in /t/ that differ from the patterns they used before arriving in the UK. The most important factor for determining this is LOR, which is significant in every case, showing a positive correlation between time spent in Manchester and the use of glottal replacement (PreV and PreP) or something other than released [t] (PreC). Also significant is LoE, with higher level speakers showing a greater tendency to adopt the local variation patterns. The interaction between LOR and LoE has been described above, but LoE is discussed again briefly below. The third interesting factor is that of gender, which is discussed in detail below.

5.4.1 Level of English

The results outlined above strongly suggest that LoE and glottal variation in /t/ are related. Until now, this finding has been discussed from the implied perspective that increased proficiency in spoken English leads to a higher rate of word final glottal replacement. However, the argument is circular. Recall that each speaker's LoE was determined by two English language teaching experts rating the speech on the basis of fluency, accuracy, and use of vocabulary. This was carried out impressionistically, with no reference to any specific phonological features (and no knowledge of any particular features on the part of the second teacher). It might very well be the case that the use of glottal variants actually played a part in the rating process. That is to say, the use of glottal stops might have been an indicator of a higher level of spoken English, albeit an indicator that was below the level of awareness in the minds of the listeners. This is certainly likely in the PreC context, where the constant use of fully released [t] would produce over-precise speech lacking in fluency. There is no answer to this question, it is simply an observation. It is possible to view the correlation as an illustration of one factor influencing another; however, it is just as likely that the two factors are simply two aspects of one and the same thing.

5.4.2 Gender

It is clear that there is a consistent gender effect at work, particularly in the PreV/PreP glottal replacement data. What is less clear is precisely what aspect of gender is responsible. It could be argued that the women are moving towards a supralocal variety along the lines described in Watt and Milroy (1999). This interpretation is strengthened if we are willing to view 'supralocal' not simply in terms of geographical space, but also in terms of distance between NS and NNS norms. In other words, the women are tending to acquire the supralocal NS patterns of variation, while the men are tending to retain the localized NNS patterns. This ties in with a second aspect of gender, the tendency of women to accommodate their speech to that of others more than men (Woods 1997). If women are accommodating towards the speech of NSs to a greater degree than men, it follows that they will acquire the variants more readily. A third aspect of gender is simply the result of women's social activities and jobs involving contact with a wider range of people than men's (Holmes 1997) which in this case means more contact with NSs, thus leading to a greater chance of accommodation.

The most fruitful approach would appear to be a 'gender as practice' type approach as espoused by, for example, Eckert and McConnell-Ginet (1992). It is simply not possible or desirable to separate the different aspects of gender that might be at work here, nor is it possible to isolate gender from other social factors. This is especially true in an immigrant setting where there is the added dimension of potentially different Polish and British gender identities. In terms of the three aspects of gender described above, it is likely that all of them play a part in providing an explanation for the data presented here. Furthermore, it is possible that certain other patterns have been missed due to the decision to follow standard procedure and use binary categories for gender from the very beginning. This over-simplification runs the risk of obscuring subtle differences that transcend the binary male/female distinction.

With this in mind, it is possible that the gender differences observed here are in fact better described along different lines; for example, in terms of a difference in the contexts in which English is used. Although self-reported rates of L1/L2 use were consistently insignificant in the regression analyses, it might be the case that the context of L2 use (where, with whom, and for what purpose) plays an important role in the extent to which local patterns of variation are acquired. Indeed, this makes intuitive sense, that those speakers who use English in contexts where they are required to engage in meaningful communication with NSs from a wide range of backgrounds are more likely to acquire NS patterns. Interestingly, a glance at the types of occupations the participants have (see Table 32) shows a clear division along gender lines, with females tending to be in those occupations which require a greater degree of NS contact. In other words, attempting to look at variation in relation to the context of L2 use necessarily involves looking at variation in terms of gender. The point is, context of L2 use as determined by occupation is itself an aspect of gender, as it is arguably the influence of pre-determined (be they of Polish or British origin) societal gender roles that have influenced the career choices (or lack of choices) of the participants.

Table 32: Identifiable occupations of the participants categorized by gender

Male	Female
Factory	Café
Warehouse	Shop manager – department store
Bus driver	Bar manager
University canteen	Office - insurance
Office – small software company	Bookmakers
Hospital – mental health nurse	Waitress
Mechanic	Office – hotel admin
Welder	University researcher
Warehouse	Shop assistant - department store
Security guard – industrial estate	Housewife
Student	Polish office
	Housewife / Classroom assistant
	Student

Obviously there are exceptions both to the idea that the participants are falling into stereotypically gender-specific occupations, and that female oriented jobs are automatically more 'communicative'. An example of the first would perhaps be the male participant working in the canteen, an example of the second would be the bus driver. But there are exceptions to most categorizations used in sociolinguistics. It would be interesting to follow up this idea and compare the strength of patterns when the data were divided along occupational/use of L2 lines on the one hand, and when the data were divided along gender lines on the other. However, the difficulty would be in systematically categorizing the speakers in terms of occupation and L2 use. Something similar has been achieved before by Sankoff & Laberge (1978) where they managed to categorize speakers in terms of their relationship with the 'legitimized language' in the francophone community of Montreal. In order to do this they used eight experts (both in terms of sociolinguistic variation and life in Montreal) to rank speakers on the basis of their socio-economic backgrounds. While there is as yet not enough information with which to carry out a similar task involving the Polish community in Manchester, particularly the one that has emerged since 2004, this is an area which is ready to be explored in future research.

5.5 (ing) - Results

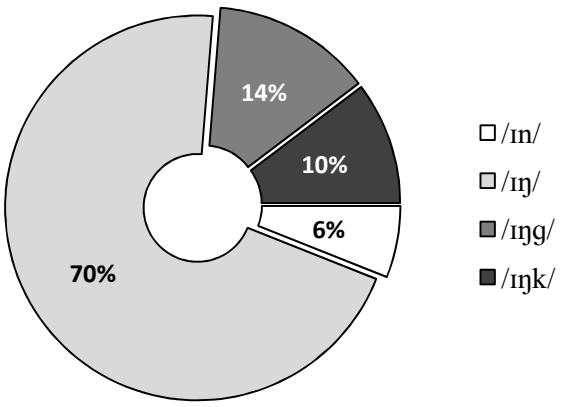
Table 33 shows the total count for the four (ing) variants in the conversation element of the interview for all 40 speakers, and Figure 19 shows the overall proportions for each variant.

Table 33: Total count for (ing) for all speakers.

Speaker	[ɪŋ]	[ɪn]	[ɪŋg]	[ɪŋk]	total
1	43 86%	0 0%	7 14%	0 0%	50
2	41 97.6%	1 2.4%	0 0%	0 0%	42
3	31 62%	0 0%	11 22%	8 16%	50
4	36 72%	0 0%	14 28%	0 0%	50
5	39 78%	1 2%	9 18%	1 2%	50
6	41 82%	0 0%	0 0%	9 18%	50
7	46 92%	1 2%	2 4%	1 2%	50
8	30 100%	0 0%	0 0%	0 0%	30
9	27 77.1%	0 0%	5 14.3%	3 8.6%	35
10	43 86%	1 2%	2 4%	4 8%	50
11	18 46.4%	0 0%	8 21.1%	12 31.5%	38
12	15 79%	1 5.3%	3 15.2%	0 0%	19
13	14 37.8%	0 0%	10 27%	13 35.2%	37
14	3 47.4%	0 0%	2 10%	15 75%	20
15	20 48%	29 50%	1 2%	0 0%	50
16	26 70.3%	1 2.7%	10 27%	0 0%	37
17	40 80%	1 2%	8 16%	1 2%	50
18	37 74%	7 14%	6 12%	0 0%	50
19	27 54%	20 40%	1 2%	2 4%	50
20	19 73.1%	0 0%	3 11.5%	4 15.4%	26
21	21 42%	0 0%	16 32%	13 26%	50
22	30 100%	0 0%	0 0%	0 0%	30
23	20 40%	0 0%	14 28%	16 32%	50
24	7 25.9%	1 3.7%	8 29.6%	11 40.7%	27
25	30 100%	0 0%	0 0%	0 0%	30
26	38 76%	0 0%	8 16%	4 8%	50
27	47 94%	2 4%	1 2%	0 0%	50

28	26 52%	0 0%	13 26%	11 22%	50
29	30 100%	0 0%	0 0%	0 0%	30
30	31 62%	19 38%	0 0%	0 0%	50
31	30 100%	0 0%	0 0%	0 0%	30
32	31 62%	0 0%	10 20%	9 18%	50
33	30 100%	0 0%	0 0%	0 0%	30
34	36 72%	8 16%	3 6%	3 6%	50
35	34 68%	5 10%	2 4%	9 18%	50
36	38 76%	0 0%	12 24%	0 0%	50
37	25 50%	0 0%	17 34%	8 16%	50
38	36 72%	3 6%	6 12%	5 10%	50
39	30 100%	0 0%	0 0%	0 0%	30
40	12 33.3%	0 0%	13 36.1%	11 30.6%	36
Total	**1178** **70.3%**	**101** **6%**	**225** **13.5%**	**173** **10.3%**	**1677**

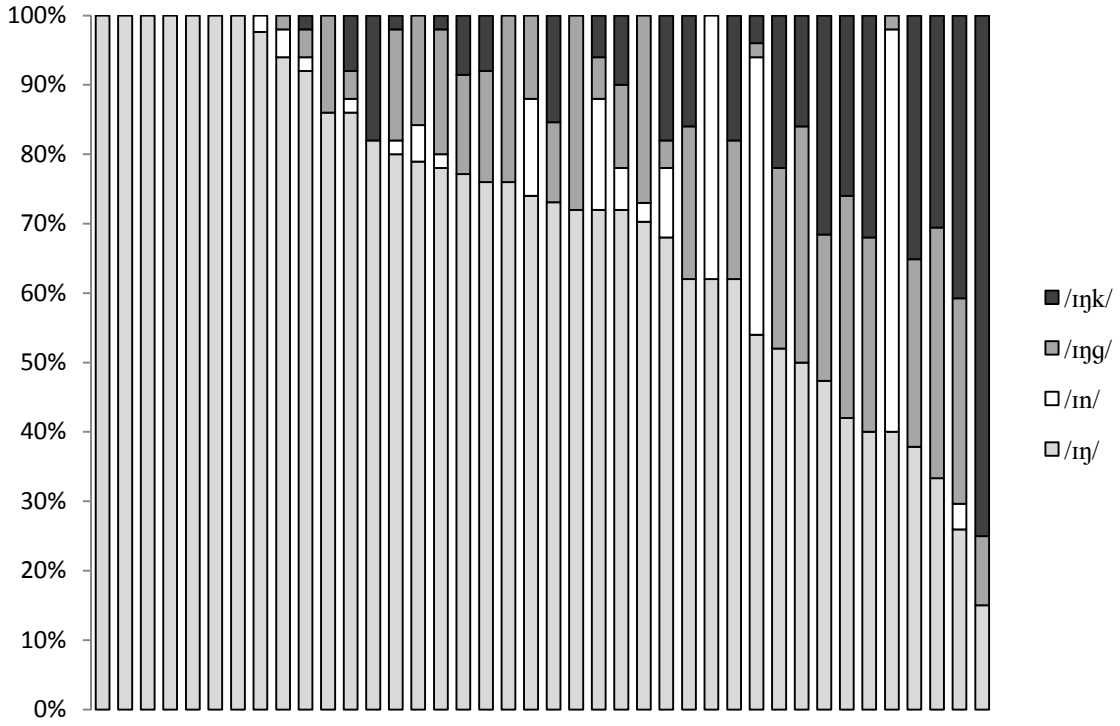
Figure 19: Total proportion of each variant of (ing), all 40 speakers.



The standard (in terms of a pedagogical model) variant of [ɪŋ] was by far the most common in the group as a whole, accounting for 70.3% of the total number of 'ing' tokens. 7 of the 40 speakers showed no variation from this standard form, leaving a majority showing some degree of variation. 9 of these speakers exhibited the use of all 4 variants. In terms of traditional (ing) research, arguably the most important variant is the alveolar [ɪn], and this will be the focus of the first part of the analysis here. This

variant accounted for only 6% of the total, yet was found in the speech of 16 of the speakers. Figure 20 shows the proportion of each variant for each speaker.

Figure 20: Chart showing the proportions for each 'ing' variant, all speakers, ordered by proportion of standard /ɪŋ/



5.5.1 Regression analysis

Due to the fact that 24 of the speakers did not produce any tokens of the variant that is of particular interest ([ɪn]) it was decided to carry out two regression analyses in the first instance. The initial analysis included all the speakers and aimed to explore patterns behind which speakers are more likely to produce [ɪn] and under which linguistic conditions, while the second analysis included only the subset of speakers who exhibited [ɪn], aiming to explore in more detail the variables which encourage or inhibit its use. In both cases the dependent variable was the (ing) variant, with the application value as [ɪn] and the non-application values being the other three possibilities. However, in both these and any subsequent analyses it must be remembered that the overall rate of [ɪn] was very low. One change was made to the data for the regression analysis, and that was the exclusion of one grammatical category ('preposition') and the recoding of another ('gerund (nominal)' was recoded to be part of 'noun'). This was done because neither category showed any examples of [ɪn], thus creating so-called 'knockout' categories, a

situation which makes any results unreliable at best.[57] An alternative solution was considered which involved simply excluding the 'gerund (nominal)' category rather than conflating it with the 'noun' category; however, the deviance measures showed that this solution did not provide a better fitting model. The results of the analysis can be seen in Table 34.

Table 34: Rbrul output for (ing), all speakers.

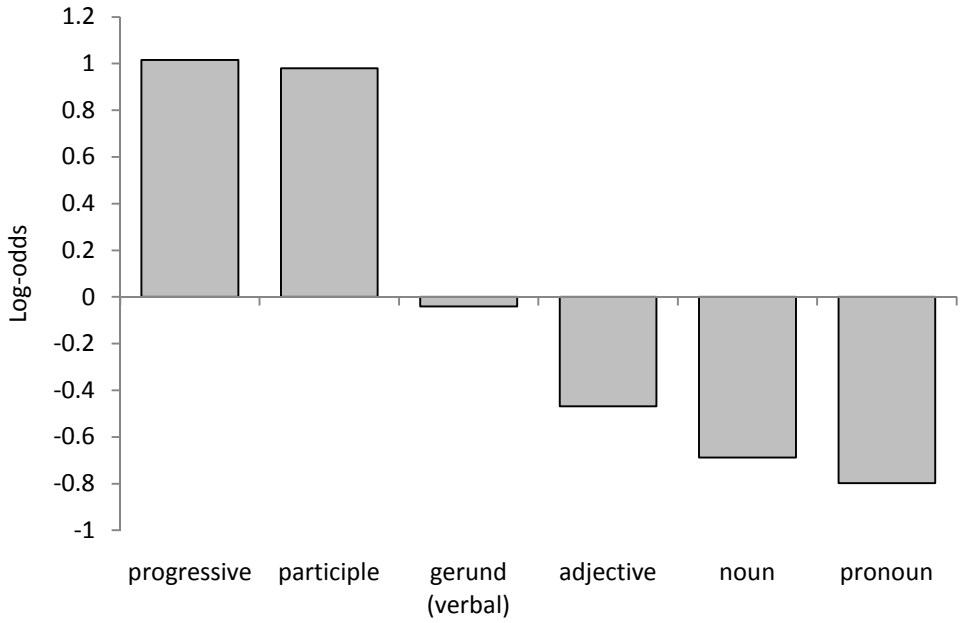
Application value: [ɪn]	***Factor***	***Log-odds***	***Tokens***	***Response proportion***	***Factor weight***
Preceding consonant *p <0.01*	velar	1.285	268	0.164	0.783
	other	-0.383	939	0.045	0.405
	alveolar	-0.902	448	0.033	0.289
Grammatical category *p <0.01*	progressive	1.015	634	0.112	0.734
	participle	0.980	220	0.068	0.727
	gerund (verbal)	-0.040	177	0.023	0.49
	adjective	-0.468	63	0.016	0.385
	noun	-0.688	181	0.011	0.334
	pronoun	-0.798	380	0.021	0.31
Gender *p <0.05*	female	1.127	867	0.099	0.755
	male	-1.127	788	0.019	0.245
Future Plans *p <0.05*	stay in uk	1.286	532	0.081	0.783
	no plans	1.205	728	0.078	0.769
	return to poland	-2.491	395	0.003	0.076
Not significant:	*LOR, LoE, ATT, AW, CHA, MOT, NS Partner, Use of L1/L2, Following sound, Previous variant, Formal English instruction,Matched Guise Test results.*				
Model	deviance 422.298	df 12	intercept -6.274		mean 0.002
	Speaker ID random standard deviation: 2.177				

The four statistically significant factors can be divided into two types: linguistic and social. Linguistically, grammatical category and preceding consonant are both highly significant; furthermore, they both largely reflect the patterns found in previous research. Recall that Houston (1985) found a pattern of progressive dissimilation whereby a preceding velar variant disfavoured the use of [ɪŋ] and a preceding alveolar disfavoured the use of [ɪn]. This is clearly the case in the current data, in which a preceding velar strongly favours the application value of the dependent variable ([ɪn])

[57] In theory, Rbrul is in fact slightly more forgiving than Goldvarb when it comes to knockouts in that results are still generated (Johnson 2009). However, in reality, the extreme log-odds and factor weights that are created tend to skew the other results, making the whole output rather unreliable. For a discussion of knockouts in Goldvarb, see Tagliamonte (2006) or Paolillo (2002).

and a preceding alveolar strongly favours one of the three velar variants. It should be noted, however, that the effect of the following sound (and therefore the process of regressive assimilation) is not statistically significant. The ordering of the grammatical category constraints clearly follows the established nominal-verbal continuum, with progressive verbs and participles quite strongly favouring the alveolar variant, simple nouns, pronouns and adjectives quite strongly disfavouring the alveolar variant, and verbal gerunds in the middle (Figure 21).

Figure 21: Chart showing log-odds for the (ing) variant. Application value [ɪn].



With regard to the social factors, the gender difference is quite striking. Of the 16 speakers who exhibited [ɪn], 11 were female and 5 were male. Furthermore, the mean proportion of [ɪn] produced by those speakers was 0.16 for females and 0.07 for males. The statistical significance of future plans is also worthy of further comment. It is perhaps best interpreted as the intention to return to Poland acting as a strong inhibitor of the use of the alveolar variant as it is not clear that an intention to stay in the UK (as opposed to having no clear plans) is enough to encourage its use. These four factors will be explored further in the discussion section.

A second regression analysis was carried out including only those speakers who showed some use of [ɪn]. The results can be seen in Table 35.

Table 35: Rbrul output for (ing), 16 speakers who produced [ɪn].

Application value: [ɪn]	*Factor*	*Log-odds*	*Tokens*	*Response proportion*	*Factor weight*
Preceding consonant *p <0.01*	velar	1.278	115	0.383	0.782
	other	-0.405	387	0.109	0.4
	alveolar	-0.873	217	0.069	0.295
Grammatical category *p <0.01*	participle	1.062	81	0.185	0.743
	progressive	1.028	291	0.244	0.736
	gerund (verbal)	-0.194	65	0.062	0.452
	adjective	-0.484	38	0.026	0.381
	pronoun	-0.665	157	0.051	0.34
	noun	-0.746	87	0.023	0.322
LOR *p <0.05*	continuous scale 1-72 months	+1 0.04	719		
Level of Eng *p <0.05*	Continuous scale 1-10	+1 0.826	719		
ATT (Attitude) *p <0.01*	continuous scale 1-7	+1 -2.048	719		
Model	deviance 375.364	df 12	intercept -0.139		mean 0.14
	Speaker ID random standard deviation: 0.588				

The first thing to note from these results is the continued statistical significance of the two linguistic constraints. The first, preceding consonant, is almost identical in its strength and pattern as in the initial analysis, and the second, grammatical category, is fundamentally the same despite a slight reordering. That they both appear largely unchanged in both analyses strengthens the explanatory power of these constraints. The two social constraints from the first analysis are no longer statistically significant in this smaller dataset, and three different ones have taken their place. As with the STRUT variable, LOR has emerged as significant, with a greater LOR encouraging a higher rate of the alveolar variant. Although not particularly surprising that it should appear, if we are to consider it as a real explanatory factor, its absence in the initial analysis is perhaps a little unexpected. Level of English is working in the expected direction, with higher proficiency equating to an increased likelihood of [ɪn]. However, the final significant social constraint, attitude towards Manchester, is unexpected and not immediately easy to interpret. The difficulty lies in the fact that there appears to be a negative correlation between attitude and the use of [ɪn], which does not make intuitive sense. It should be borne in mind that the (ing) variation being considered is by no means a 'Manchester'

feature, so the inclusion in the regression analysis of 'attitude towards Manchester' is perhaps not justified in the first place. There is a possibility that individuals' response to the attitude questions could be interpreted as measuring a more general attitude towards living in the UK, but the specificity of the questions does highlight the local rather than the general.

5.5.2 Lexical frequency

In order to test for the effects of lexical frequency on (ing) the BNC frequency lists compiled by Leech et al. (2001) were again used. The aim was to see if higher-frequency words were more likely to show use of [ɪn]. All 1677 <-ing> words were isolated from the Polish data (as before, this refers to the corpus gathered in the course of this research from the 40 Polish participants), and those which did not appear on the spoken frequency lists (i.e. those with a frequency of less than 10 in 1 million words) were excluded. The resulting list was then checked against individual speaker, and any word that was not used by 3 or more individual speakers was also excluded. The BNC frequency lists use only 5 grammatical categories: NOUN, VERB, ADJECTIVE, PREPOSITION, PRONOUN, necessitating the conflation of some of the Polish data categories for comparison purposes (Table 36).

Table 36: Conflation of 8 grammatical categories into 5

noun	NOUN
gerund (nominal)	
progressive	VERB
participle	
gerund (verbal)	
adjective	ADJECTIVE
pronoun	PRONOUN
preposition	PREPOSITION

Five words *(learning, living, reading, teaching, writing)* retained representation in more than one grammatical category after the exclusions, all having a verb form and noun form. The result was a list of 75 words, each with a corresponding BNC frequency value (frequency per million words), its frequency within the Polish dataset (total count), and the number of individual speakers who used that particular word. In addition to this,

each word's proportion of [ɪn] was calculated. The complete list can be seen in Table 37. The final column in the table shows the words in order of proportion of [ɪn] from highest to lowest.

Table 37: List of (ing) words with lexical frequency details, ordered by BNC frequency.

Word	*Gramm. category*	*BNC freq*	*Polish freq*	*No. of speakers*	*Proportion of [ɪn]*	*Words in order of Prop of [ɪn]*
going	VERB	2174	97	35	0.00	taking
something	PRON	1290	200	34	0.07	checking
doing	VERB	943	101	28	0.29	asking
being	VERB	634	17	15	0.10	making
anything	PRON	633	55	26	0.06	staying
saying	VERB	577	16	11	0.00	using
getting	VERB	539	19	13	0.00	looking
coming	VERB	522	35	22	0.00	having
morning	NOUN	459	15	9	0.33	starting
having	VERB	452	8	7	0.11	thinking
looking	VERB	428	32	22	0.00	speaking
talking	VERB	428	37	18	0.00	moving
nothing	PRON	403	28	17	0.08	walking
everything	PRON	359	97	28	0.00	leaving
trying	VERB	311	27	12	0.00	sitting
working	VERB	282	77	30	0.00	planning
making	VERB	224	7	7	0.00	saying
taking	VERB	224	8	6	0.00	working
thinking	VERB	179	24	17	0.03	coming
using	VERB	157	14	9	0.00	waiting
training	NOUN	156	7	4	0.00	writing (v)
during	PREP	152	18	13	0.05	beginning
interesting	ADJ	146	10	8	0.00	going
sitting	VERB	117	15	9	0.08	doing
giving	VERB	113	3	3	0.00	anything
running	VERB	113	5	4	0.00	living (v)
asking	VERB	111	7	4	0.25	being
evening	NOUN	108	10	8	0.00	talking
playing	VERB	108	5	5	0.00	getting
telling	VERB	108	7	6	0.00	everything
moving	VERB	96	5	5	0.00	something
happening	VERB	86	4	4	0.00	amazing
waiting	VERB	76	9	6	0.14	boring
beginning	NOUN	74	21	12	0.00	building
walking	VERB	74	10	8	0.06	changing
speaking	VERB	68	29	16	0.28	considering
writing	VERB	63	10	9	0.00	dealing
seeing	VERB	61	5	4	0.29	drinking
starting	VERB	57	4	4	0.00	driving
living	VERB	53	33	19	0.00	during
dealing	VERB	50	8	6	0.00	earning
driving	VERB	50	8	6	0.20	evening

reading	VERB	47	19	9	0.00	exciting
selling	VERB	47	6	4	0.00	feeling
including	PREP	45	3	3	0.13	giving
leaving	VERB	44	7	6	0.00	growing
wedding	NOUN	39	20	6	0.00	happening
changing	VERB	38	11	6	0.00	helping
feeling	VERB	38	3	3	0.00	including
boring	ADJ	37	11	7	0.13	interesting
meeting	VERB	36	3	3	0.00	learning (n)
staying	VERB	34	7	6	0.00	learning (v)
writing	NOUN	32	6	4	0.13	living (n)
helping	VERB	31	5	5	0.01	losing
amazing	ADJ	30	21	9	0.21	meeting
reading	NOUN	29	4	4	0.25	missing
losing	VERB	27	5	4	0.29	morning
planning	VERB	27	8	6	0.00	nothing
teaching	NOUN	27	10	7	0.00	passing
exciting	ADJ	26	4	4	0.38	playing
growing	VERB	24	5	3	0.05	reading (n)
learning	VERB	24	14	10	0.00	reading (v)
teaching	VERB	24	9	7	0.00	running
missing	VERB	23	5	4	0.00	seeing
building	VERB	19	5	3	0.25	selling
drinking	VERB	18	4	3	0.00	studying
learning	NOUN	18	6	4	0.00	surprising
checking	VERB	17	6	4	0.00	teaching (n)
surprising	ADJ	16	5	4	0.29	teaching (v)
earning	VERB	15	6	4	0.11	telling
travelling	VERB	15	6	5	0.20	training
passing	VERB	14	3	3	0.00	travelling
studying	VERB	11	22	16	0.12	trying
considering	VERB	10	4	3	0.00	wedding
living	NOUN	7	7	7	0.10	writing (v)

As with the STRUT analysis, the frequency data were normalized using the log10 transformation (see section 5.1.2), and a Pearson correlation coefficient was calculated to assess the relationship between the BNC frequency values and the Polish dataset values; there was found to be a modest/strong correlation between the two *($r=0.674$ $p<0.01$)*.

In order to explore a potential relationship between lexical frequency and use of [ɪn], Pearson correlation coefficients were calculated for both frequency measures (BNC and Polish dataset) and the proportion of [ɪn] for each word.

Measures	**r value**	**p value**	**N**
BNC freq and proportion of [ɪn]	0.279	0.016	75
Polish dataset freq proportion of [ɪn]	0.115	0.327	75

The results suggest a statistically significant weak correlation between the BNC frequency and the use of [ɪn], but no statistically significant relationship between the Polish frequency measure and the use of [ɪn].

The BNC frequency data were then added to the regression analysis as an independent variable. Note that due to the exclusions described above, the number of tokens was reduced from 1655 to 1029. The 'grammatical category' variable was recoded to reflect those used by the BNC frequency lists. However, of the five categories, two were excluded on the basis of there being no examples of [ɪn] in either. The first was of course 'preposition', the second was 'adjective'. In addition, 'return to Poland' was excluded from the 'Future plans' variable for the same reason. The results of the regression analysis can be seen in Table 38.

Table 38: Rbrul output for (ing), all speakers, with the addition of lexical frequency.

Application value: [ɪn]	***Factor***	***Log-odds***	***Tokens***	***Response proportion***	***Factor weight***
Preceding consonant	velar	1.248	193	0.223	0.777
	other	-0.343	629	0.064	0.415
p <0.01	alveolar	-0.906	207	0.058	0.288
Grammatical category	verb	1.318	648	0.131	0.789
	noun	-0.034	75	0.027	0.491
p <0.01	pronoun	-1.284	306	0.026	0.217
Syllables	3	0.707	175	0.051	0.67
p <0.05	2	-0.707	854	0.101	0.33
Gender	female	1.118	550	0.145	0.754
p <0.05	male	-1.118	479	0.031	0.246
Not significant:	*LOR, LoE, ATT, AW, CHA, MOT, NS Partner, Use of L1/L2, Following sound, Previous variant, Formal English instruction, Future plans, Matched Guise Test results.*				
Model	deviance 371.299	df 8	intercept -4.72		mean 0.009
	Speaker ID random standard deviation: 2.259				

Despite the (slight) correlation when isolated, the effect of lexical frequency did not reach statistical significance when assessed along with the other variables. In fact, when the steps of the analyses are consulted it can be seen that frequency was working in the expected direction, with +1 adding 0.473 to the log-odds coefficient, but the p-value of this addition to the model was 0.152. The continued statistical significance of both the preceding consonant and grammatical category, albeit in a simplified form, is additional

confirmation of the strength of these two constraints which have remained the same in each analysis. The number of syllables in the <-ing> words was statistically significant in this model, with words of 3 syllables favouring the alveolar variant, although this category only accounts for 6 of the 75 words *(anything, beginning, everything, happening, studying, travelling).* Gender retains statistical significance, with females more likely to use the alveolar variant.

One further set of analyses was carried out in order to explore any patterns behind the distribution of the three velar variants, [ɪŋ], [ɪŋg] and [ɪŋk]. Initially, [ɪŋ] was chosen as the application value, with the other two variants together as the non-application value. [ɪn] tokens were excluded, and grammatical category was recoded as in the first analyses. There was no need to exclude any other factors on the basis of knockouts. The results of the regression can be seen in Table 39.

Table 39: Rbrul output for (ing) focusing on [ɪŋ], [ɪŋg] and [ɪŋk]. All speakers.

Application value: [ɪŋ]	***Factor***	***Log-odds***	***Tokens***	***Response proportion***	***Factor weight***
Following sound *p <0.01*	velar	1.903	25	0.960	0.87
	alveolar	0.251	310	0.861	0.563
	other	-0.570	1034	0.752	0.361
	pause	-1.584	207	0.527	0.17
Grammatical category *p <0.05*	progressive	0.289	563	0.766	0.572
	participle	0.164	205	0.785	0.541
	adjective	0.130	63	0.774	0.532
	pronoun	0.111	372	0.755	0.528
	presposition	0.048	22	0.773	0.512
	gerund (verbal)	-0.175	173	0.694	0.456
	noun	-0.566	179	0.670	0.362
LOR *p <0.05*	continuous scale 0-72 months	+1 0.028	1576		
Level of Eng *p <0.05*	Continuous scale (1-10)	+1 0.417	1576		
Not significant:	*Gender, LOR, ATT, AW, CHA, MOT, NS Partner, Use of L1/L2, Formal English instruction, Future plans, Matched Guise Test results.*				
Model	deviance 1397.907	df 13	intercept -1.696		mean 0.747
	Speaker ID random standard deviation: 1.511				

Once again, two linguistic constraints and two social constraints reached statistical significance, although only one, grammatical category, remained from the previous

analyses. It is perhaps unwise to speculate too much on the basis of the ordering of grammatical category, as the differences between the categories is so small; however, there is a suggestion of quite an intriguing pattern. Although there is a mixture in the middle, the two extremes suggest the continued existence of a nominal-verbal continuum, with verbs favouring [ɪŋ], and nouns favouring [ɪŋg] or [ɪŋk]. Recall that there was a strong version of the continuum at work in the initial (ing) analysis, illustrating that verbal forms favour [ɪn] and disfavor the three velar variants. Yet here, in the absence of [ɪn] variants, the verbal forms favour one of these velar variant over two others.

The fact that a following velar strongly favours [ɪŋ] is only to be expected. Although there were a few examples of the velar variant being released before the following velar, thus allowing for one of the other variants to be distinguished, the vast majority simply assimilated and were heard as [ɪŋ]. The finding that a following pause strongly disfavours [ɪŋ] might be as a result of the suggestion made earlier that a following pause encourages the use of [ɪŋk] due to the influence of the L1. This will be explored in more detail in the next analysis.

The two social constraints are of great interest. Both suggest a move towards a standard variant from a variant influenced by the L1. Recall that there is no correlation between LOR and LoE, so each represents a different process. The effect of LoE is independent of location, so exists whether a speaker has spent time in the UK or not. However, as was mentioned earlier with regard to glottal variation in /t/, it is a somewhat circular argument. An increased frequency of the standard variant in someone's speech might just as easily be playing a part in the evaluation of that person's speech as proficient, as it is a result of increased proficiency. Yet the separate effect of LOR suggests that spending time in the UK and being exposed to more examples of [ɪŋ] does play a small part in its increased use.

The final regression analysis looked for patterns in the use of the two velar + plosive variants [ɪŋg] and [ɪŋk]. All [ɪn] and [ɪŋ] were excluded and the independent variable 'following sound' was replaced with 'following voice' in order to provide more insight into the distribution of the two variants. 'Following sound' was a variable with three options: *velar*, *alveola*r, or *other* which was included to test for regressive assimilation with regard to [ɪn]; 'following voice' is a variable with six options: *voiced obstruent,*

voiceless obstruent, nasal, approximant, vowel, pause which aims to explore any patterns of voicing assimilation as described in an earlier section. The two variables could not be used in the same regression analysis for reasons of collinearity. The results of this analysis can be seen in Table 40.

Table 40: Rbrul output for (ing) focusing on [ɪŋg] and [ɪŋk]. All speakers.

Application value: [ɪŋk]	***Factor***	***Log-odds***	***Tokens***	***Response proportion***	***Factor weight***
Following voice *p <0.01*	pause	1.909	98	0.765	0.871
	nasal	0.862	18	0.611	0.703
	voiceless obstruent	-0.399	69	0.406	0.401
	voiced obstruent	-0.693	18	0.278	0.333
	approximant	-0.698	42	0.262	0.332
	vowel	-0.981	153	0.281	0.273
Future plans *p <0.05*	return to poland	1.152	137	0.555	0.76
	stay in uk	-0.312	139	0.417	0.423
	no plans	-0.840	122	0.320	0.302
Not significant:	*Gender, LOR, ATT, AW, CHA, MOT, NS Partner, Use of L1/L2, Formal English instruction, Matched Guise Test results.*				
Model	deviance 423.021	df 9	intercept -0.536		mean 0.369
	Speaker ID random standard deviation: 1.413				

The earlier assertion that a following pause would favour [ɪŋk] rather than [ɪŋg] is supported, although it was also predicted that a voiceless obstruent would favour this addition of a voiceless plosive, which it does not appear to do. Instead, a nasal is the only other sound showing the same tendency. The re-appearance of future plans as statistically significant is of interest, with those speakers who intend to return to Poland favouring [ɪŋk] and those who intend to stay in the UK or with no plans favouring [ɪŋg]. However, these results should all be treated with caution due to the low number of tokens (398).

Table 41: Summary of regression analyses of (ing) variation.

Application value	[ɪn]	[ɪn]	[ɪn]	[ɪŋ]	[ɪŋk]
Non-application value	[ɪŋ] [ɪŋg] [ɪŋk]	[ɪŋ] [ɪŋg] [ɪŋk]	[ɪŋ] [ɪŋg] [ɪŋk]	[ɪŋg] [ɪŋk]	[ɪŋg]
Tokens	1655	719	1029	1576	398
Notes	40 speakers	16 speakers who exhibited [ɪn]	40 speakers. Lexical frequency.	40 speakers	40 speakers
Statistically significant constraints	• Preceding consonant • Grammatical category • Gender • Future plans	• Preceding consonant • Grammatical category • LOR • LoE • Attitude	• Preceding consonant • Grammatical category • No. of syllables • Gender	• Following sound • Grammatical Category • LOR • LoE	• Following voice • Future plans

5.6 (ing) - Discussion

From the five analyses carried out, a variety of constraints emerged as statistically significant (see Table 41). Some of more predictable ones (e.g. LOR and LoE in the second analysis) have already been commented on briefly in the results section. The following discussion will therefore explore the implications of some of the more noteworthy findings, or those which potentially provide a greater insight into the possible processes at work.

5.6.1 Linguistic constraints

The two linguistic constraints of preceding consonant and grammatical category clearly have a consistent influence on the distribution of (ing). This consistency lends further strength to the argument for employing variationist methods in a second language setting, illustrating the fact that L2 speech can and does exhibit systematic variation. Moreover, the fact that both constraints reflect the patterns identified in previous research (e.g. Houston 1985; Labov 2001) suggest that these speakers are acquiring NS patterns of variation. However, not all the expected constraints proved to be statistically significant. For example, although there was evidence of progressive dissimilation, there was no sign of any regressive assimilation. In fact, even when an additional Rbrul analysis was carried out without individual speaker as a random effect, thus giving a

much less conservative output, following sound still failed to reach statistical significance. This mirrors Labov's (2001:87) findings when he reported no evidence of this type of phonological conditioning. Alternatively, this might be a case of L1 interference, with the Polish rules for the regressive assimilation of the <-ing> coda overriding, or at least affecting, the patterns generally seen in English.

5.6.2 Gender

Just as with glottal variation in /t/, there is a clear gender effect at work in the distribution of [ɪn], with women more likely than men to use this alveolar form. Moreover, in both cases this effect represents a deviation from what is usually expected in L1 speech, where numerous studies have shown the reverse to be the case. Even in L2 studies, this traditional gender pattern has held, or even been exaggerated. Recall the description earlier of Adamson & Regan's (1991) study into Cambodian speakers' use of (ing) in which the male speakers not only showed a higher rate of [ɪn], but this rate was higher still when more attention was paid to speech, a finding that the authors explained in terms of covert prestige. However, the recent findings of Schleef et al. (forthcoming) reflect those presented here. In their London data they found that the Polish females were more likely than the Polish males to use [ɪn], and explained the pattern in terms of (ing) not being a stable sociolinguistic variable for L2 speakers. Schleef et al. go on to interpret the differences found between the constraint hierarchies and rankings of the locally born speakers and those of the Polish born speakers as examples of a reinterpretation or transformation of the constraints by the L2 speakers. This is a useful interpretation, and one that reflects the findings of recent research into long-term language and dialect contact (e.g. Buchstaller & D'Arcy 2009; Meyerhoff 2009) in which different strengths of transfer between the model and replica varieties are discussed. While it would be relatively simple to apply a similar interpretation to the present data, the lack of comparative, current data from local NSs weakens the argument slightly. The studies mentioned above all have a relevant, local comparison to explore, whereas the data being discussed here are relying on more general comparisons with a wider range of previous research. This is not to say that the current set of data is not a perfect example of the type of constraint reinterpretation just described, rather that further research is required into local NS patterns for that claim to be made confidently.

An alternative (and perhaps complementary) interpretation of the gender difference is one which encompasses aspects of the discussion in an earlier section in relation to glottal variation in /t/. Recall that the concept of gender as practice was explored, where it was argued that any attempt to isolate individual aspects of gender was not the most fruitful approach to understanding gender differences of this type, and that perhaps the differences might be better explained along different lines. The suggestion made earlier was that the real source of difference might lie in the contexts in which English is used, and that it is these contexts which differ with respect to gender. Clearly there is a considerable amount of ambiguity when attempting to ascertain an individual's context of L2 use, but a person's occupation offers some insight, particularly as this is the situation in which most contact with NSs is likely to occur**.** If we return to the table of identifiable occupations listed in an earlier section divided by gender, an interesting picture emerges (Table 42). The highlighted occupations are those of the 16 speakers[58] who exhibited [ɪn]. Once again, it could be argued that the use of the variant in question is influenced by context of L2 use rather than gender, it just happens to be the case that those contexts of use are divided along gender lines. What is striking about the female side of the list is that with one exception (bookmakers), the occupations which do not coincide with the use of [ɪn] are those which one would expect to involve the least contact with NSs, and the occupations which do coincide with the use of [ɪn] are all potentially high contact. The male occupations are, as has already been pointed out, mostly the kind in which minimal contact with NSs would be expected. Two of those which do suggest more NS contact are highlighted as coinciding with the use of [ɪn]. Admittedly, the pattern is not so clear cut for the males as it is for the females, as there are several jobs on the male side which do suggest a higher level of contact than others (e.g. bus driver and nurse); however, there is clearly an underlying trend.

[58] There are not sixteen occupations highlighted, as there is some degree of repetition. For example, four of the males who exhibited [ɪn] were students.

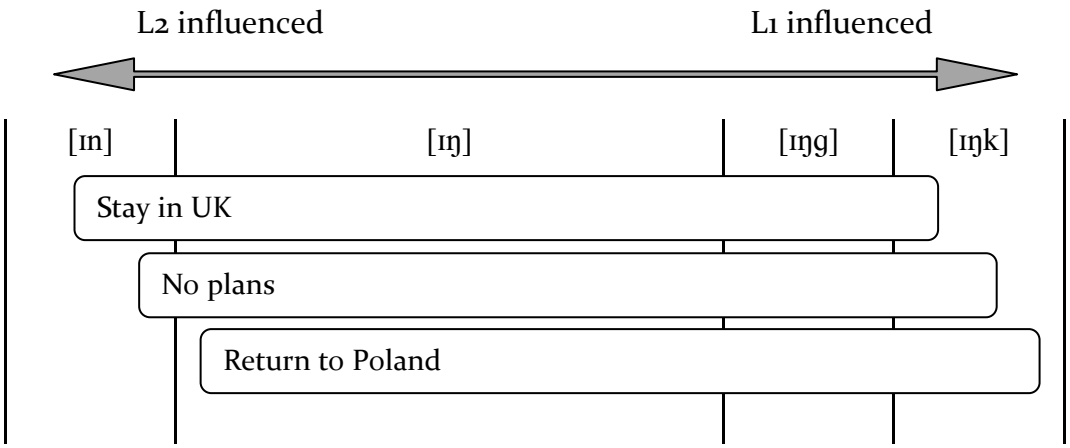
Table 42: Identifiable occupations of the participants, categorized by gender. Use of [ʔn] is highlighted.

Male	Female
Factory	Café
Warehouse	Shop manager – department store
Bus driver	Bar manager
University canteen	Office - insurance
Office – small software company	Bookmakers
Hospital – mental health nurse	Waitress
Mechanic	Office – hotel admin
Welder	University researcher
Warehouse	Shop assistant - department store
Security guard – industrial estate	Housewife
Student	Polish office
	Housewife / Classroom assistant
	Student

5.6.3 Identity

The statistical significance of future plans in two of the regression analyses paints an interesting picture, perhaps on the importance of identity in the acquisition of local features. Those speakers who were planning on returning to Poland were found to be less likely to produce [ɪn] in the analysis which included all four variants, and more likely to produce [ɪŋk] in the analysis which looked only at the two non-standard velar nasal + plosive variants. It is perhaps possible to view the four variants as existing on a continuum, with the most L1 influenced variant at one extreme, and the most L2 influenced variant at the other. While none of the speakers is (or is likely to be) categorically at one end or the other, the results of the analyses suggest that those speakers who intend to return to Poland are towards one end, and those speakers who intend to stay in the UK or who have no plans are towards the other. Figure 22 provides a visual representation of this idea. It shows that while those who plan to stay in the UK or who have no plans exhibit all four variants (but to slightly different degrees), those speakers who plan to return to Poland exhibit no [ɪn] tokens yet more [ɪŋk] tokens than the other two groups. The [ɪŋ] category is given the largest area in the diagram to reflect its status as the most common form.

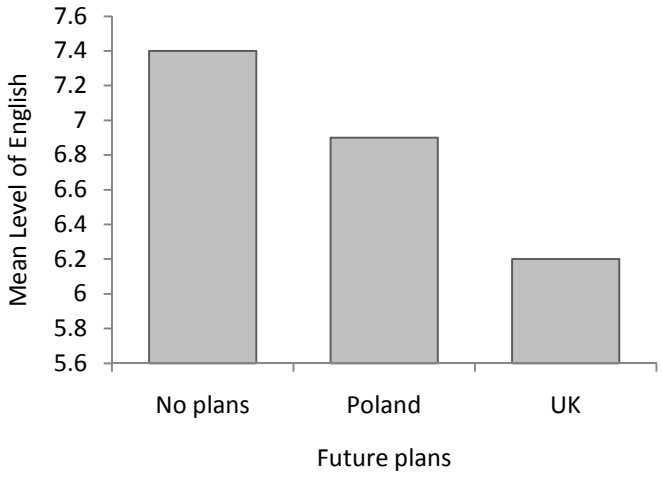
Figure 22: A visual representation of a possible [ɪn] - [ɪŋk] continuum.



Viewing the variants as lying on a continuum is especially plausible due to the fact that it is very unlikely that a speaker will produce [ɪŋk] without also producing [ɪŋg]. In fact of the 23 speakers who produce [ɪŋk], only one shows no tokens of [ɪŋg].

The three categories of future plans do not correlate with any other factors, suggesting that this is a real constraint on the variation of (ing). Most notably, there is no relationship between future plans and level of English, a factor which one intuitively feels might affect the distribution of [ɪŋk]. This lack of relationship is made clear by the fact that LoE is absent from all the regression analyses above except for the one concentrating on the subset of speakers who produce [ɪn]; however, it can be clarified further buy looking at Figure 23. This shows that the mean LoE of those speakers who plan to return to Poland is actually higher than that of those speakers who plan to stay in the UK. Therefore, the increased use of [ɪŋk] in the 'Poland' group cannot be put down to a lower level of spoken English.

Figure 23: Chart showing the mean level of English categorized by future plans.



Instead, the results could be interpreted as a measure of identity towards the L2 or the L1 culture. Those speakers who intend to return to Poland arguably feel a stronger sense of identity and allegiance towards their native country and culture, and this is reflected in their use of a variant which signals that connection. On the other hand, it is likely that those speakers who intend to settle in the UK, while still identifying themselves as Polish, will also identify to a certain extent with the target culture. This diluting of their Polish identity is reflected in their reduced use of [ɪŋk] and increased use of [ɪn]. This interpretation reflects the findings of Sharma (2005) who concluded that it was the phonetic variation in the speech of her subjects which signaled the construction of identity. In this case, the retention of [ɪŋk] is a sign of allegiance to the L1 identity.

5.7 'h' dropping - Results

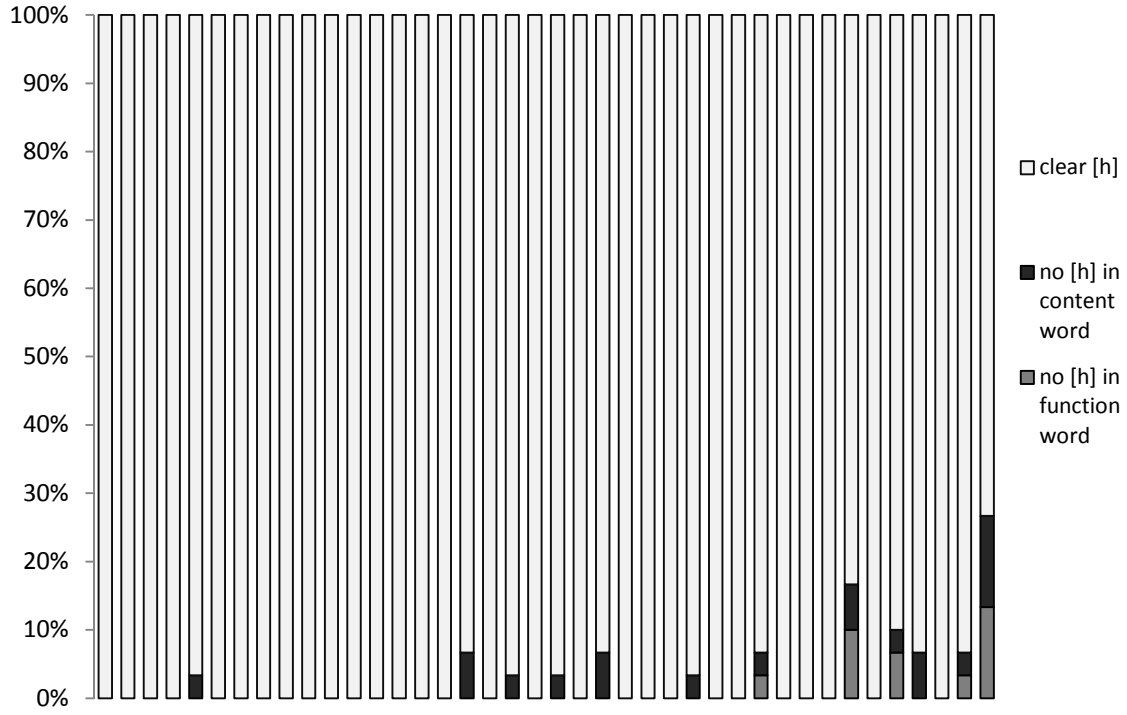
As mentioned earlier, the rates of h-dropping in all environments were extremely low in the speech of all the Polish participants. This can be seen in Table 43 and Figure 24.

Table 43: Total count for 'h' dropping for all speakers.

speaker	no [h] in unstressed function word[59]	no [h] in content word	[h]	total
1	0/8	0/22	30	30
2	0/4	1/26	29	30
3	0/10	0/20	30	30
4	0/8	0/22	30	30
5	0/7	0/23	30	30
6	0/16	0/14	30	30
7	0/5	0/25	30	30
8	0/8	0/22	30	30
9	0/3	1/27	29	30
10	0/20	0/10	30	30
11	0/3	0/27	30	30
12	0/14	0/16	30	30
13	0/3	0/27	30	30
14	0/0	0/8	8	8
15	0/15	0/15	30	30
16	0/3	0/27	30	30
17	0/13	0/17	30	30
18	1/5	1/25	28	30
19	4/9	4/21	22	30
20	0/5	0/25	30	30
21	0/3	0/27	30	30
22	0/0	0/30	30	30
23	0/0	0/30	30	30
24	0/4	0/26	30	30
25	0/4	0/26	30	30
26	0/11	0/19	30	30
27	1/13	1/17	28	30
28	0/8	1/22	29	30
29	0/7	2/23	28	30
30	2/11	1/19	27	30
31	3/11	2/19	25	30
32	0/8	0/22	30	30
33	0/5	0/25	30	30
34	0/12	0/18	30	30
35	0/2	2/28	28	30
36	0/8	1/22	29	30
37	0/2	0/28	30	30
38	0/5	2/25	28	30
39	0/8	0/22	30	30
40	0/6	0/24	30	30
total	**11/287**	**19/891**	**1148**	**1178**

[59] Unstressed function words are those described in section 4.3.4 - auxiliary 'have' and pronouns.

Figure 24: Chart showing proportion of 'h' dropping for all speakers, ordered by LOR.



Clearly the rates of h-dropping are very small, with 28 of the 40 speakers showing categorical [h] in all contexts, and only one speaker dropping more than 5 of the possible 30 instances of /h/. Surprisingly, in the speech of this sample there is a higher rate of content words with a dropped /h/ than there is of function words with a dropped /h/. This of course is in direct contrast with previous research which has tended to exclude function words from the analysis simply because the likelihood of h-dropping was so high in even the most prestigious varieties of English. Furthermore, none of the speakers exhibits h-dropping in function words without also exhibiting it in content words, again suggesting the primacy of the latter as a more likely environment for h-dropping. With such small numbers it is important to treat these results with caution, similarly with any subsequent regression analysis. However, even with the conservative approach of Rbrul, two factors emerge which might begin to describe an underlying pattern (Table 44).

Table 44: Rbrul output for h-dropping, all speakers.

Application value: no [h]	***Factor***	***Log-odds***	***Tokens***	***Response proportion***	***Factor weight***
LOR *p <0.01*	continuous scale 1-72 months	+1 0.052	1178		
Level of Eng *p <0.01*	(scale 1-10)	+ 1 0.567	1178		
Not significant:	*Gender, ATT, AW, CHA, MOT, Age, Use of L1/L2, English partner, Formal English instruction.*				
Model	deviance 229.643	df 4	intercept -10.715		mean 0.025
	Speaker ID random standard deviation: 0.769				

As with previous features, LOR is significant, with those speakers who have been in the UK longer more likely to exhibit signs of h-dropping. In fact, in the 480 tokens collected from those speakers with LORs of up to 37 months, there is only one instance of a dropped /h/. 848 tokens are required from those speakers with LORs of up to 48 months before there is an instance of a dropped /h/ in a weak function word.

Level of English is also significant, with those speakers who have a higher level of spoken English showing an increased likelihood of h-dropping. In fact 80% of the examples of dropped /h/ are produced by speakers whose LoE is in the top two (of five) levels.

5.8 'h' dropping – Discussion

It is probably unwise to even begin to discuss the variation described above in anything other than very tentative terms, given the very low level of variation. Even if the two constraints found to be statistically significant were felt to indicate a real underlying pattern, in a variable such as /h/ they are somewhat unremarkable. Given the widespread h-dropping in many varieties of English, including the local variety the Polish participants are exposed to, it is not surprising that an increased level of proficiency in English correlates with an increased rate of h-dropping. Neither is it surprising that this increased rate is slightly more likely to occur in the speech of those participants who have been in the UK for longer.

However, what is of interest is the very fact that makes further analysis so difficult; namely, the extremely low rate of h-dropping overall, even when function words are included in the analysis. The reasons perhaps lie in the influence of the L1. Polish phonology is not generally thought to include the glottal fricative [h], rather the

spellings <ch> and <h> represent a velar fricative [x]. However, there is evidence to suggest that a glottal [h] is becoming more common, with Gussmann (2007:87), in the process of discussing spirants noting:

> we might also add the phonetic observation going back to Jassem (1954: 98), who noted that the initial spirants in words like chata [xata] 'hut' and hymn [x͡mn] 'hymn' are increasingly more often pronounced with the glottal [h] as [hata] and [h͡mn]. This is a surprising development since the standard inventory of spirants in Polish does not include the glottal spirant at all, one of the distinctive features of the Polish accent in English and German being the pronunciation of have and haben as [x͡f] and [xab͡n], respectively.

It could be argued that the substitution of [h] for [x] represents a process of lenition to some extent. If this is the case, then perhaps the next stage of lenition is the omission of [h] altogether, but this secondary process is being restrained by the initial strength of [x]. In other words, to move from [x] to [h] is possible and even likely, but to move from [h] to Ø is too far from the influence of the L1 norm. It should be pointed out that the speech samples were coded for [h] or Ø and not for [x]. However, a later review of the recordings revealed very few clear examples of [x][60]. Perhaps this in itself reflects a move towards the local variant, although the evidence from Gussmann above, and other informal sources[61], suggests that [h] is already a possibility, and its existence might therefore have no connection with being in the UK. It would certainly be interesting to listen to the speech of native Polish speakers who have been in the UK for longer with regard to this variable, to begin to see if there was a point at which its obvious resistance to change is weakened.

The other somewhat striking finding is the fact that there is a slightly higher rate of h-dropping in content words than there is in function words. Again, we must be cautious given the very low rates overall, but it is still worth mentioning. Even with such small numbers, there is a consistency in the fact that no speakers exhibited h-dropping in function words only. This would suggest that whilst there is considerable evidence to suggest that the Polish speakers are going some way to replicating NS patterns of variation in certain features ((ing) for example), in others they appear to be doing something quite different. It would be useful to explore this issue further, again, perhaps with individuals who have spent longer in the area. Data collected from a long-term

[60] In spontaneous speech it is in fact often quite difficult to discriminate between [h] and [x]. It is possible that in a more detailed analysis the rate of [x] would be found to be higher.
[61] Jarosław Weckwerth of Adam Mickiewicz University in Poznań [personal communication].

resident (see section 5.12.5) shows a significantly higher rate of h-dropping in function words than in content words, suggesting that the balance might shift at some point. It would be interesting to identify at what stage, or in what context, this point might exist.

To sum up, the feature itself is so invariable in the speech of this particular group of English L2 speakers that meaningful analysis of constraints is almost impossible. However, this lack of variation itself is interesting, especially when we consider the widespread occurrence of h-dropping in most varieties of English. The most sensible way forward in exploring possible variation in /h/ would be to look at the speech of Poles who have been in the UK for longer than 6 years.

5.9 Style

This section discusses the findings with regard to the effect of speaking style on the variables under consideration. Recall that that the linguistic data were collected by way of three tasks: a conversation, a picture description, and a word-list. As described earlier, the reason for including these three tasks was to explore the effect of task formality on the speech of the participants, with the conversation being the least formal and the word list being the most formal. Recall also that due to time constraints on the part of several participants, only 31 of the 40 speakers carried out the picture task. Furthermore, of those 31, there was a degree of inconsistency with regard to the number of pictures they described. This was largely due to the fact that the task itself appeared to make some participants feel self-conscious and uncomfortable, and this disrupted the overall positive feeling of the meeting. When this happened, the task was cut short, with priority given to the conversation, the wordlist and the written questionnaire. This was felt to be the right course of action in the circumstances, as persevering with a task that was clearly not working might potentially jeopardize the effectiveness of the subsequent elements.

Due to these various inconsistencies and general lack of success with the task as a whole, the results from the picture description element are not included in any subsequent analysis. Instead, the discussion will focus on any differences between the conversation data and the wordlist data. All participants except one (speaker 3) took part in the wordlist, so the data presented here are from the remaining 39 participants. The varying numbers of tokens for each speaker is the result of several factors. Firstly, two versions of the wordlist were used. The first version was felt not to offer a sufficient balance of words across the different variables, so was changed. However, this change only occurred during the data collection period. Secondly, some speakers, despite being urged to slow down, read the word list so quickly that the words could not be viewed as being good examples of isolated words. For example, on several occasions the <-ing> at the end of a word could not be reliably separated from the sound at the beginning of the next. As one of the primary purposes of the word list was to get words in isolation, it was decided to discard these examples. Thirdly, there were a few occasions where a speaker did not know some of the words. It would have defeated the object of the task for the interviewer to help them, so these words were omitted. Lastly, the variable of 'h-dropping' is not

included in the wordlist data. At the time of the pilot study and the creation of the wordlists, the task was only intended to be used for the STRUT variable, and to enable the measurement of other vowels. It was later decided to use the wordlist data for analysis of the other features, but while there were plenty of (ing) and /t/ examples, there were too few examples of <h->words.

5.9.1 STRUT

Table 45 shows the overall results of the auditory analysis for the wordlist element, with all tokens for all speakers (39 Polish participants, 4 local native speakers).

Table 45: Total auditory analysis results from the wordlist element for 39 speakers.

Speaker	target					non target	total
	0 [ɐ]	1 [ɐ̟]	2 [ə]	3 [ʊ̟]	4 [ʊ]		
1	10 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	10
2	6 54.5%	2 18.2%	2 18.2%	1 9.1%	0 0.0%	0 0.0%	11
3							
4	10 90.9%	0 0.0%	1 9.1%	0 0.0%	0 0.0%	0 0.0%	11
5	4 66.7%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	2 33.3%	6
6	2 33.3%	0 0.0%	0 0.0%	0 0.0%	3 50.0%	1 16.7%	6
7	0 0.0%	0 0.0%	2 40.0%	1 20.0%	2 40.0%	0 0.0%	5
8	6 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	6
9	6 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	6
10	8 80.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	2 20.0%	10
11	10 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	10
12	7 63.6%	2 18.2%	1 9.1%	0 0.0%	0 0.0%	1 9.1%	11
13	7 58.3%	1 8.3%	1 8.3%	1 8.3%	0 0.0%	2 16.7%	12
14	4 36.4%	0 0.0%	0 0.0%	0 0.0%	1 9.1%	6 54.5%	11
15	4 36.4%	4 36.4%	0 0.0%	0 0.0%	0 0.0%	3 27.3%	11
16	7 70.0%	0 0.0%	1 10.0%	0 0.0%	0 0.0%	2 20.0%	10
17	7 63.6%	2 18.2%	0 0.0%	1 9.1%	0 0.0%	1 9.1%	11
18	0 0.0%	0 0.0%	3 30.0%	2 20.0%	1 10.0%	4 40.0%	10
19	5 45.5%	2 18.2%	2 18.2%	1 9.1%	0 0.0%	1 9.1%	11
20	3 27.3%	2 18.2%	2 18.2%	1 9.1%	1 9.1%	2 18.2%	11
21	6 54.5%	0 0.0%	0 0.0%	1 9.1%	2 18.2%	2 18.2%	11
22	8	1	0	0	0	2	11

	72.7%	9.1%	0.0%	0.0%	0.0%	18.2%	
23	11 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	11
24	3 27.3%	0 0.0%	0 0.0%	4 36.4%	3 27.3%	1 9.1%	11
25	11 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	11
26	2 18.2%	0 0.0%	1 9.1%	3 27.3%	2 18.2%	3 27.3%	11
27	0 0.0%	3 27.3%	4 36.4%	1 9.1%	1 9.1%	2 18.2%	11
28	6 54.5%	1 9.1%	0 0.0%	1 9.1%	1 9.1%	2 18.2%	11
29	0 0.0%	0 0.0%	3 27.3%	4 36.4%	2 18.2%	2 18.2%	11
30	2 18.2%	2 18.2%	3 27.3%	2 18.2%	0 0.0%	2 18.2%	11
31	9 81.8%	1 9.1%	0 0.0%	0 0.0%	0 0.0%	1 9.1%	11
32	3 30.0%	1 10.0%	3 30.0%	1 10.0%	0 0.0%	2 20.0%	10
33	5 45.5%	0 0.0%	1 9.1%	2 18.2%	1 9.1%	2 18.2%	11
34	8 72.7%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	3 27.3%	11
35	10 90.9%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 9.1%	11
36	9 81.8%	0 0.0%	0 0.0%	1 9.1%	0 0.0%	1 9.1%	11
37	10 90.9%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 9.1%	11
38	7 63.6%	0 0.0%	1 9.1%	0 0.0%	0 0.0%	3 27.3%	11
39	7 63.6%	1 9.1%	0 0.0%	0 0.0%	0 0.0%	3 27.3%	11
40	8 72.7%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	3 27.3%	11
NS1	0 0.0%	0 0.0%	0 0.0%	5 45.5%	6 54.5%	0 0.0%	11
NS2	0 0.0%	0 0.0%	0 0.0%	1 9.1%	10 90.9%	0 0.0%	11
NS3	0 0.0%	0 0.0%	0 0.0%	2 18.2%	9 81.8%	0 0.0%	11
NS4	0 0.0%	0 0.0%	0 0.0%	4 36.4%	7 63.6%	0 0.0%	11

Initial comparisons between the two datasets (conversation and wordlist) with regard to STRUT are striking. Figure 25 shows the distribution of target tokens following auditory analysis for all speakers. The top chart is a reproduction of the one presented earlier showing the conversation element; the bottom chart shows the wordlist element. Both charts are ordered by the mean value across all five categories, although this is a different ordering for each chart. In both cases the four bars on the right represent the four native speakers. The first thing to note is that while only one Polish speaker exhibited no 'o' ([ɐ]) tokens in the conversation element, this increased to four speakers in the word list. In fact, this reflects the overall tendency of the comparison – that the word list task

produced more NBrEng influenced tokens than the conversation task. This can be seen to an extent in Figure 25; notice how the right hand side of the chart is generally darker in the bottom example. However, Figure 26 provides a very clear illustration of the difference.

Figure 25: Bar chart showing distribution of target STRUT tokens for all speakers (auditory analysis). Conversation element above, wordlist element below.

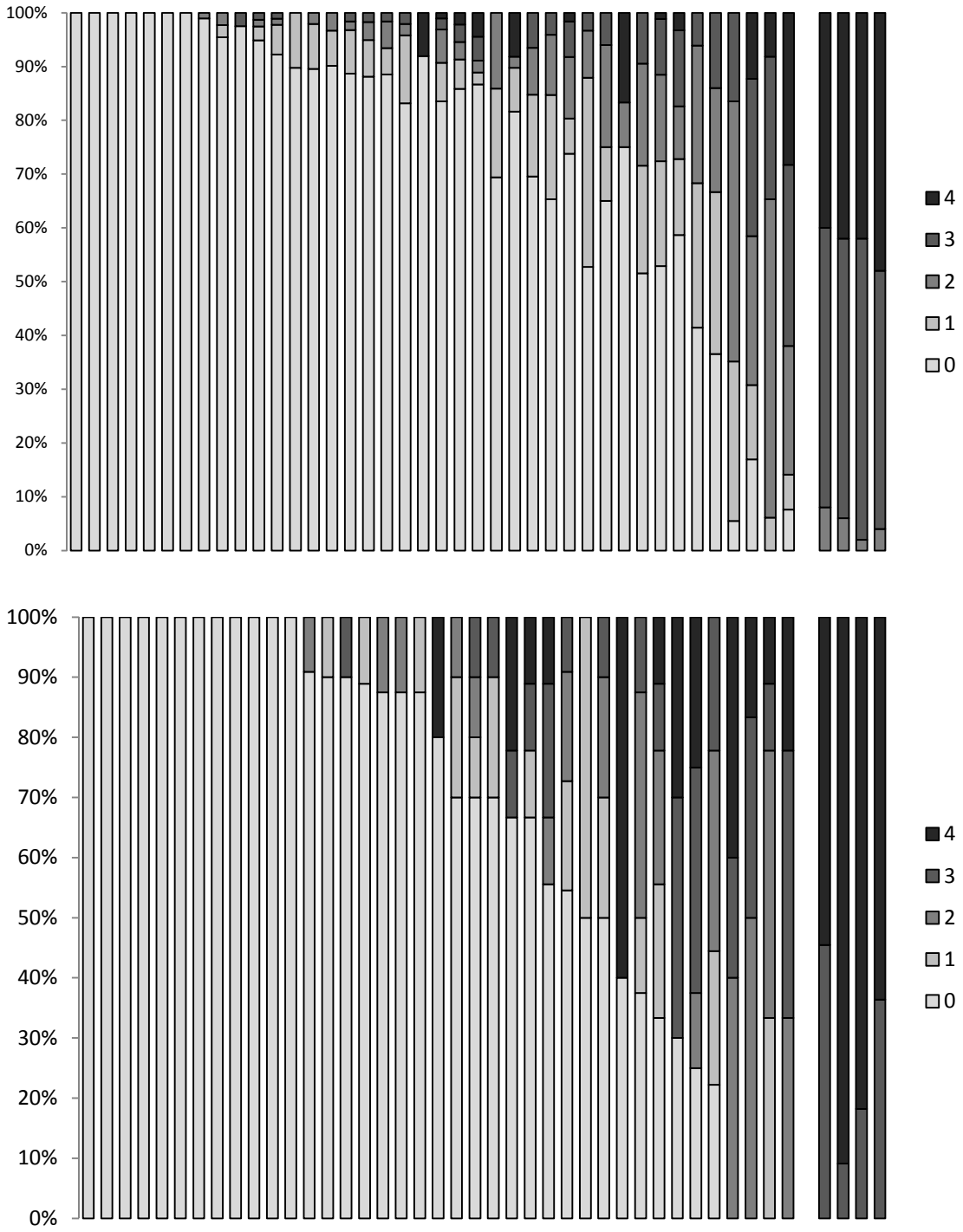
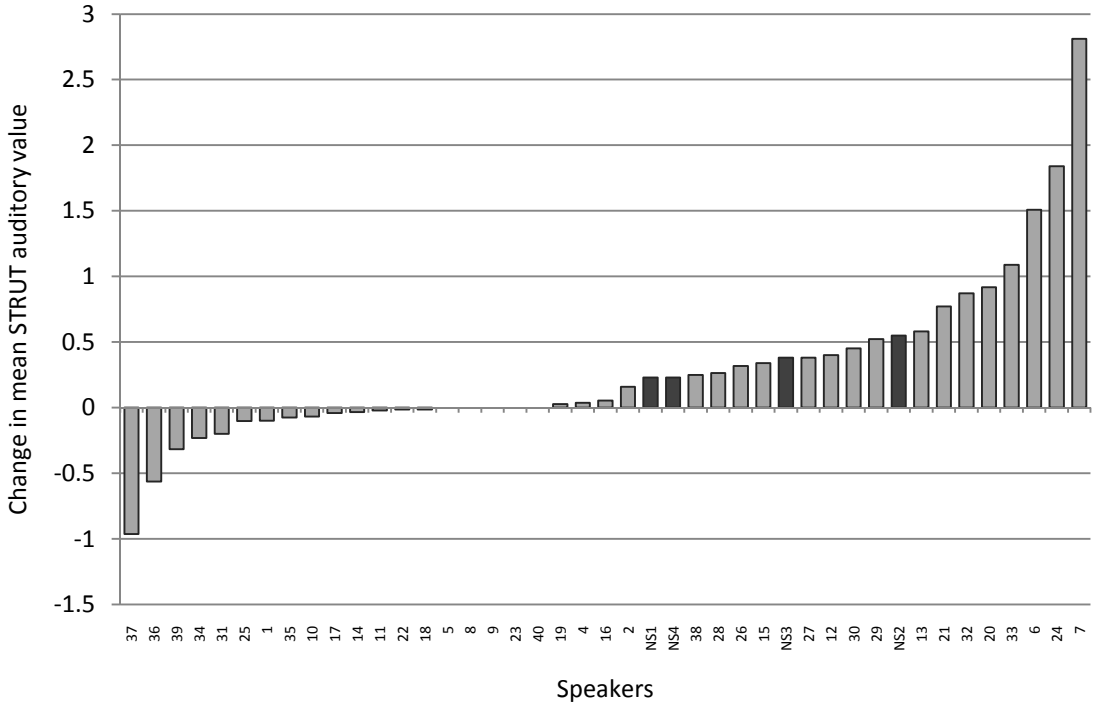


Figure 26 shows the difference between the mean STRUT auditory values for each speaker in the conversation element and in the word list. A positive difference shows an increase in the mean auditory value (thus, an increased use of NBrEng influenced variants in the word list) and a negative difference shows a decrease. Clearly, the majority of speakers show a move towards the local variant in the wordlist, with 20 of the 39 Polish speakers exhibiting a higher STRUT auditory value. Note, however, that all four NSs (darker grey) also show a move in the same direction.

Figure 26: Chart showing the difference in mean STRUT auditory values between the conversation and wordlist elements.

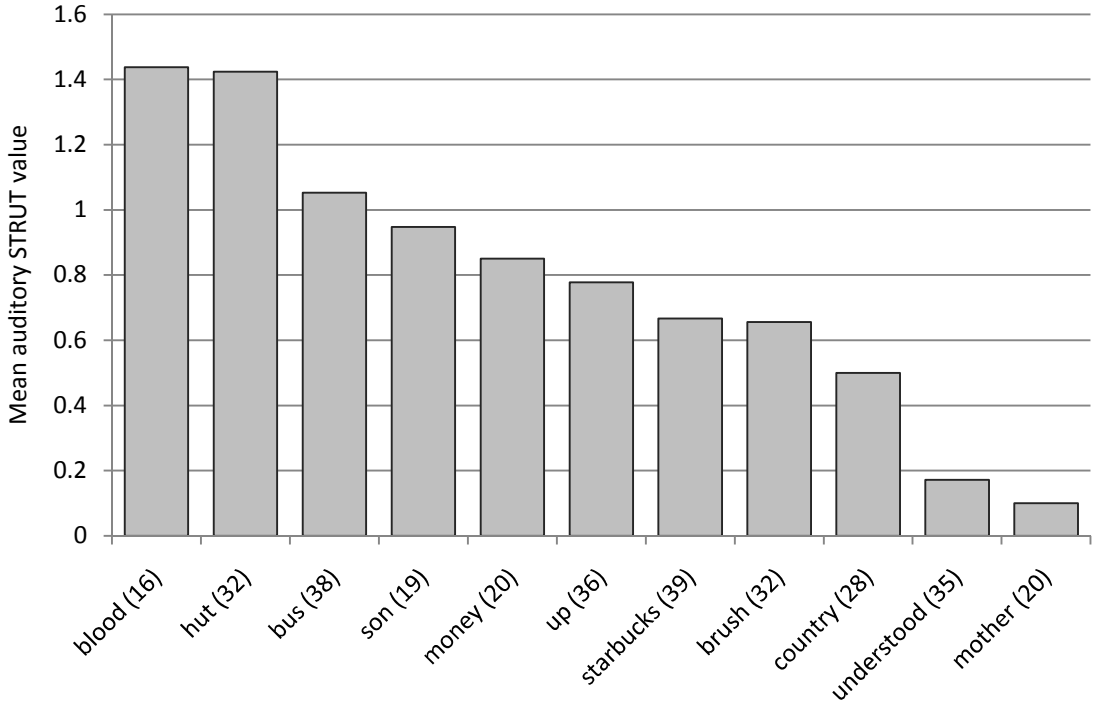


It is not immediately clear why this should be the case. It cannot be an example of a movement towards reduced articulatory effort, thus encouraging the STRUT vowel to be realised more centrally (and therefore more towards the NBrEng variant when starting from RP [ɐ]), as this would be more likely to occur in the more rapid speech of the conversation task. One possible influencing factor is that of orthography, which will be discussed in due course.

In addition to the overall difference described above, it is also possible to look at the pronunciation of individual words from the list, with some words appearing more likely to encourage the use of a NBrEng influenced variant.

Figure 27 shows the mean STRUT auditory value for each word[62] in the wordlist, along with the number of tokens for each (in brackets).

Figure 27: Chart showing the mean STRUT auditory values for each word.



While it is clear that words such as *blood* and *hut* are more likely to show a variant closer to NBrEng STRUT than words such as *understood* and *mother*, it is not clear why this should be the case. There appears to be no correlation between the individual words and either of the measures discussed previously (lexical frequency, context frequency, and context voicing). Table 46 shows each word listed in order of auditory STRUT value (highest to lowest) with each word's BNC frequency. The lack of apparent correlation is confirmed when the BNC value is normalized using the log10 transformation and a Pearson correlation coefficient is calculated *(r=-0.218 p=0.520)*. The third column displays

[62] *Starbucks* and *understood* are slightly different from the other words in the list, as the STRUT vowel does not fall on the primary stressed syllable of the word. However, both words tend to retain the full vowel in these syllables, which was certainly the case in all examples from the Polish speakers. For this reason they were included in the analysis.

the ranking of each word's linguistic context in terms of the likelihood of exhibiting a NBrEng STRUT variant. Recall that the most likely context to exhibit a NBrEng variant in the conversation data was vx_v as in *come*, followed by v_v as in *does*, e_vx as in *up*, v_vx as in *bus*, e_v as in *other*, and finally vx_vx as in *cut* (reproduced in Figure 28). For the purposes of Table 46, vx_v has a rank of 6 (most likely) and vx_vx has a rank of 1 (least likely). Simply by looking at the data it is clear that there is no relationship between the two. That is, the wordlist items do not appear to follow the same pattern of STRUT variation in terms of linguistic context as the conversation data. It is not clear why this should be the case.

Figure 28: Chart showing log-odds (NBrEng STRUT) for each context in the *conversation* data.

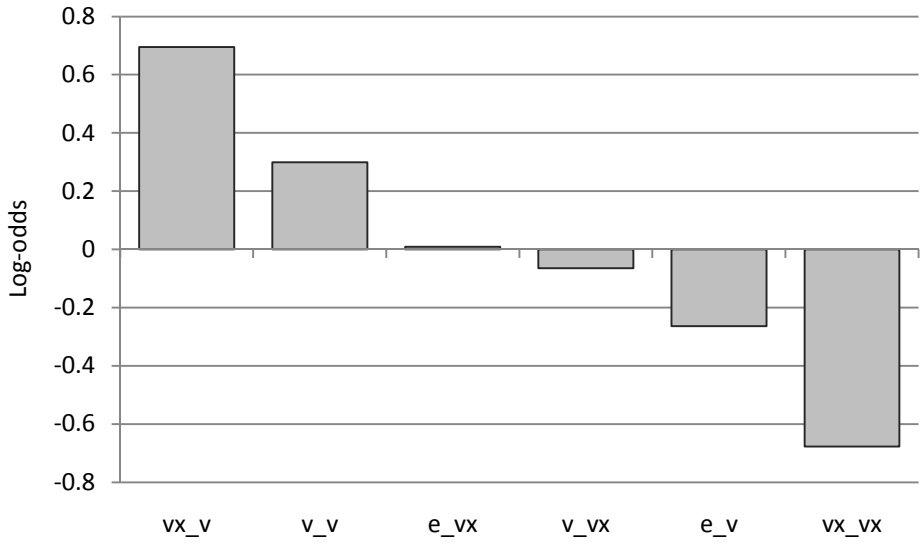
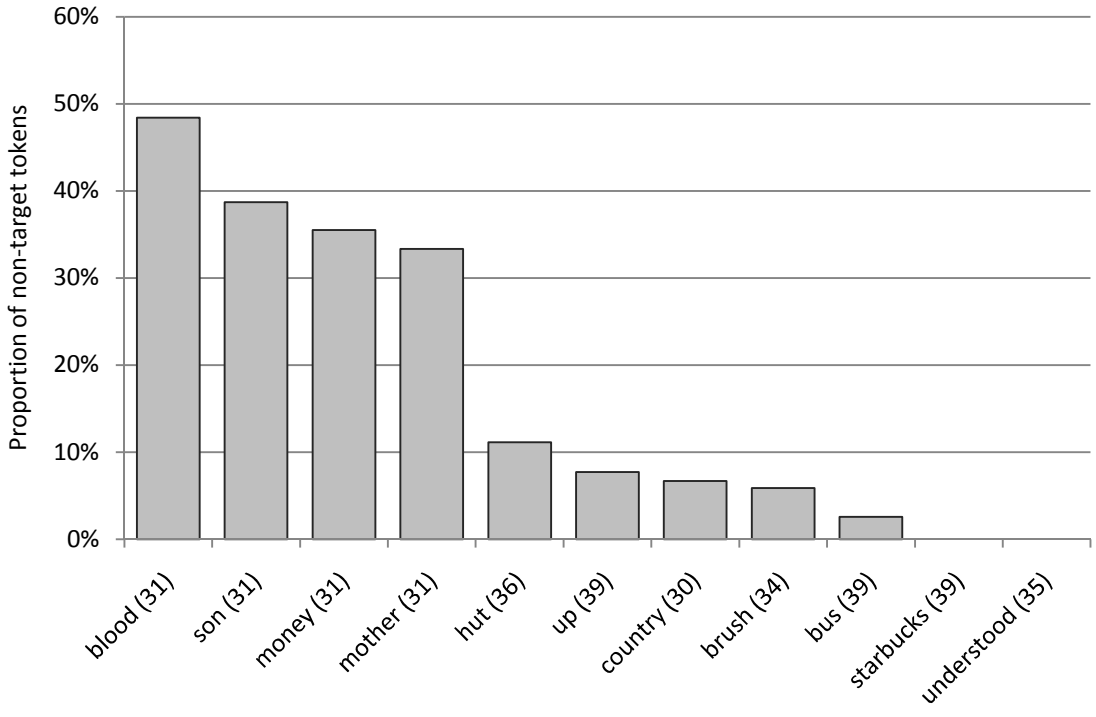


Table 46: Wordlist items with corresponding BNC frequency and linguistic context rankings.

Word (in order of STRUT value)	BNC frequency per million words	Context rank
blood	51	5
hut	<10	1
bus	94	3
son	72	6
money	637	5
up	3042	2
starbucks	<10	3
brush	13	3
country	204	6
understood	23	2
mother	184	3

While this pattern remains unclear, the same is not true when we look at non-target (outside the range of NS variation) realizations for each word. Recall that non-target STRUT variants were identified in terms of the closest cardinal vowel, which led to five possibilities: [u] [ɔ] [ɒ] [ɑ] [a]. Figure 29 shows the proportion of non-target STRUT realizations for each word, along with the number of tokens (target and non-target) of each. Notice that *blood* is at the top of both lists, meaning it has the highest mean auditory STRUT value (therefore closest to the local variant) as well as the highest rate of non-target realisations.

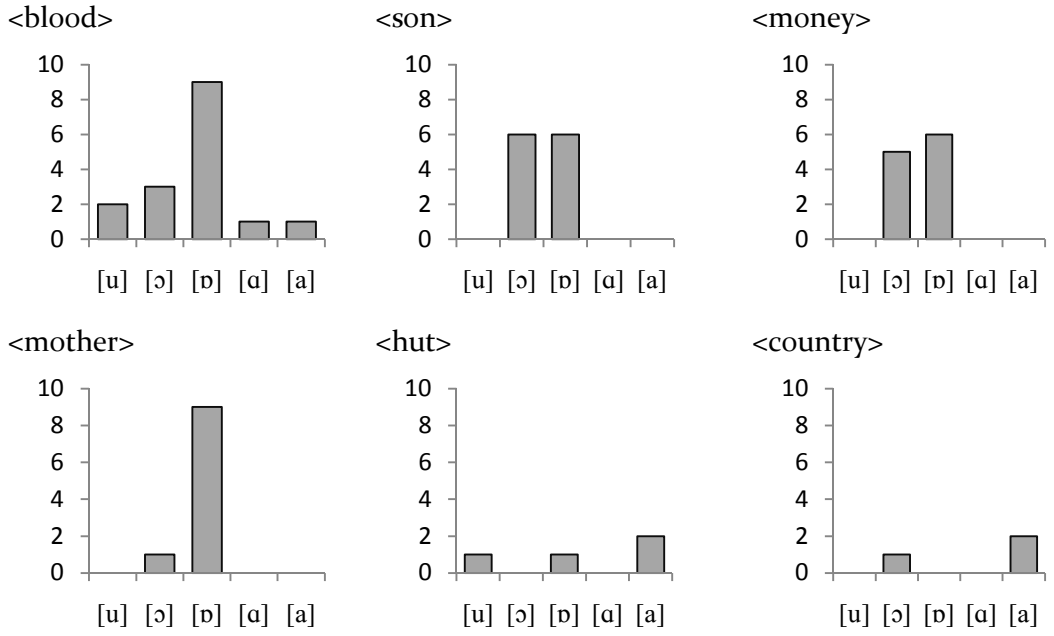
Figure 29: Proportion of non-target STRUT realizations for wordlist items.

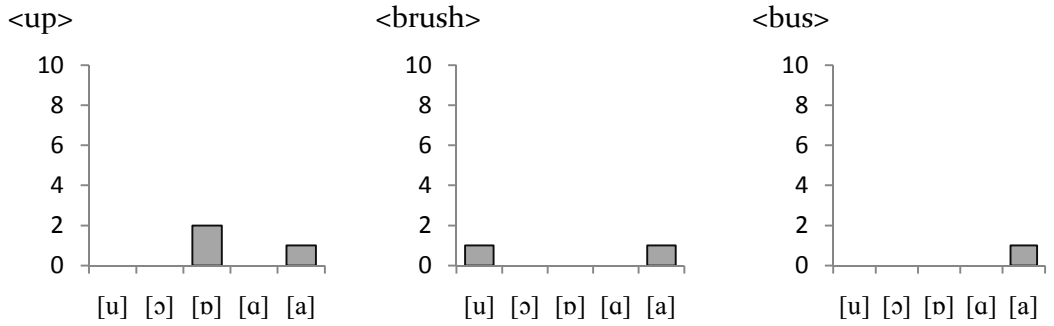


Although there is once again no correlation between the non-target proportion and BNC frequency or linguistic context (*r=0.301 p=0.368; context rank order: 5, 6, 5, 3, 1, 2, 6, 3, 3, 3, 6)*, there is perhaps evidence of the influence of orthography. The four words which show the highest rates of non-target vowels, *blood son money mother*, and indeed which have rates of non-target forms of at least three times those of all the other words, all have only the letter <o> in their spellings for the STRUT vowel. It could be argued that it is this <o> spelling of the vowel which is leading to the non-target realizations. This hypothesis is strongly supported when the details of the non-target forms are explored. Figure 30 shows each of the 9 words in which non-target variants were used, ordered

from the most to the least tokens. Notice how in each of the four words with a <o> or <oo> spelling of STRUT, there is a high rate of [ɔ] and [ɒ] tokens. In fact, all the non-target tokens for *son money mother* are one of these two possibilities. If we then look at the Polish vowel system we see that the Polish letter <o> represents a vowel slightly below [ɔ]. This is unlikely to be coincidental, rather, it is an illustration of how an L1 grapheme/sound correspondence can be mapped onto the L2 system. This is made more likely when we consider the nature of these particular L1 and L2 orthographic systems, in particular, their orthographic depth. Orthographic depth refers to the extent to which a language's writing system deviates from one-to-one grapheme to phoneme correspondence (Van den Bosch et al. 1994), with different systems existing on a continuum from transparent (straightforward one to one grapheme-phoneme correspondence) to opaque (less consistent grapheme-phoneme correspondences) (Erdener & Burnham 2005). Polish is an example of a system that is nearer the transparent end of the continuum, while English is nearer the opaque end. It is feasible, therefore, that the transparency of the L1 system is influencing the production of the L2 when faced with the (opaque) written form.

Figure 30: A breakdown of the non-target realizations of STRUT, ordered by proportion of non-target tokens.





Orthography might also explain the finding that *blood* has the highest auditory STRUT value. Its high rate of non-target realisations (48%), and the fact that these non-target forms cover the widest range of possibilities (Figure 30) suggest that it is an unfamiliar word for several speakers. Unfamiliar, that is, in terms of reading; the word itself is not particularly unusual, but the spelling is. More importantly, it shares its spelling with other words which are more common in the FOOT lexical set, such as <look> and <good>. It might be the case that some of the tokens from <blood> which were auditorily categorized as '3' and '4' ([ʊ̟] and [ʊ]) were, in a sense, non-target realizations which just happened to match a target variant, thus falsely inflating the word's auditory STRUT value.

There is also the possibility that orthography has an influence in the finding that the wordlist generally produced more NBrEng influenced (target) variants than the conversation task. The results above suggest it is likely that reading the words results in the participants being more aware of their spelling. Apart from the four words just described, the STRUT vowel in all the words is spelt with <u> (or <ou>). In Polish, the letter <u> represents the vowel [u], which of course is very close to NBrEng [ʊ]. It might be the case that seeing the letter <u> in the spelling of a word triggers a connection with the Polish vowel, thus colouring what is produced. The mechanisms of L2 proficiency restrict this, preventing the vowel being realised as [u], yet the influence remains. The same influence is not at work in spontaneous speech, as the visual cue is not present.

Orthography does not, however, explain the fact that the four NSs also exhibited a tendency to produce isolated words with 'stronger' NBrEng variants. Instead, this tendency might be explained by the point made earlier about a reduction in articulatory effort, resulting in vowels becoming more central in the conversation data. Unlike the

Polish speakers whose STRUT vowel would move closer to NBrEng as a result of reduced articulatory effort, the NSs STRUT vowel, by starting at something close to [ʊ], would actually move towards [ə] as a result of reduced articulatory effort. A corresponding reduction did not appear to occur in the spontaneous speech of the Polish speakers, as is evidenced by the direction of the difference between the two styles, most probably as a result of the more measured and monitored nature of L2 speech production.

5.9.2 Glottal variation in /t/

Table 47 shows the overall count of word final and word medial /t/ in the wordlist data, categorized as before into 'glottal' and 'other'. By definition, examples from the wordlist will only include word final /t/ in PreP position. Data from all 39 speakers who did the task are included, giving a mean of 19 tokens per speaker.

Table 47: Overall count of /t/ tokens taken from the wordlist data.

word final			word medial		
glottal	other	total	glottal	other	total
3 0.5%	549 99.5%	552	0 0.0%	194 100.0%	194

While it is only to be expected that the word medial context showed no examples of glottal replacement, given that the conversation data produced only 2 from 518 tokens, the absence of any glottal replacement in word final position is perhaps less expected. Only 3 examples from 549 tokens can be viewed as a categorical lack of glottal replacement. Incidentally, two of the three tokens were produced by the same speaker (speaker 36). There was not even much in the way of variation within the 'other' category, with only five examples of unreleased [t̚], and the remaining 544 being clear examples of released [t].

It is clear that there is a task effect at work here, which is that the more formal task is encouraging the use of the more standard variant. This reflects previous findings for NSs in which there was little if any use of a glottal stop in either environment in a more formal (in these cases reading) style (Fabricius 2000; Altendorf 2003). The findings of the present study add little to the existing knowledge in this respect, although they do once again add some support to the argument that NNSs do indeed exhibit similar patterns of sociolinguistic variation to those of NSs.

5.9.3 (ing)

Table 48 shows the overall count for (ing) variants in the wordlist data. There is no data for speakers 1 and 3[63], so the results are for the remaining 38 speakers. The distribution of (ing) variants is significantly different in the two styles (conversation and wordlist), as can be seen by the proportions displayed in Figure 31. Notice how the proportion of [ɪn] and [ɪŋg] remain fairly constant between the two, yet there is a fairly large shift in [ɪŋ] and [ɪŋk].

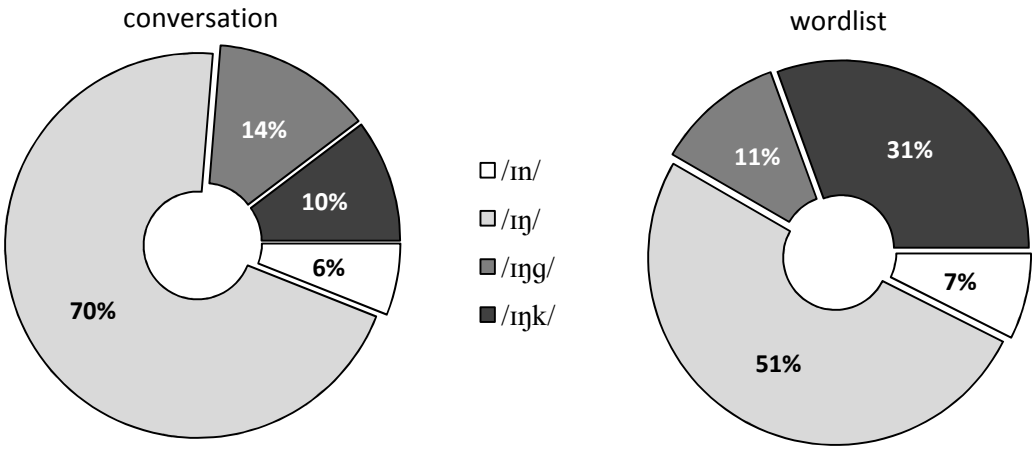
Table 48: Total count for (ing) for all speakers - wordlist data.

Speaker	[ɪŋ]	[ɪn]	[ɪŋg]	[ɪŋk]	total
2	4 100.0%	0 0.0%	0 0.0%	0 0.0%	4
4	0 0.0%	0 0.0%	3 50.0%	3 50.0%	6
5	0 0.0%	6 100.0%	0 0.0%	0 0.0%	6
6	5 100.0%	0 0.0%	0 0.0%	0 0.0%	5
7	3 50.0%	3 50.0%	0 0.0%	0 0.0%	6
8	6 100.0%	0 0.0%	0 0.0%	0 0.0%	6
9	3 50.0%	0 0.0%	1 16.7%	2 33.3%	6
10	3 50.0%	0 0.0%	0 0.0%	3 50.0%	6
11	0 0.0%	0 0.0%	0 0.0%	6 100.0%	6
12	1 16.7%	0 0.0%	0 0.0%	5 83.3%	6
13	0 0.0%	0 0.0%	0 0.0%	6 100.0%	6
14	0 0.0%	0 0.0%	0 0.0%	6 100.0%	6
15	3 50.0%	3 50.0%	0 0.0%	0 0.0%	6
16	5 83.3%	0 0.0%	0 0.0%	1 16.7%	6
17	4 66.7%	0 0.0%	0 0.0%	2 33.3%	6
18	5 83.3%	2 16.7%	0 0.0%	0 0.0%	6
19	5 83.3%	1 16.7%	0 0.0%	0 0.0%	6
20	2 33.3%	0 0.0%	0 0.0%	4 66.7%	6
21	0 0.0%	0 0.0%	3 75.0%	1 25.0%	4
22	6 100.0%	0 0.0%	0 0.0%	0 0.0%	6
23	1 20.0%	0 0.0%	0 0.0%	4 80.0%	5
24	0 0.0%	0 0.0%	0 0.0%	6 100.0%	6
25	5	0	0	0	5

[63] Speaker 3 did not do the wordlist task, and speaker 1 did an early version of the task which did not contain any usable <-ing> words.

	00.0%	0.0%	0.0%	0.0%	
26	0 0.0%	0 0.0%	6 100.0%	0 0.0%	6
27	6 100.0%	0 0.0%	0 0.0%	0 0.0%	6
28	0 0.0%	0 0.0%	4 100.0%	0 0.0%	4
29	6 100.0%	0 0.0%	0 0.0%	0 0.0%	6
30	5 83.3%	1 16.7%	0 0.0%	0 0.0%	6
31	6 100.0%	0 0.0%	0 0.0%	0 0.0%	6
32	0 0.0%	0 0.0%	0 0.0%	6 100.0%	6
33	3 60.0%	0 0.0%	1 40.0%	0 0.0%	4
34	4 66.7%	0 0.0%	1 16.7%	1 16.7%	6
35	5 83.3%	1 16.7%	0 0.0%	0 0.0%	6
36	5 83.3%	0 0.0%	1 16.7%	0 0.0%	6
37	3 50.0%	0 0.0%	0 0.0%	3 50.0%	6
38	0 0.0%	0 0.0%	3 50.0%	3 50.0%	6
39	6 100.0%	0 0.0%	0 0.0%	0 0.0%	6
40	0 0.0%	0 0.0%	1 20.0%	4 80.0%	5
Total	**110** **50.9%**	**16** **7.4%**	**24** **11.1%**	**66** **30.6%**	**216**

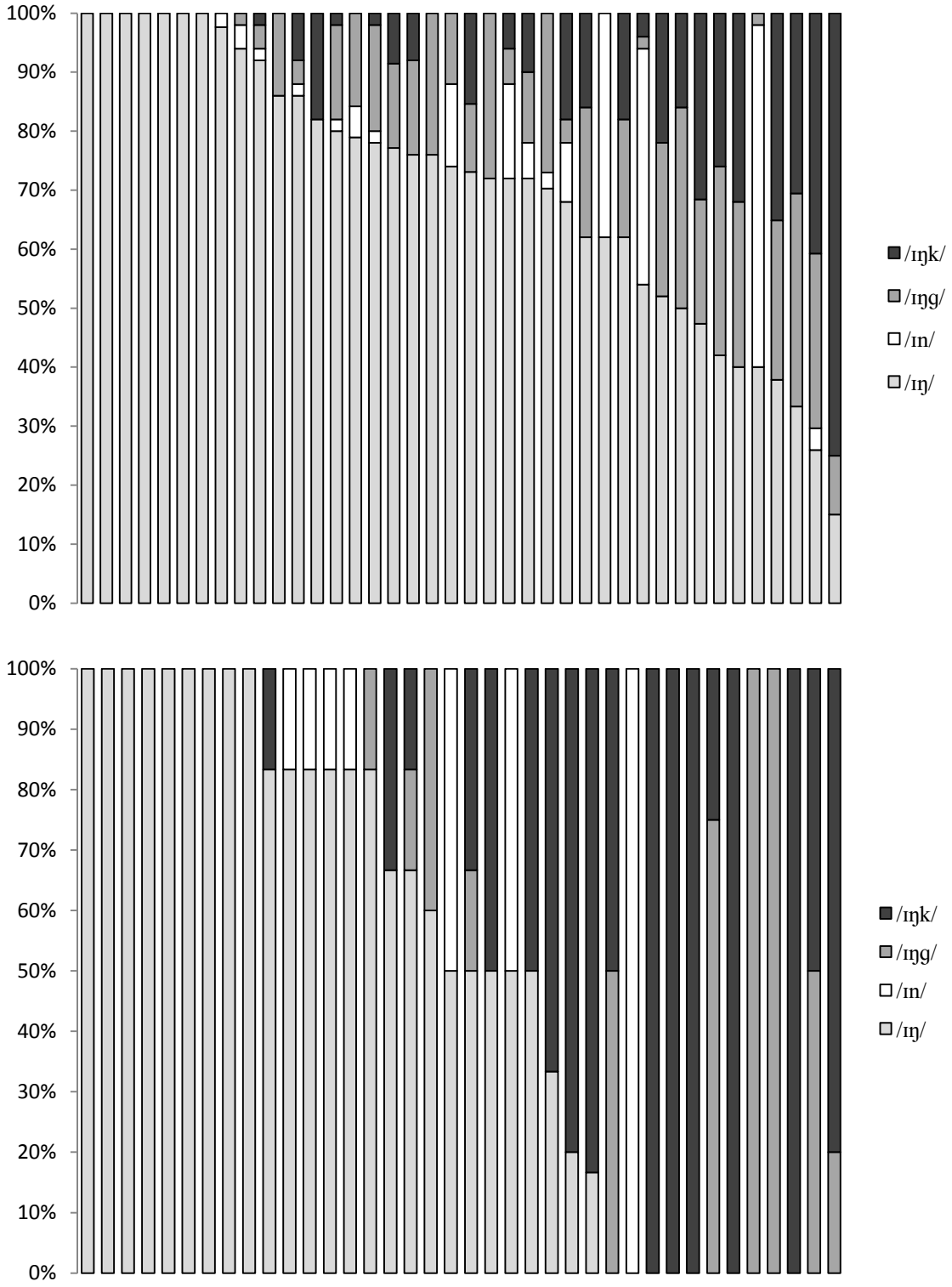
Figure 31: A comparison of the proportion of each variant of (ing) in the conversation and wordlist elements.



The difference is made clearer still when we look at the proportions for each speaker (Figure 32). 12 of the 38 speakers have no standard [ɪŋ] at all in the wordlist data, with 11 of them using one or both of the velar plosive variants. Notice also how the [ɪn] variant,

while retaining its overall share between the two styles, is only present in the speech of 7 speakers in the wordlist data as opposed to 16 in the conversation.

Figure 32: Chart showing the proportions for each (ing) variant, ordered by proportion of standard /ɪŋ/. Conversation data above, wordlist data below.



Due to the reduced number of tokens available in the wordlist data compared to the conversation data, it was decided to carry out a simplified version of the regression analysis to explore any constraints on the pattern of variation. Having previously established that the [ɪŋg] variant was not likely to exist as a result of local NS influence, but rather as a result of L1 interference, and having proposed the possibility of a continuum from L2 influenced variants to L1 influenced variants ([ɪn] > [ɪŋ] > [ɪŋg] > [ɪŋk]), it was decided to conflate the four variants into a binary dependent variable: [ɪn] and [ɪŋ] vs [ɪŋg] and [ɪŋk]. This gives an English influenced choice 'Eng' and a Polish influenced choice 'Pol'. Recoding in this way also gives the opportunity to test the significance of the overall difference between the two styles. The pie charts in Figure 31 suggest movement towards the Polish end of the (ing) continuum in the wordlist data, with a drop in [ɪŋ] and a rise in [ɪŋk]. By adding the wordlist data to the conversation data and recoding the variants into the binary choice described above, it is possible to see if this really is the case. All the independent variables added to the regression analysis were social rather than linguistic, as the fact of having words in isolation renders most linguistic variables irrelevant. The only linguistic variable that might have remained useful was preceding consonant, however, by conflating [ɪn] and [ɪŋ], even this became irrelevant. The results can be seen in Table 49.

Table 49: Rbrul output for (ing) variation, 38 speakers, conversation and wordlist data.

Application value: 'Eng'	***Factor***	***Log-odds***	***Tokens***	***Response proportion***	***Factor weight***
Style *p <0.01*	conversation wordlist	0.629 -0.629	1577 216	0.764 0.583	0.652 0.348
LoE *p <0.01*	continuous scale 1-10	+1 0.596	1793		
LOR *p <0.05*	continuous scale 1-72 months	+1 0.029	1793		
Not significant:	*Gender, ATT, AW, CHA, MOT, NS Partner, Use of L1/L2, Future plans, NS partner, Formal English instruction,Matched Guise Test results.*				
Model	deviance 1552.403 df 5 intercept -3.844 mean 0.742 Speaker ID random standard deviation: 1.719				

The most important result here is the fact that style makes a statistically significant difference in the direction suggested by the pie charts, namely, that even with all other

factors considered, the wordlist task is more likely to produce Polish influenced variants than the conversation task. The other two constraints, LOR and LoE, appear to be working in the expected direction and have been discussed elsewhere.

The second analysis isolates the wordlist data and explores the social constraints. For the purposes of this analysis individual speaker was not entered as a random effect due to the small number of tokens and the lack of normal distribution between the speakers. The results can be seen in Table 50.

Table 50: Rbrul output for (ing) variation, 38 speakers, wordlist data.

Application value: 'Eng'	***Factor***	***Log-odds***	***Tokens***	***Response proportion***	***Factor weight***
LoE *p <0.01*	continuous scale 1-10	+1 0.773	216		
Gender *p <0.01*	female	0.98	110	0.773	0.727
	male	-0.98	106	0.387	0.273
LOR *p <0.01*	continuous scale 1-72 months	+1 0.02	216		
Future plans *p <0.05*	no plans	0.372	94	0.596	0.592
	stay in UK	0.355	66	0.712	0.588
	return to Poland	-0.727	56	0.411	0.326
Not significant:	*ATT, AW, CHA, MOT, NS Partner, Use of L1/L2,NS partner, Formal English instruction,Matched Guise Test results.*				
Model	deviance 197.502	df 6	intercept 0.583		mean 0.483

In addition to the expected constraints of LOR and LoE, gender and future plans reappear as statistically significant constraints. The gender pattern is in fact even more extreme than the analysis above suggests, as can be seen when the exhibited variants are separated by gender. Figure 33 is a reproduction of the lower chart in Figure 32 but with male speakers on the left and female speakers on the right. Notice how none of the male speakers exhibits [ɪn] and that 9 of the 19 male speakers use only the Polish influenced variants [ɪŋg] and [ɪŋk]. Amongst the female speakers, despite 7 of them exhibiting [ɪn] (one speaker uses only this variant), there is also a fairly high use of [ɪŋk]. Strangely, this is not accompanied by the use of [ɪŋg], with only one female speaker producing this variant. This does not reflect the findings of the conversation data, in which the use of [ɪŋk] without [ɪŋg] was very unusual. Table 51 provides the overall numbers for each variant divided by gender, along with the totals for the conflation of the variants into English influenced and Polish influenced (ing).

Figure 33: Chart showing the proportions for each (ing) variant in the wordlist data, ordered by proportion of standard /ŋ/ and separated by gender.

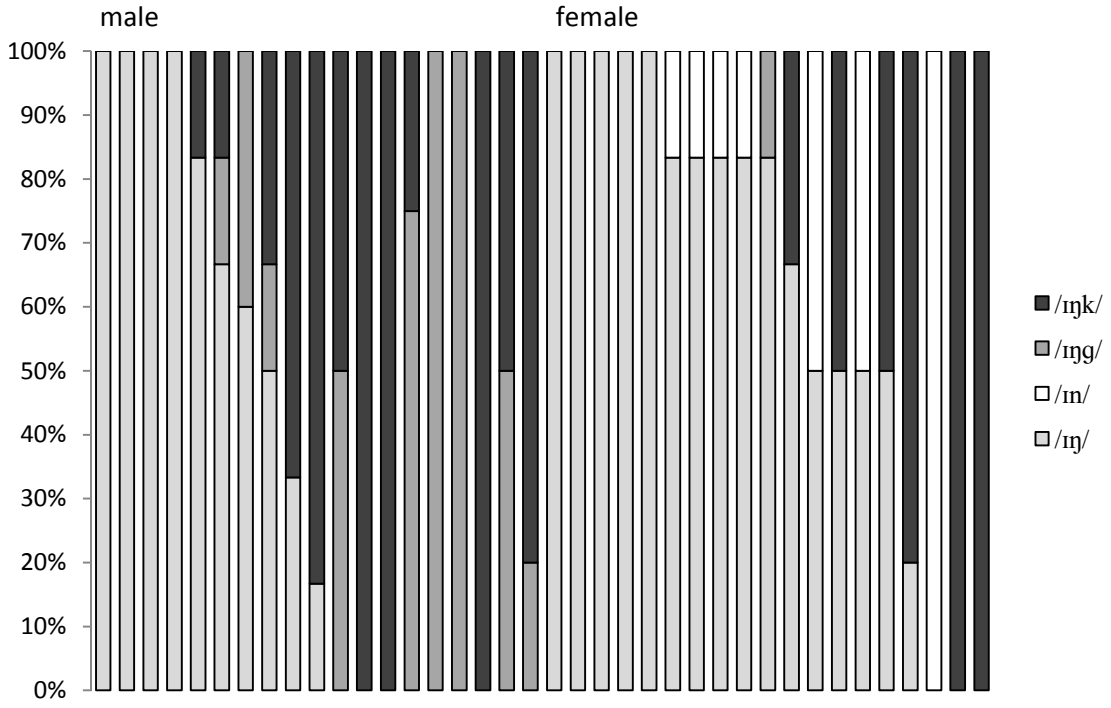


Table 51: Proportions of (ing) variants by gender, wordlist data.

	/ɪn/	/ɪŋ/	/ɪŋg/	/ɪŋk/	total
female	15%	63%	1%	22%	100%
male	0.0%	38%	22%	39%	100%

	English influenced	Polish influenced
female	77%	23%
male	38%	62%

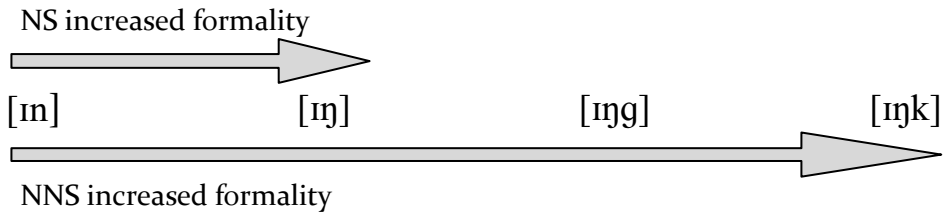
Two findings stand out as requiring some kind of explanation: the overall increased use of Polish influenced variants in the wordlist element compared to the conversation element, and the increased likelihood of females to use English influenced variants in the wordlist. The constraint of future plans remains consistent in its patterning with the conversation data, so has already been discussed.

Style was not found to be statistically significant in the Polish data[64] in Schleef et al. (forthcoming), despite it being significant in their NS data following established patterns

[64] Polish adolescents in Edinburgh and London.

(an increased use of velar vs alveolar in more formal styles). However, their study omitted [ɪŋk] tokens, which, in the present analysis at least have proved to be quite important. The findings presented here appear to reflect the NS pattern of a move towards the velar variant in more formal styles, yet with the addition of two further velar variants. To continue with the idea of these variants existing on a continuum, it might be the case that more formal speech styles encourage the use of variants further along the continuum. For NSs this is realised as an increase in [ɪŋ] and a decrease in [ɪn], while for Polish speakers it might be realized as an increase in [ɪŋg] and [ɪŋk] and a decrease in [ɪŋ]. This idea is represented visually in Figure 34.

Figure 34: Visual representation of the effect of task formality on (ing) for NSs and NNSs.



One problem with this explanation is the fact that the female speakers did not move steadily along the continuum, as only one of them produced [ɪŋg]. However, looking back at Figure 33 we can see that the remaining variants were still produced in their order along the continuum. That is to say, none of the female speakers produced only [ɪn] and [ɪŋk], the two extreme variants. One the one hand this should not be surprising when we recall that L1 interference encourages the insertion of a stop after a velar nasal, and that this stop is likely to be voiceless before a following pause. However, what makes it unusual is the fact that the same does not appear to be happening in the speech of the men. As can be seen in Table 52, the male speakers follow precisely the pattern set out above, with a decrease in the two English influenced variants and an increase in the two Polish influenced variants as the task changes from less to more formal. The female speakers on the other hand, despite showing a similar overall pattern when the variants are conflated as in the regression analysis above (English influenced variants decrease by 2.5%, Polish influenced variants increase by 2.5%), do not follow the pattern so neatly.

Table 52: Summary of the rates of each variant categorized by gender and task.

		/ɪn/	/ɪŋ/	/ɪŋg/	/ɪŋk/
female	conversation	9.8%	70.0%	11.8%	8.5%
	wordlist	14.5%	62.7%	0.9%	21.8%
male	conversation	1.9%	70.5%	15.2%	12.4%
	wordlist	0.0%	38.3%	22.4%	39.3%

A more serious problem with this interpretation is the unanswered question of why it should be the case that NNSs follow the same pattern of style as NSs, as it is unlikely that there is a universal tendency for velar variants to be used in more formal contexts. It is possible that there is an alternative stylistic process at work which just happens to coincide with elements of the NS pattern. It might be the case that the [ɪŋk] variant does indeed serve a stylistic function and marks careful speech[65], and the fact that NS careful speech is also marked by a velar is coincidental. However, further research would be needed to explore this idea fully. Therefore, at present, this can only be a tentative suggestion of a pattern of change with regard to style. However, with more data, it might be possible to gain further insights to help clarify the process.

Without this additional data to confirm or disconfirm the above pattern it is difficult to speculate as to the reasons behind the gender difference. The female speakers appear to be exhibiting a contradictory pattern, with a higher rate of both the most English influenced variant and the most Polish influenced variant. The former can be interpreted in the same way as the similar pattern in the conversation data, namely that it is as a result of the context of L2 use. What makes it more interesting is that the rate of [ɪn] is not only maintained but is actually higher in the wordlist task than in the conversation task, a finding that reflects those of Adamson & Regan (1991) only with a different gender. The increased use of [ɪŋk] however, is difficult to interpret with the current available data.

[65] This same possibility is raised in Schleef et al (forthcoming), also with the expressed need for further research.

5.10 Vowels

In addition to the main findings, i.e. those that refer to the four features described throughout, the data also provide some useful information with regard to vowels other than STRUT. It is possible to use these data to lend support or otherwise to elements of the Speech Learning Model (Flege 1995) described earlier. Recall that the SLM hypothesises that L2 sounds which are perceived as similar to L1 sounds will, by a process of equivalence classification, be subsumed into a single perceptual category, along with the L1 sound. This can result in inaccurate L2 production, as the single category will not be identical to the L2 sound in question. In terms of the context being described here, the expectation would be that certain L2 vowels which are perceived as being similar to existing L1 vowels will be produced as something close to the L1 vowel. What makes this particularly interesting, however, is the fact that Polish has two vowels (/ɛ/ and /a/) in the area where English has either three or four, depending on the dialect (/e/ /æ/ /ʌ/ /ɑː/), meaning that the process of equivalence classification is made all the more likely. The decision to concentrate on this area of the vowel space in particular was made due to the overall focus of the study on STRUT. It is also the area that most lends itself to this type of analysis when considering these two particular languages.

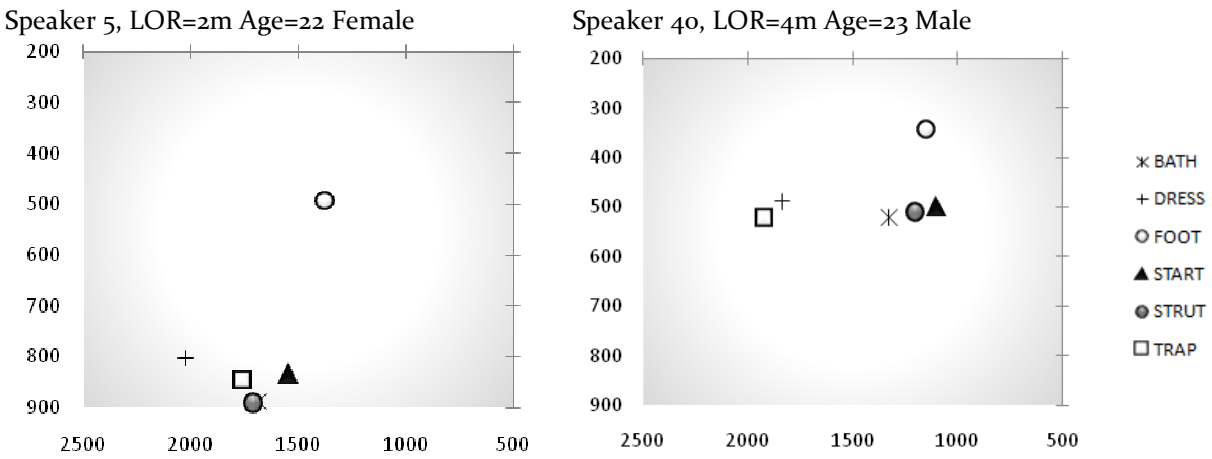
The possibility of Polish /a/ influencing the production of the English STRUT vowel has already been mentioned briefly with regard to the conversation data. Here, the focus is on the wordlist data, and while STRUT is still relevant, the focus is also on DRESS, BATH, START and TRAP. The first point to notice is whether BATH patterns with START as in SSBrEng or TRAP as in AmEng. Whilst it is tempting to suggest that a BATH/TRAP patterning can be viewed as an influence of the local accent (NBrEng also lacks a BATH/TRAP split), given the prominence of AmEng pronunciation in the media and in some teaching materials in Poland, it is more likely that this would be the source. That being said, it is possible that such a pattern is reinforced by the local accent, to an extent that might not occur in a different area of the UK.

The second point to notice is whether the L2 vowels do indeed exhibit influence from L1 vowels. This would manifest itself in the clustering of TRAP, BATH, START and STRUT around one or other of Polish /ɛ/ or /a/. It is likely that DRESS will be assigned to something close to /ɛ/ due to their close similarity. It is anticipated that START and STRUT will show the influence of Polish /a/, but it is unclear if TRAP will be drawn

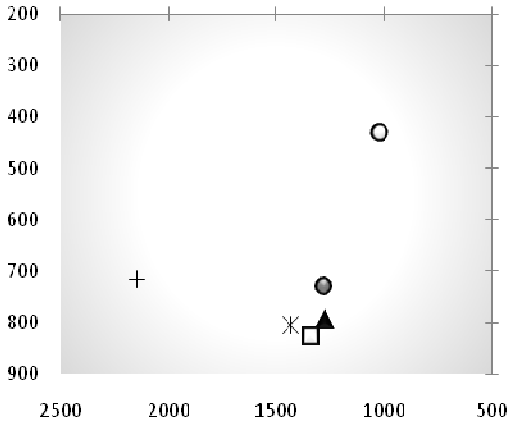
towards Polish /ɛ/ or to Polish /a/, existing as it does somewhere between the two. Weckwerth (2010) describes four patterns of Polish speakers' realisations of English TRAP: one in which TRAP patterns with DRESS, one in which TRAP patterns with STRUT (influenced by Polish /a/), one in which it patterns with both DRESS and STRUT, and one in which it creates its own category.

In order to explore these ideas, charts have been plotted for those 20 speakers whose STRUT tokens were acoustically analysed previously. Vowels representing BATH, DRESS, START, STRUT and TRAP were taken from the wordlist data, with F1 and F2 readings taken from a visible steady state in the middle of each vowel using *Praat* (Boersma & Weenink 2010). Where the measurement was ambiguous, the token was discarded. In most cases there were 5 tokens per speaker for each vowel (the full word-list can be found in appendix 2). FOOT tokens were added in order to give a reference point for any change in STRUT. The charts in Figure 35 show the mean F1/F2 measurements for each of the vowels for all 20 speakers, listed in order of LOR. In each of the charts, the x-axis represents f2 in Hz and the y-axis represents f1 in Hz.

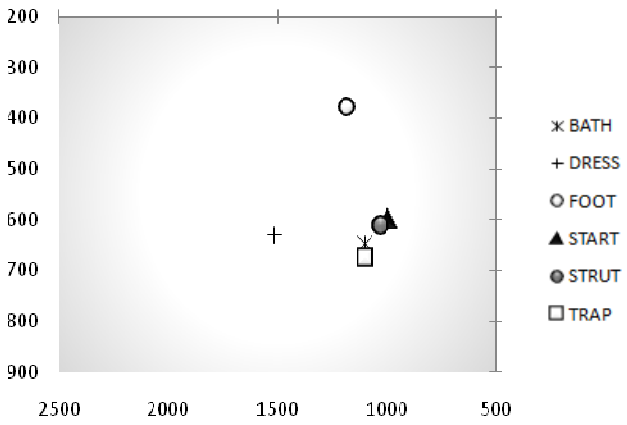
Figure 35: Acoustic analysis results for 20 speakers, wordlist data vowels.



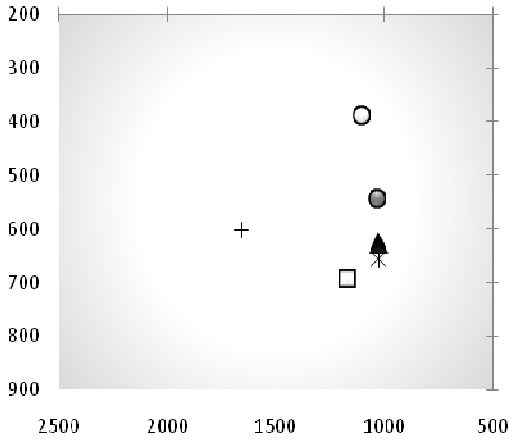
Speaker 8, LOR=6m Age=22 Female



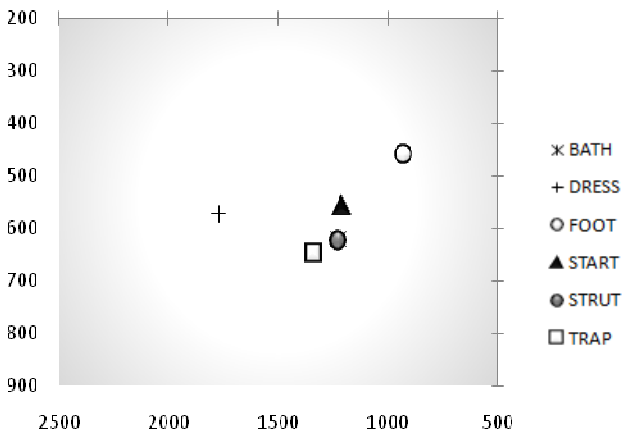
Speaker 9, LOR=6m Age=19 Female



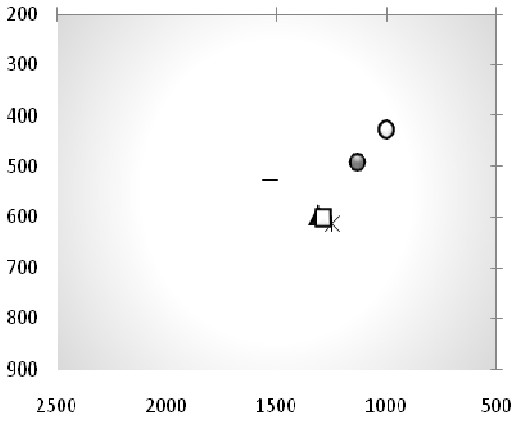
Speaker 12, LOR=22m Age=21 Male



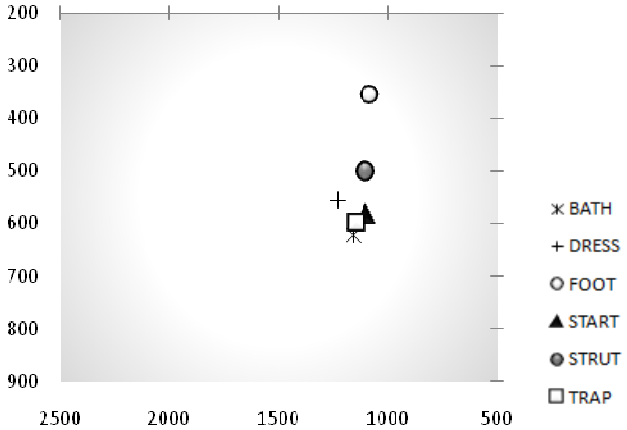
Speaker 23, LOR=25m Age=36 Female



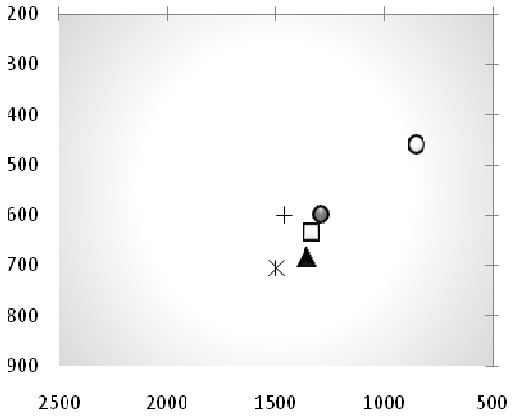
Speaker 20, LOR=32m Age=24 Male



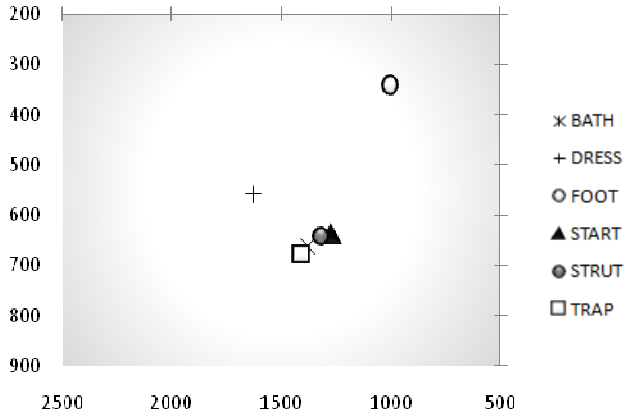
Speaker 28, LOR=40m Age=22 male



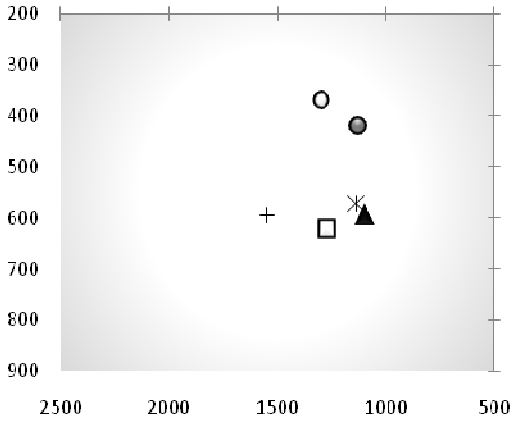
Speaker 36, LOR=42m Age=28 Female



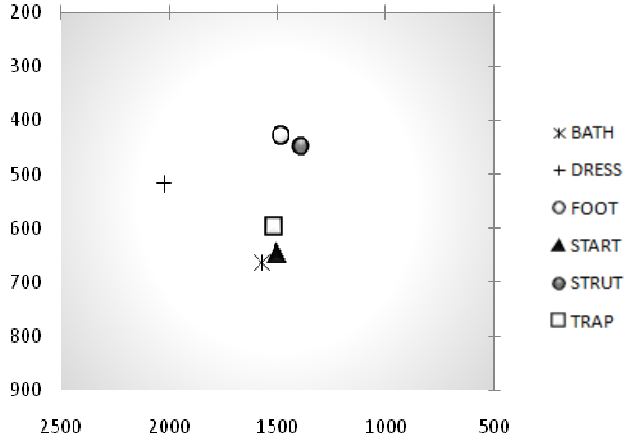
Speaker 38, LOR=42m Age=24 Male



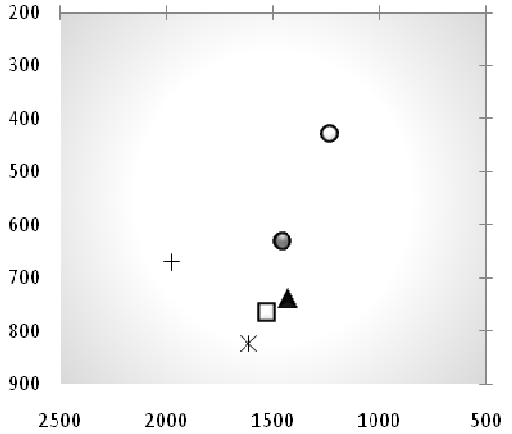
Speaker 6, LOR=46m Age=37 Male



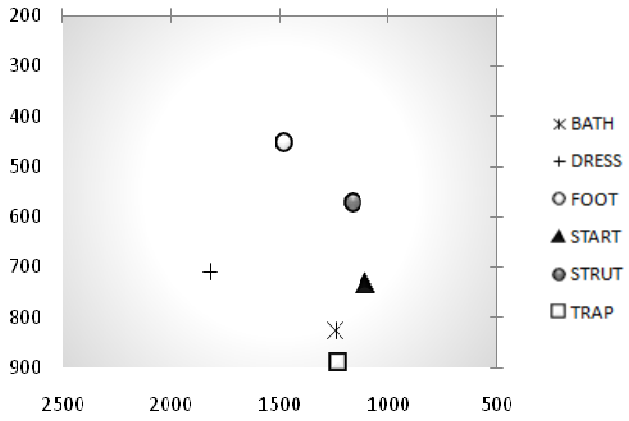
Speaker 24, LOR=46m Age=37 Female



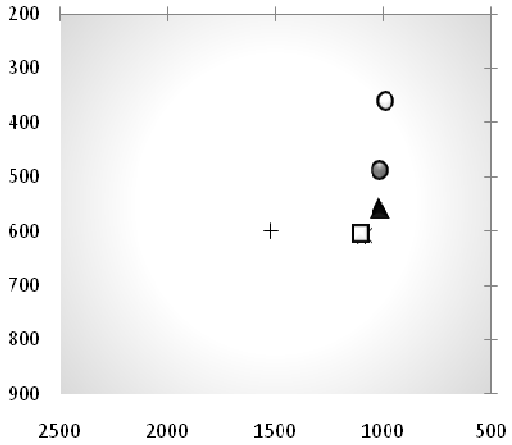
Speaker 2, LOR=47m Age=27 Female



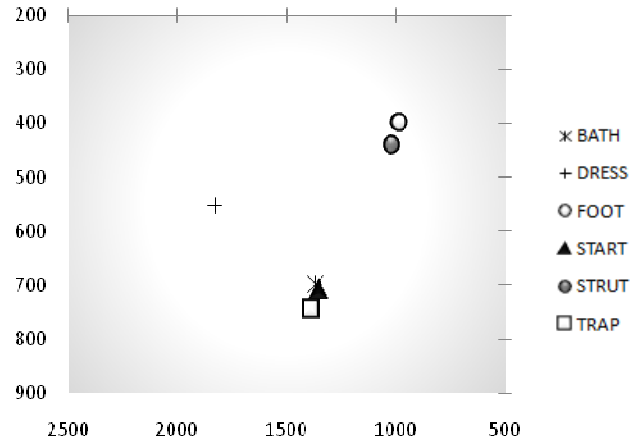
Speaker 17, LOR=48m Age=30 Female



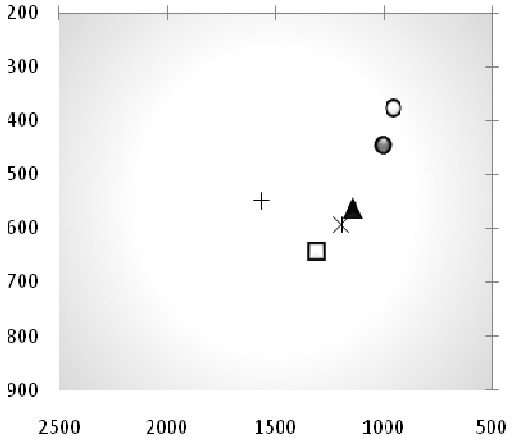
Speaker 27, LOR=53 Age=27 Male



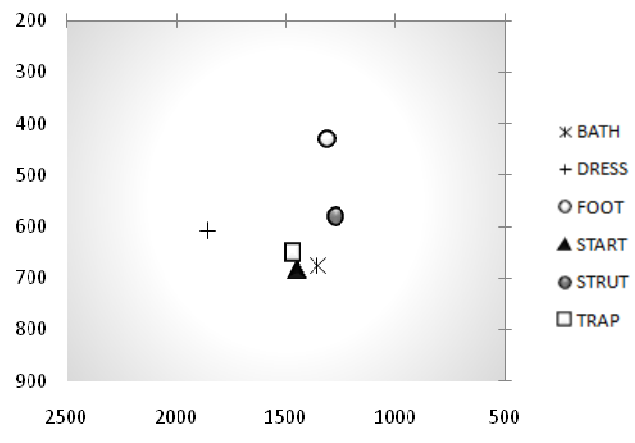
Speaker 26, LOR=61m Age=34 Male



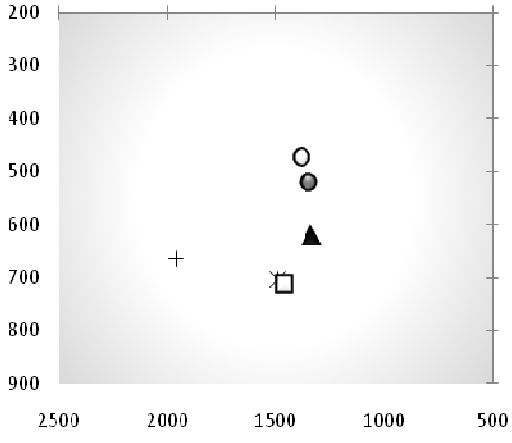
Speaker 29, LOR=64 Age=32 Male



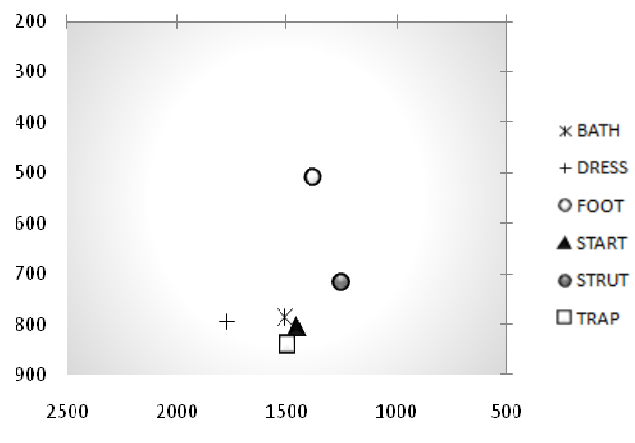
Speaker 30, LOR=64m Age=31 Female



Speaker 18, LOR=72m Age=28 Female



Speaker 19, LOR=72m Age=33 Female



On inspection of the charts, the question as to whether BATH patterns with TRAP or START is in fact somewhat irrelevant, due to the clustering of START and TRAP in the vast majority of speakers (see below). This also means that TRAP does not appear to be

drawn towards DRESS, except in the case of speaker 40, who shows a clear overlap between the two vowels. Speakers 28 and 36 also show an overlap between these two vowels, but this is perhaps better interpreted as a movement of DRESS towards the other vowels. The central question, however, is whether there is evidence of any of these vowels clustering around one or other of the Polish vowels.

Due to the limited number of tokens for each vowel, it is unwise to carry out anything other than an impressionistic analysis of the visual data provided by the charts, but even this provides some interesting findings. To give an idea of the kind of distance that might be expected between the vowels in question, Figure 36 shows the relevant vowel positions for two NS varieties of English: Lancashire English (the same area of the UK as Manchester), and 'standard southern English' (London). Notice how TRAP and START are clearly separate in the Lancashire chart, and TRAP, START and STRUT are all clearly separate in the London chart (the Lancashire chart obviously shows the absence of the FOOT/STRUT split). Clearly, the Polish speakers are not displaying the same degree of separation between the vowels. For some speakers there is apparent overlap between TRAP, BATH and START, in particular speakers 2, 8, 19, 20, 26, 27, 28, 30 and 38. For most other speakers the vowels appear close, but there is still clear separation, at least between TRAP and START. For some speakers (5, 8, 9, 23, 36, 38) STRUT is also clustered with one or more of these vowels, although for others, STRUT will of course be showing influence from the local variant and be realized as less open.

Figure 36: Vowel charts for two relevant varieties of British English, based on Ferragne & Pellegrino (2010)

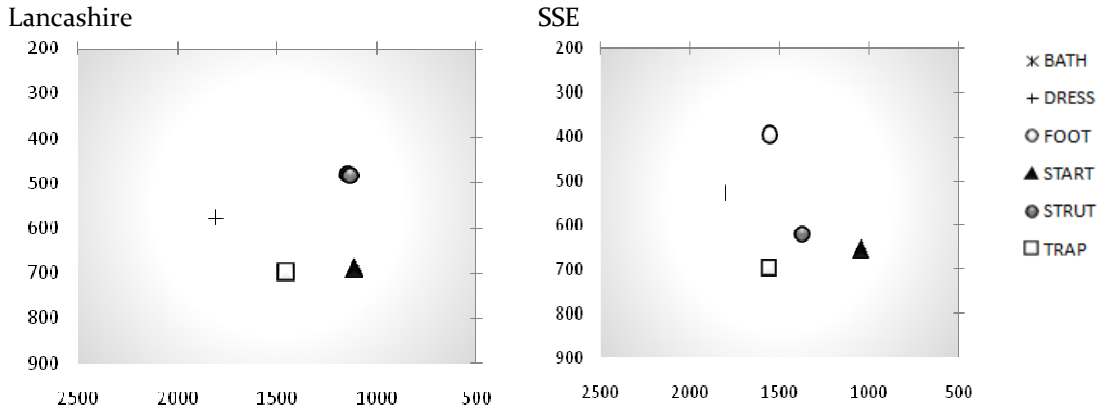
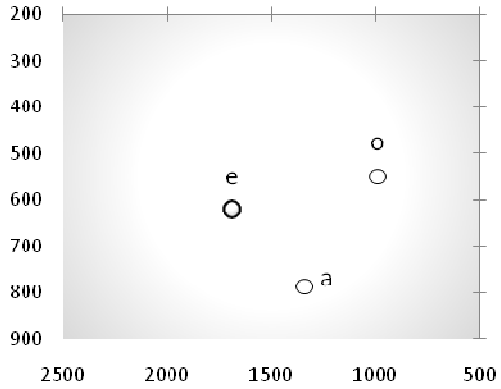


Figure 37: Vowel chart for 3 Polish vowels, based on Bodacka et al. (2006)



The fact that so many of the 20 speakers show at least some degree of clustering between these vowels, with some showing complete overlap (e.g. 20, 26, 28) does suggest that there is something in the L1 which is preventing separate L2 categories being made effectively. It is difficult to say for sure whether the results presented here provide meaningful support for the hypotheses of the SLM, but if we remind ourselves of the positions of the Polish vowels (Figure 37), they provide a tentatively positive interpretation. It is likely that for many speakers, TRAP, BATH, START (and STRUT) are strongly influenced by Polish /a/, as this does appear to be the approximate point at which the clustering occurs. In order to be certain it would be necessary to record samples of Polish words for each speaker, which would make a fascinating topic for further research, but which is outside the scope of the present study.

5.11 Matched Guise Test

The Matched Guise Test was carried out as a way of measuring the participants' ability to distinguish between two accents of English. In addition, it was hoped that the results might provide some information on attitudes towards these accents. It was envisaged that the results might play a part in describing the patterns of acquisition of the accent features being investigated, primarily the STRUT vowel. However, as can be seen from the regression analyses for all features, the MGT variable did not reach statistical significance in relation to any of them. Subsequent analysis of the MGT results in isolation confirmed that there was no correlation between them and STRUT variation. A variety of measurements from the MGT were used in these calculations, but the one that was felt most likely to offer some insight was the mean difference between the ratings for each accent. For example, participant 4 rated the 2 female speakers as outlined in Table 53. The difference between each rating was calculated, along with the overall mean. The result is a number which when positive indicates a preference for the NBrEng accent, and when negative indicates a negative attitude. In this case, we conclude that the participant has a preference for the NBrEng accent in the speech of the female NS, which can be measured at 0.67. The fact that there is any difference at all satisfies the primary function of the MGT, to ascertain whether the participants perceive that the accents are not the same.

Table 53: Explanatory MGT results for speaker 4.

	Fem (SSBrEng)	Fem (NBrEng)	Difference
intelligent	5	5	0
confident	4	5	1
kind	3	4	1
educated	5	4	-1
friendly	3	5	2
polite	3	5	2
interesting	4	5	1
honest	4	4	0
attractive	5	5	0
	Mean difference:		**0.67**

The procedure outlined above was carried out for each participant with regard to the male and female voices. Results were also separated in terms of whether certain

attributes could be seen as being a measure of status or solidarity[66] as determined by reference to previous studies (e.g. McKenzie 2008). No statistically significant correlations were found between any of these measures and the mean auditory STRUT value of the Polish participants. Table 54 shows the results of Pearson correlation coefficients calculated for the relationship between mean STRUT auditory value and each of the measures.

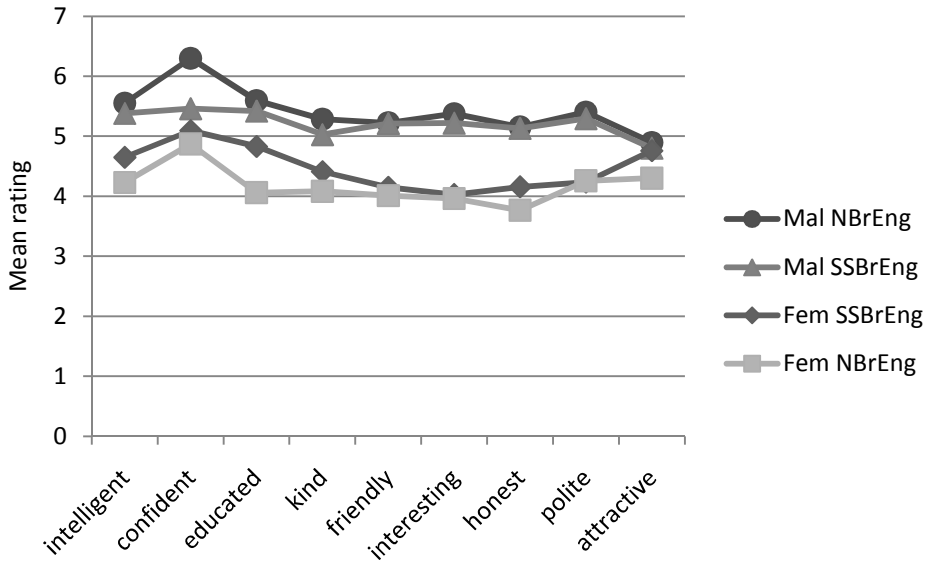
Table 54: Summary of Pearson coefficient calculations for the relationship between STRUT variation and MGT results.

	r value	p value	N
Female voice	0.190	0.281	34
Male voice	-0.077	0.667	34
Female voice status	0.294	0.091	34
Female voice solidarity	0.110	0.536	34
Male voice status	-0.006	0.971	34
Male voice solidarity	-0.178	0.315	34

However, despite the MGT measurements having no explanatory power with reference to STRUT variation, the results themselves offer some interesting findings in their own right, at least in terms of highlighting an area for future research. Figure 38 shows the mean ratings across all participants for the four NS voices. Notice how the ratings for the male voice are consistently higher than those for the female voice, for every attribute. Notice also how the NBrEng male voice is rated higher than the corresponding SSBrEng voice, yet the reverse is true for the female voice, with the SSBrEng guise being rated higher.

[66] *Intelligent, confident* and *educated* were identified as measures of status*, kind, friendly, interesting* and *honest* were identified as measures of solidarity.

Figure 38: MGT results for all four NS voices.



Further data are required in order to interpret these findings with any confidence, as by themselves they mean very little. The apparent gender difference might in fact be due to any number of factors other than gender. The whole point of a Matched Guise Test is that it tests attitudes to different guises, thereby avoiding the comparison of voices from two different people. As a MGT between male and female is impossible, the experiment would have to be repeated many times with different voices in order to begin to find any gender pattern. However, the difference in the favoured accent between the male and female voice is something that can be tested fairly easily. In the first instance, the same test using the same voices could be varied out with different groups of people to see if there was any consistency in the pattern. It would certainly be interesting to see if NSs tended to favour one or other of the accents. It would then be useful to replicate the test with different voices.

In summary, the MGT did not offer any insight into the patterning of STRUT variation amongst the Polish participants. Neither did it provide any generalizable information regarding attitudes towards the different voices. However, it did show that the Polish participants were able to distinguish between the two accents, and it did provide an interesting avenue for further research.

5.12 Case study

5.12.1 Background

All the findings discussed so far come from the data that were collected from the subset of the Polish community in Manchester that was outlined in section 4.1. Recall that the primary motivating factor behind identifying a subset was the fact that older individuals who had been in Manchester for a significant period of time often had extremely varied backgrounds, making it very difficult to control some of the variables to a degree which would allow meaningful statistical analysis and comparison. The example of one particular speaker was given, a woman in her 70s who left Poland at the age of 17, but who arrived in the UK only after a few years in India; she then spent varying amounts of time in different areas of England before settling in Manchester. However, not all these long-term residents had such an indirect route to their current situation. One participant in particular, Marta[67], is a very good example of someone who simply grew up in Poland, then settled as an adult in Manchester.

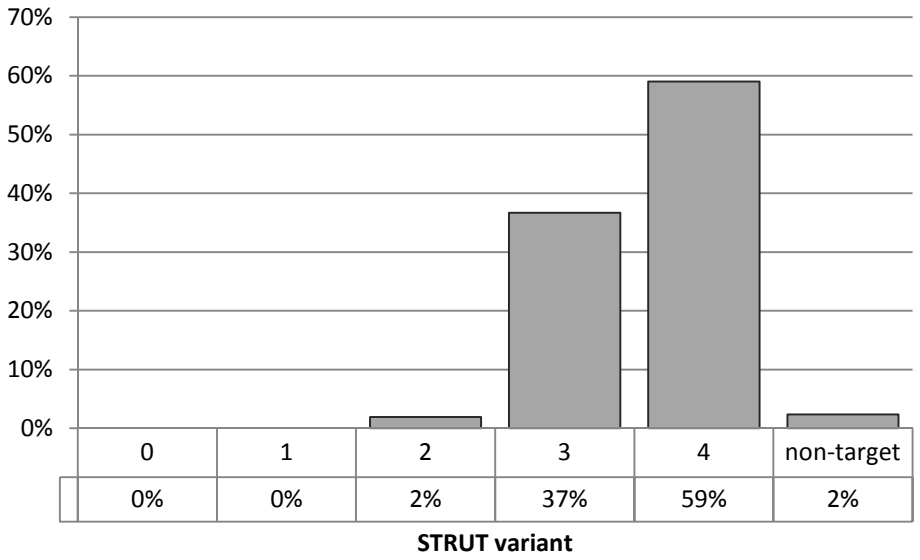
Marta was born in Poland in 1953, and first visited England at the age of 18. It was during this holiday to visit an uncle in Manchester that she first met her future husband, a printer from Salford. They kept in touch after the holiday, and eventually married[68] in 1973, at which point she moved permanently to Manchester. She has always worked part time, for many years in a department store, and more recently on the customer services counter of a shopping centre in the city. In this respect, Marta is in a very similar situation to some of the other individuals described in this study, only with a much longer LOR (36 years). She came to the UK as an adult, she spoke some English on arrival, and has stayed only in the Manchester area ever since. For this reason, she is an ideal person to look at with a view to what might happen to an individual's speech after long-term residence in Manchester. The following sections describe Marta's spoken English with reference to the four features discussed throughout. The linguistic variables were identified and coded in the same way as for the other speakers, although more tokens were collected overall for Marta (STRUT: 210; /t/: 309; (ing): 100; h-dropping: 100; total: 719).

[67] Not her real name.
[68] In fact they married in the church described in the introduction.

5.12.2 STRUT

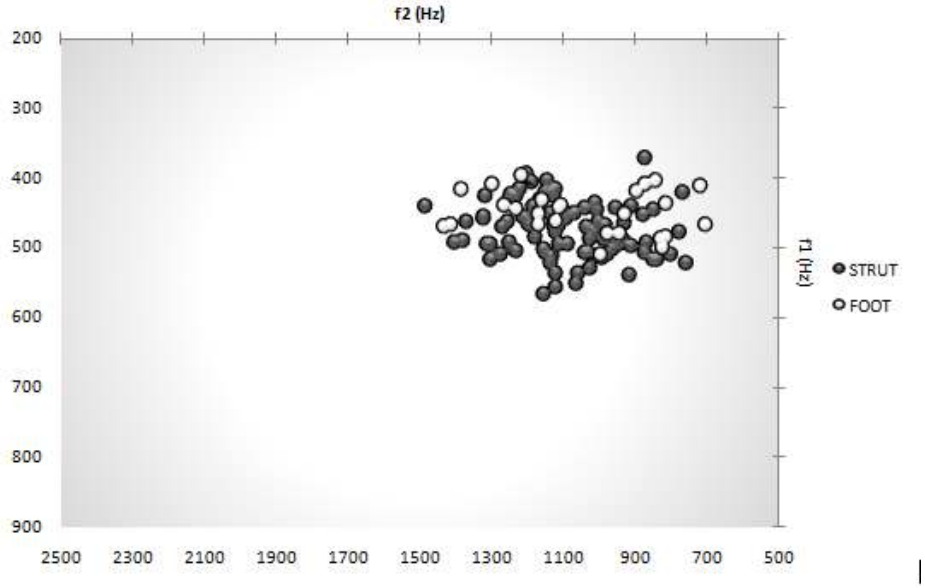
Figure 39 shows the results of the auditory analysis for Marta from 210 STRUT tokens. Notice how the vast majority of tokens (96%) were judged to be in categories 3 and 4 [ʊ̟] and [ʊ]. This is very much in line with data from the NSs described in an earlier chapter, all of whom had between 92% and 98% in categories 3 and 4 (see Table 11 and Figure 4 for details). In fact, were it not for the fact that 5 tokens were non-target, the spread of variants would be identical to that of a local NS. Incidentally, the non-target variants were all judged to be closest to [ɔ] and they only occurred in two words: *month*s and *London*.

Figure 39: Chart showing the results of the auditory analysis of Marta's STRUT vowel.



The results of the auditory analysis are supported by the acoustic analysis, the results of which can be seen in Figure 40.

Figure 40: Formant chart showing the position of STRUT and FOOT for Marta.



The complete overlap between the two vowels illustrates a very similar pattern to those of the NSs described in 5.1, a pattern which shows a lack of a FOOT/STRUT split.

Marta appears to have fully acquired the local STRUT variant, with no sign of the SSBrEng variant she would have arrived with. This is not surprising when we consider her background. She reports a fairly low level of English when she arrived in the UK having had very little formal instruction in Poland. So for 36 years, her main pronunciation model has been the local variety, with no FOOT/STRUT split. We can assume that her husband, who comes from a working class background in nearby Salford, exhibits the local system of vowels, and she talks of having had English friends since she arrived. Marta also has a very positive attitude towards Manchester, scoring highly (mean 5.8 out of 7) on the ATT section of the questionnaire. In other words, Marta has all the attributes that were identified earlier in encouraging the use of the local STRUT variant: long LOR, a positive attitude towards Manchester, and a local NS partner. So perhaps it should not be surprising that she appears to have fully acquired the local variant (with the exception of a handful of non-target examples).

However, the fact that she has acquired the local variant so completely is interesting. Recall that of the speakers in the main analysis who demonstrated the greatest degree of local acquisition, none was close to matching the local NS variety. The only real difference between them and Marta is age and LOR. The two factors are clearly

inseparable in this context, so we should perhaps focus on LOR as being a better representative of what is happening. All we can say for sure from the data available is that a LOR of less than 6 months results in no acquisition of the local variant; a LOR of 5-6 years can result in a real, observable degree of acquisition (with some speakers exhibiting a mean auditory STRUT value of >2); and a LOR of 36 years can result in complete acquisition of the local variant. Clearly, further research is needed to fill in the detail between LORs of 6 and 36. With enough data, it might be possible to identify a minimum point at which complete acquisition is possible, or a point at which a complete lack of acquisition is impossible. The difficulty, however, lies in finding enough speakers with comparable backgrounds.

5.12.3 Glottal variation in /t/

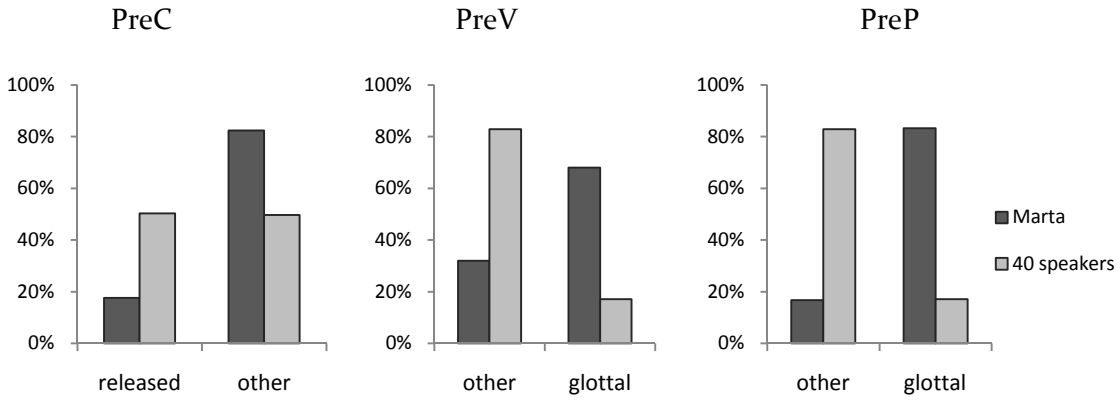
Analysis of Marta's production of /t/ also shows a deviation from the pattern of the other 40 Polish speakers. Table 55 shows a reproduction of the table provided earlier showing the mean percentages for each variant in each environment produced by the other 40 speakers, with the percentages for Marta in the table below. Figure 41 presents the relevant data visually, allowing for easy comparison. Notice how in each environment, Marta shows a far higher percentage of what could be seen as the local variant: glottal replacement in PreV (vowel) and PreP (pause) and lack of released [t] in PreC (consonant). One point of interest is the fact that Marta's speech shows a higher rate of glottal replacement in PreP position than in PreV, a pattern which reflects the common NS pattern described in Straw & Patrick (2007), and which contrasts with the pattern found for the other Polish speakers.

Table 55: Total count and percentages for each /t/ variant under investigation; 40 speakers above, Marta below.

	PreC			**PreV**			**PreP**			
	other	**released [t]**	**total**	**glottal**	**other**	**total**	**glottal**	**other**	**total**	
word final	49.7% (797)	50.3% (806)	100% (1603)	17.1% (154)	82.9% (748)	100% (902)	17.1% (73)	82.9% (354)	100% (427)	
word medial	×	×	×	0.4% (2)	99.6% (516)	100% (518)	×	×	×	
			1603			**1420**			**427**	**3450**

	PreC			PreV			PreP			
	other	**released [t]**	**total**	**glottal**	**other**	**total**	**glottal**	**other**	**total**	
word final	82.4% (126)	17.6% (27)	100% (153)	68.0% (51)	32.0% (24)	100% (75)	83.3% (30)	16.7% (6)	100% (36)	
word medial	×	×	×	2.2% (1)	97.8% (44)	100% (45)	×	×	×	
			153			**120**			**36**	**309**

Figure 41: Comparison between 40 speakers and Marta of each /t/ environment.



When we look in more detail at the PreC environment we find that the pattern of use of something other than released [t] in each PreC context is different from both that described in Fabricius (2000)[69] and that of the 40 speakers. For Marta, PreS (stop) shows the highest rate at 97%, and PreF (fricative and affricate) and PreA (approximant) pattern together at 72%. This suggests a PreS>(PreF, PreA) pattern, compared to Fabricius' (2000) PreA>(PreF, PreS) and the 40 speakers' (PreS, PreF)>PreA. This is relevant in terms of the observation was made earlier in relation to the 40 speakers. It was suggested that with an increase in LOR beyond 6 years, the pattern might change from (PreS, PreF)>PreA to PreA>(PreF, PreS), thus replicating the NS pattern. This was based on the finding that the rate of 'other' in PreA seemed to be increasing along with LOR. However, the evidence from Marta does not support this hypothesis.

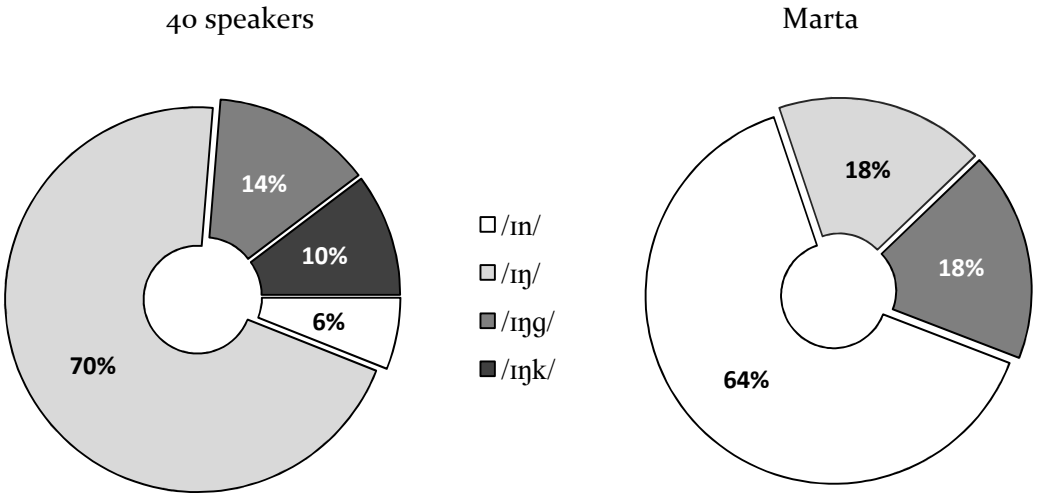
[69] As before, we must bear in mind that Fabricius was looking specifically at glottal replacement vs 'other' rather than 'other' vs released [t], but the comparison is still valid from a patterning point of view.

In terms of social factors, once again Marta is a prime candidate for increased use of glottal variants according to the results of the analysis of the 40 speakers (female, high LoE and high LOR), but there is little to add to this. It might simply be the case that the considerably longer LOR of Marta overshadows the other factors.

5.12.4 (ing)

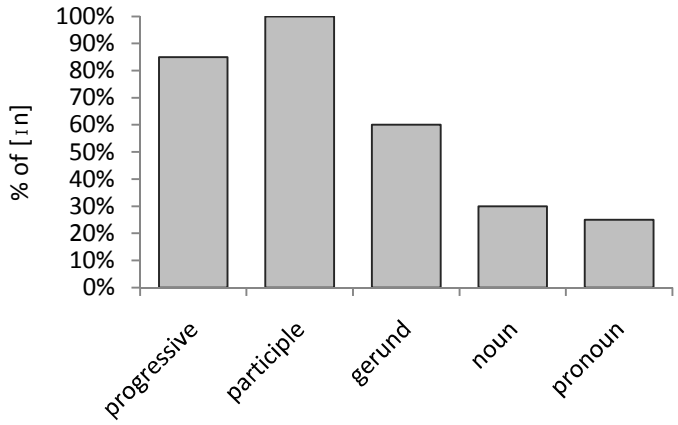
The distribution of (ing) variants in the speech of Marta is completely different to that of the other 40 speakers. As be seen in Figure 42, the most common variant for Marta is [ɪn], with [ɪŋ] and [ɪŋg] having equal proportions. Notice that [ɪŋk] is absent in Marta's speech. These results can be seen as following the pattern described earlier which suggested that the four variants could be seen as existing on a continuum from L1 influenced [ɪn] (and [ɪŋ]) to L2 influenced [ɪŋk] (and [ɪŋg]). Marta's LOR, LoE and commitment to the UK all make her more likely to use the L1 influenced variants, with a greatly increased use of [ɪn] and a non-existent use of [ɪŋk]. However, there is an alternative interpretation regarding the use of [ɪŋg]. It was mentioned earlier that [ɪŋg] is in fact a local NS variant of (ing), but due to the fact that there were so many examples of [ɪŋk] in a pilot study, it was felt more plausible to view [ɪŋg] as a result of L1 interference rather than a move towards a local variant. But in this case, with Marta's LOR, it is possible that the use of [ɪŋg] does indeed represent the acquisition of the local variant.

Figure 42: Total proportion of each variant of (ing), all 40 speakers and Marta.



In terms of linguistic constraints, the familiar pattern of the nominal/verbal continuum can be clearly seen, as illustrated in Figure 43.

Figure 43: Chart showing the influence of grammatical category on the use of [ɱ] in the speech of Marta.

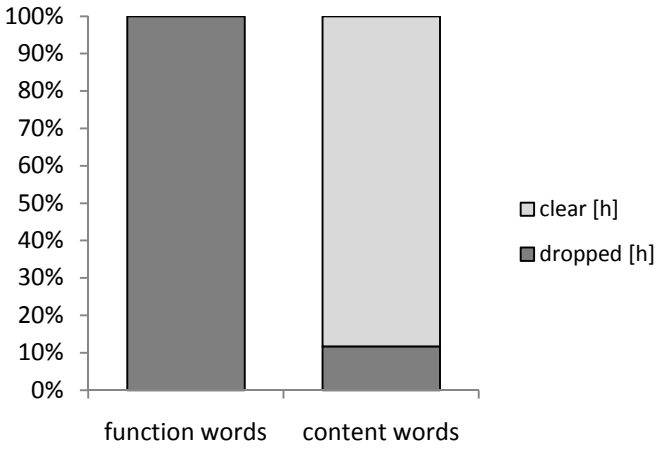


Again, Marta appears to show a significant move towards the local pattern of (ing) variation, although this would need to be confirmed with further research into the speech of local NSs.

5.12.5 h-dropping

Marta displays a far higher rate of h-dropping than any of the other 40 speakers, as can be seen in Figure 44. Notice that her h-dropping in function words such as the personal pronouns *him* and *her* is categorical, a finding which echoes those of NS research (recall that function words are usually not counted in NS h-dropping studies due to this tendency). As for content words, comparisons with general NS findings on h-dropping for the area (e.g. Beal 2004) suggest that Marta's rate might be slightly low. Certainly, it is considerably lower than those reported for NSs in other areas (e.g. Trudgill 1974; Williams & Kerwsill 1999).

Figure 44: Proportion of h-dropping in function words and content words for Marta.



5.12.6 Discussion

Overall, it is very clear that Marta's speech exhibits variants of all four variables that are considered to be closer to the local NS variety than those in the speech of the other 40 speakers. Without detailed data on the variation within the speech of local NSs it is impossible to say precisely how closely Marta's speech resembles that of a NS, but general comparisons with NS data from other areas suggests it might not be far away. Certainly, Marta's STRUT vowel is almost indistinguishable from that of the local NSs who were also recorded, and were it not for the small number of non-target forms, then it really would be identical.

Impressionistically, Marta's speech appears to go beyond what would be expected for some NSs, at least with regard to /t/ and (ing). A plausible reason for this is the influence of social class. Social class has been absent from all the discussions in this study due to the fact, as mentioned earlier, that it is difficult to consider in relation to immigrant populations. There is often a significant difference between an individual's status in the home country and in the new country, making it hard to make the judgements necessary to include social class as a factor in variation. However, Marta's situation is different. The permanent nature of her residence in Manchester, along with her marriage to a local man make it possible to view Marta's context in these terms. And although not investigated in a methodical manner, everything about Marta's context that could be gained from the interview puts her in an average working class category. Her occupation, her husband's occupation, their level of education, and their neighbourhood, all point to

this. In which case, it is not surprising that Marta displays relatively high rates of t-glottaling and h-dropping.

In conclusion, Marta serves as an interesting illustration of the changes that can take place in the English pronunciation of a native Polish speaker living in Manchester. We can only assume that her English pronunciation was largely similar to that of the more recent arrivals who had a similar level of English; certainly, there is no reason why this should not be the case. This is not to say that if any of the other 40 speakers decided to stay in Manchester for another 30 years their speech would show the same degree of change. As has just been observed, Marta embedded herself in the target culture, married to a working class local man. Other individuals, perhaps especially those with Polish partners, might not have the same degree of contact with the local variety. However, even after 36 years, and even with these heavily NS-influenced variants, there is no mistaking Marta for a native speaker of English. Admittedly, this is largely due to syntactic errors and idiosyncrasies, but a little is due to pronunciation. That said, her accent when speaking English identifies her as being from Manchester before it identifies her as being from Poland.

6: Discussion

The purpose of this section is to frame the findings from this study within the areas of research outlined in the review of the literature, as well as to explore their possible application to contexts in the wider world. This will be achieved by briefly assessing the extent to which the findings have supported, contradicted, or added to the existing knowledge within each area mentioned in the literature review, before suggesting ways in which the findings might be used in future research or in other contexts. In addition, those areas which were mentioned in the literature review but which did not appear to influence the findings will be discussed with a view to understanding why they were not relevant in this context.

The SLM was outlined in order to provide a possible model with which to view the process of L2 phonological acquisition in the context of native Polish speakers acquiring English sounds. One central hypothesis of the SLM is that L2 sounds will automatically be compared and contrasted with the existing L1 sounds, as the two phonetic subsystems cannot be fully separated, existing as they do in a common phonological space (Flege 2003). This was indeed found to be the case here, especially with regard to the realisation of vowels such as TRAP, BATH and START. As such, the findings here offer support for the SLM, at least in terms of similar vowels patterning together (equivalence classification), resulting in a lack of distinction between certain L2 vowels. In terms of the central area of the current research, STRUT variation, this process of equivalence classification can be seen to have two possible contrasting effects. On the one hand, if STRUT is drawn towards Polish /a/ along with the other vowels, as appeared to be the case for several speakers in section 5.10, then this might inhibit the acquisition of the local STRUT variant. This inhibition would be caused by the fact that Polish /a/ is that much more open than any L2 vowel, thus making any movement towards [ə] and [ʊ] that much more significant. If we accept that the variation seen in STRUT does lie on a continuum, it might be the case that some speakers who were judged to be producing target-like [ɐ] were only doing so as a result of the very beginnings of a move away from Polish /a/ towards the local variant.

On the other hand, it is possible that movement of STRUT could be seen as a way of maintaining a distinction between some of these vowels that tend to cluster around

Polish /a/. With TRAP, BATH and START all overlapping, the local realisation of STRUT might be all that is needed to encourage a move to a less peripheral position in this vowel, thus maintaining a contrast. This process is in fact very similar to Flege's (2003) notion of 'phonetic category dissimilation' in which L2 and L1 categories move further apart.

In order to gain a deeper understanding as to whether the processes described in the SLM can be applied to the present context it would be necessary to revisit the STRUT data and widen the focus to include the non-target STRUT tokens as well as the target tokens. Recall that acoustic analysis was only carried out on target tokens in order to verify the auditory analysis with a view to measuring movement from the pedagogical variant to the local variant. In order to fully understand how L1 vowels influence L2 vowels it would be necessary to take all realisations into consideration. This is an area that has been identified as a future project. It would also be very interesting to investigate the participants' pronunciation of Polish vowels after they have spent some time in Manchester. Recall that the process of 'equivalence classification' is also believed to affect the L1 vowels. This happens when a vowel in the L2 and its 'similar' counterpart in the L1 create a composite category, which, over time creates an L2 vowel with L1-like properties and an L1 vowel with L2-like properties. This would be a fairly straightforward hypothesis to test with those speakers from the current cohort who are still in the UK.

In terms of wider applications, the findings here add support to existing knowledge with regard to possible pronunciation issues for Polish learners of English. Admittedly, nothing new has emerged, as the issue of distinguishing between the vowels discussed here is well known to anyone who has taught native Polish speakers. However, the fact that only one speaker appeared to merge DRESS and TRAP is perhaps a sign that this confusion (in pedagogical terms) at least is not as widespread as might have been thought. Again, further research, perhaps using the conversation data as opposed to the wordlist data might add some important detail.

In terms of variation in a second language, many of the findings here strongly support the notion that it is a valid area of research in that the speech of NNSs does indeed exhibit systematic variation. One of the clearest examples of this was the grammatical category patterning of (ing) which accurately reflected patterns found in NS data. All four features appeared to be affected by social constraints, sometimes mirroring NS

patterns, sometimes not, but there were patterns nonetheless. It is these patterns which, with careful interpretation, can be used to gain insights into the processes at work.

Age was not found to be statistically significant in any regression analysis of any of the features. This was not particularly surprising given that the sample of speakers only included adults between the ages of 18 and 40 and therefore well above any sensitive period in terms of SLA or dialect acquisition. Even if an emic approach (Eckert 1997) is taken by focussing on shared life stages rather than chronological age, it is unlikely that differences would be found, as it is simply not possible to divide these particular speakers into suitable different categories. It might well be the case that a university student is at a significantly different life stage to a housewife, yet the overriding shared experience is one of migration to the UK from Poland. In that sense, all the speakers are involved in the same life stage, that of migration to a new country, and they all share the anxieties that come with such migration regardless of their other individual situations. The most obvious way in which to properly explore age, whether through an etic or an emic approach, would be to compare the speech of children and adolescents with these adults. Despite also sharing the experience of migration, children and adolescents find themselves in a vastly different context on arrival, one in which they are forced to communicate in a particular way as a direct result of their life stage. It would be especially interesting to compare the speech of parents, children and adolescents from within the same family in order to explore the effects of the different linguistic and social demands made on each.

LOR was found to be statistically significant in all four features, with local variants being more likely as LOR increases. This is only to be expected when we consider that the local variants are largely absent from any pedagogical model the speakers will have been exposed to in Poland, and that time spent in the UK represents the first continued exposure to some of them. However, viewing LOR as a constraint in itself is too simplistic. It clearly cannot be the case that simply spending time in a location has such a significant effect on an individual's speech; rather it is the interaction that occurs during this time. It is often the case that migrants maintain L1 networks (as discussed in Sharma 2005) and have limited contact with local NSs. In other words, it is the opportunities for interaction with and in the L2 which LOR affords the L1 community. Put simply, a longer LOR means a greater chance of L2 contact. In this sense, LOR is not

in itself an explanatory factor, rather it is a pre-required condition for the acquisition of local variants to take place through other processes of interaction. The difficulty lies in identifying and measuring these different processes of interaction.

The amount of L1/L2 use did not emerge as being statistically significant in any of the analyses. However, it is extremely hard to accept that there is no effect, particularly in the light of the LOR discussion above. It is far more likely that the lack of significance lies in the methods used to gather the data. Any kind of self-reporting brings issues of subjectivity and inconsistency, and this, along with the crude categories offered in the questionnaire, led to unreliable measurements. In addition, it was not entirely clear what was being measured, as the question simply referred to the proportion of English/Polish use in three different contexts. It did not attempt to determine with whom this interaction took place. It might well be the case (in fact it was the case) that a Polish couple report 75% use of English at home, reflecting a self-imposed method of improving their English. However, a high level of English use between two NNSs would not encourage acquisition of local variants, particularly with regard to the STRUT vowel. Instead, other methods need to be found to enable more accurate measurements of L1/L2 use. This was achieved to an extent in relation to the discussions on gender, when occupations were observed with a view to exposing likely contexts of L2 use, but this needs to be developed for future research. It is hoped that as more is learned about the various social networks within UK Polish communities, by studies such as this one and those carried out by Schleef et al. (forthcoming), it will become easier to be more precise in measuring such factors as L1/L2 use in a meaningful way.

Motivation to improve one's pronunciation was measured as part of the attitudinal questionnaire and only reached statistical significance in the analysis of STRUT variation when random effects were not included. As such, it must be treated as a tentative finding at best. Whilst apparently showing that increased motivation leads to an increased likelihood of exhibiting variation in STRUT, the qualitative data serves to question this interpretation. For example, speaker 38 is highly motivated with regard to accurate pronunciation, and during the conversation he confidently expressed his views on the importance of aiming for NS-like pronunciation; however, he is also the speaker who made the comments discussed in section 5.2.8 about speaking with a Manchester accent being a 'bad habit' that he consciously avoids. In other words, it is unclear whether

increased motivation to improve one's pronunciation leads to the acquisition of local variants (thus using the local variety as a model) or leads to the rejection of local variants (thus seeing an alternative variety as a model). It is likely that this differs between speakers. It is also likely that this kind of influence is better investigated through measurements of attitude and/or identity.

Level of English was found to be a statistically significant constraint in the analysis of three of the features (glottal variation in /t/, (ing) and h-dropping). An important finding was that LOR and LoE were themselves not correlated, a counter-intuitive claim in some ways, but less so when we consider the influence of recently arrived (low LOR) high-level speakers. The significance of LoE suggests that as proficiency increases, so too does the likelihood of the use of local variants. However, as was discussed in the respective sections, this correlation does not give any indication of causality. Unlike LOR for example, where the direction of causality is obvious, here it is unclear whether a high LoE leads to the use of local variants, or whether the use of local variants leads to a judgement of high LoE. Nonetheless, this lack of direction does not make the finding any less interesting. The fact remains that speakers judged to be proficient speakers of English are exhibiting the use of glottal variants of /t/, alveolar variants of (ing) and are dropping /h/s. This arguably has implications for English language teaching, possibly suggesting that the conscious teaching of some of these variants would help to improve learners' pronunciation. This is certainly a valid and interesting avenue for further research which once again underlines the importance of applying variationist methods to L2 data.

Formal instruction did not emerge as a statistically significant constraint in any of the analyses. This is perhaps not surprising given that the vast majority of reported tuition took place in Poland, before arrival in the UK. The LOR results suggest that time spent in the UK is important for the acquisition of the local variants, so it is largely irrelevant how much tuition took place before this time. Of course, it is likely that formal instruction plays a part in an individual's LoE, but the latter then overrides tuition as the more influential and easier to measure constraint. The one element of formal instruction that might have been important was if the lessons had taken place in Manchester with a teacher who had a local accent; but only a few participants had taken classes in the UK, and it was impossible to ascertain the teacher's accent. Moreover, anecdotal evidence

and personal experience suggests that at anything other than very low levels of proficiency, the teacher's accent is unlikely to affect the pronunciation of the learners in any case.

It was explained earlier how social class would not be explored in any detail in this study due to the difficulties in applying notions of class to a migrant population. However, social class is still important with regard to social interactions and the contexts of L2 use. If, for example, an individual regularly finds themselves in a context which is predominantly associated with one class or another, then it can be assumed that they are being exposed to a particular type of language. In some cases, this is fairly easy to predict when an individual discusses their occupation; the participant who works in a bookmakers, for example, is likely to encounter more working-class speech than the participant who works in the university. But in other cases, it is not so easy to categorise. In this instance it was decided that not enough is known about the various occupations and lifestyles of the participants to reliably categorise or rank individuals in terms of what is effectively the social class of their L2 contexts. Nevertheless, each study into the Polish communities in Manchester and elsewhere will add to the background knowledge, thus making the inclusion of this type of factor more feasible in future research.

Gender was found to be statistically significant in the analysis of two features: glottal variation in /t/ and (ing). In both cases it emerged that women were more likely than men to use the L2-influenced or non-standard variant. Indeed, this is all that can be said for certain; that the 20 female speakers represented here were statistically more likely, as a group, to produce certain variants than were the 20 male speakers. But it is simply not adequate to leave the subject at this point, with the conclusion that women do one thing and men do another. This binary opposition is more than likely masking a whole series of other factors which are far more important, but which happen to pattern along gender lines to a greater or lesser degree. Gender is widely accepted as being a social construct, and as such, it is made up of a complex network of social practices which themselves are gendered. As was mentioned in an earlier section, it is these gendered social practices which interact with language, not gender per se (Ehrlich 1997:440). It is therefore necessary to look beneath the level of male and female gender in order to identify some of these gendered social practices. In doing so, it might be the case, as suggested here

with reference to glottal variation in /t/ and (ing), that gender is no longer the most appropriate broad division to be using when describing patterns of linguistic behaviour. The suggestion made earlier was that context of L2 use with regard to occupation provides an alternative and arguably more meaningful categorization between patterns of certain features; but this is only the first step for this type of analysis within this type of community. As mentioned above, it is first necessary to learn more about how the Polish community works in terms of social networks, occupations, and contexts of L2 use, so as to be able to use this information in identifying appropriate and above all useful system of categories.

Two different aspects of identity emerged as statistically significant, one quite central aspect: future plans, and one more peripheral: attitude towards Manchester. Future plans was felt to be a more central element in the construction of identity due to the fact that the decision to settle permanently in a different country immediately labels an individual as a migrant, a label which then becomes part of one's identity. The label of migrant can then be broken down further in the way demonstrated by Eade et al. (2006), whose work was discussed in the introduction. They identified different types of migrants depending on their long-term plans and reasons for coming to the UK. Each of these types brings with it connotations to do with identity, especially perhaps in the minds of the target community. A 'Type B' Pole who has come to the UK for a short time simply to make money will be treated differently to a 'Type D' Pole who has decided to settle in the UK permanently. This treatment they receive will then play a role in their construction of identity, as will their participation in the various communities of practice open to them.

It was in the analysis of (ing) variation that identity (by way of future plans) was found to be statistically significant. The results were interpreted as showing participants who were planning on staying in the UK as displaying more L2-influenced variants of (ing) and participants who were planning on returning to Poland as displaying more L1-influenced variants. This was then further interpreted as signifying allegiance to one or other culture. It is interesting that it should be in this variable that identity has emerged most strongly as a possible constraining factor. It was suggested earlier that variation within the STRUT vowel might provide the clearest indication of identity construction through linguistic patterns, although perhaps the STRUT vowel is indeed too salient a feature to

be used in this way. Certainly, the most extreme local variant is highly salient, and one which several speakers mentioned as unattractive during their conversations. However, by measuring STRUT on a scale of 5 possibilities, it was possible to identify movement towards the local variant that would not necessarily register in the mind of the individual as being anything different. So while the full local variant is arguably well above the level of individual consciousness, the various intermediate variants might be well below the level of individual consciousness.

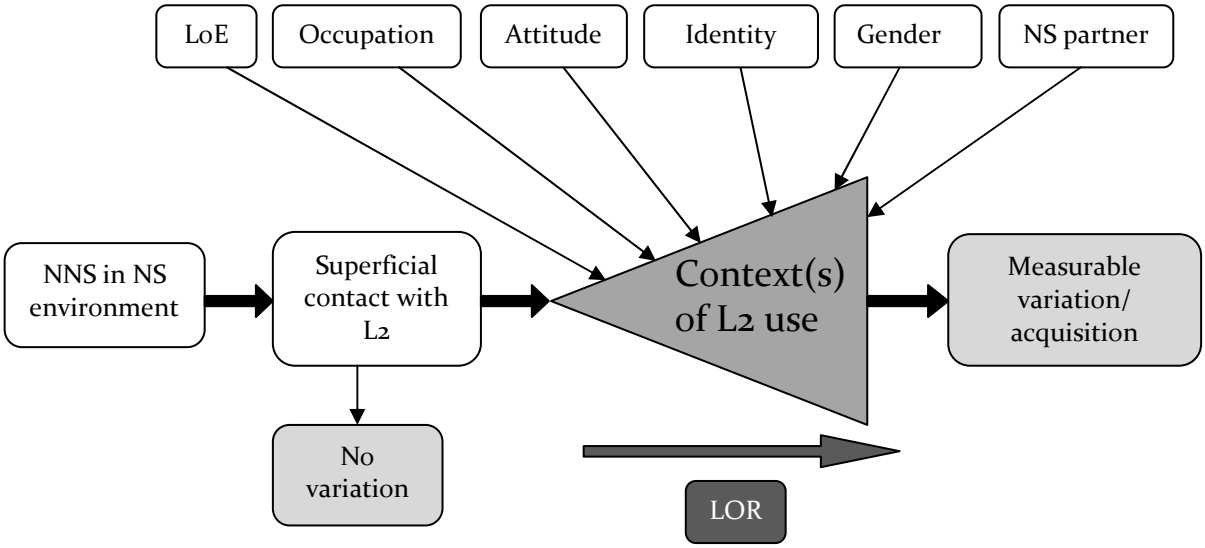
Indeed, STRUT variation was the area in which the other aspect of identity was found to be significant. Attitude towards Manchester and its people is a more peripheral aspect, yet is still relevant in identity construction as it positions an individual in relation to the target culture. A positive attitude suggests a willingness to be part of the target culture, whereas a negative attitude suggests a desire to remain separate. It became apparent that those speakers with a positive attitude towards Manchester, and therefore who perhaps identify themselves more closely with the target culture, were often more likely to show movement towards the local STRUT variant.

Of course these are just two interpretations of elements that constitute identity; it would be just as relevant to have the same discussion about identity in relation to gender, or even to a lesser degree in relation to LOR and LoE. But as a first step towards exploring the relationship between the construction of identity and the use of language in this particular migrant context, these findings provide a useful starting point.

One concept that has repeatedly emerged in these discussions is that of 'context of L2 use'. It could be argued that all the social constraints on all the features under investigation here can be distilled into this one factor. Gender determines the contexts of L2 use in terms of gendered social practices; occupation determines the type of people with whom contact will be made; identity determines allegiances with various groups of people and their contexts; LoE determines the type of language used in these contexts; having a NS partner creates a specific context, and creates opportunities for additional contexts; LOR increases the likelihood of contexts to occur; and attitude determines an individual's willingness to engage in particular contexts. To put it another way, in a situation where a NNS finds themselves in a NS environment, 'context of L2 use' is the part of the process that determines the extent to which certain aspects of L2 variation will take place. It is not enough to simply be in the target environment, but neither is it

enough to simply have superficial contact with the L2 community. It is the type of contact and the level of engagement with the L2 community that is so crucial, in other words, the context of L2 use. And the context of L2 use is itself shaped and influenced by the various social constraints discussed above. The process is schematised in Figure 45. Notice how LOR is an underlying pre-requisite rather than a separate influencing factor, and that the 'size' of the context of use increases along with LOR, indicating the increased opportunities for L2 use that LOR brings.

Figure 45: The process of L2 variation through contexts of L2 use.



In addition to the social factors above, one interesting finding was that a frequency effect might be playing a role in the degree of STRUT variation. This apparent frequency effect was occurring not at the word level, but at the context level, and was interpreted in relation to exemplar theory. It was argued that the reason certain phonetic contexts were more likely to produce a locally influenced STRUT vowel was because of the higher frequency of these contexts. Higher frequency results in more exemplars with the local STRUT variant, which in turn results in stronger exemplar clusters of certain contexts, which in turn leads to an increased likelihood of the production target for a particular context exhibiting a locally influenced vowel. At this stage, such interpretations must be viewed with some caution, but further research in this area can only serve to help make the picture clearer.

The final point to consider is the extent to which the findings overall can be applied to situations outside the arena of academic research. Several times in the discussion above reference has been made to an English language teaching context, highlighting points which might benefit that particular field. Possibly the most important lesson that can be learned from these findings with regard to language teaching is one of awareness. Language teachers, researchers and theorists simply must be made aware of the variation inherent in both L1 and L2 speech. Too often, the L2 pedagogical model of pronunciation is a fixed, single variety of L2 speech. This is acceptable up to a point; there is a strong argument for having a standard model in language teaching. The danger, however, is that this fixed model then becomes the single fixed target, without any awareness or acknowledgement of variation. Language teaching, especially in relation to the teaching of pronunciation, is a matter of knowing when to correct and when not to correct. Language teachers need to be sure that they are not correcting variants which are part of the natural variation in NS speech, or at least they need to be aware that this is what they are doing. An understanding of some of the patterns, both linguistic and social, behind this variation would undoubtedly help in this endeavour.

Finally, these findings might help in determining the integration levels of migrants within the local community, a relevant issue in 21st century multicultural Britain. The fact that identity (in the form of future plans) and attitude were both found to be significant factors in the acquisition of local variants suggests that there might be a link between language and integration that goes beyond the simple fact of learning the language in order to operate in the L2 environment. All 40 participants had, to varying agrees, learned to speak English, yet those who scored more highly on measurements to do with integration were also more likely to exhibit local, or L2-influenced variants. This is not to suggest that measuring an individual's degree of local accent would automatically produce a corresponding measurement of integration, rather that the existence of local variants in the speech of an individual might, along with other factors separate from language, be a useful indicator of integration.

7: Conclusion

The thesis began by asking three questions:

1. To what extent do non-native speakers of English acquire features of the local native-speaker accent in their own speech?
2. For those features which are variable for native-speakers, to what extent do non-native speakers acquire similar patterns of variation?
3. What factors (social and linguistic) influence the degree of both these types of acquisition?

In relation to the first question, the findings presented here suggest that NNSs do indeed acquire local accent features, and that this can occur to a considerable degree depending on the individual. In terms of the STRUT vowel, there was clear evidence of acquisition, illustrated by a movement away from the pedagogical target [ɐ] towards the local variants of [ə] and [ʊ]. Whilst no individual speaker (apart from the case-study, Marta) showed NS-like production, there was certainly a change in vowel quality in many of the speakers. The analysis of glottal variation in /t/ showed that given the right conditions, speakers were increasingly likely to exhibit glottal replacement in PreV (vowel) and PreP (pause) environments, and something other than released [t] in PreC (consonant) environment. Variation in (ing) was interpreted here as speakers exhibiting L1 and L2 influenced variants. h-dropping, although on a very small scale, also showed a degree of acquisition, but this feature was by far the most resistant to change on the evidence of these speakers.

Question two relates only to glottal variation in /t/, (ing) variation, and h-dropping. Of the three, (ing) proved to be the most likely to mirror NS patterns of variation, at least in relation to the nominal-verbal continuum. The important difference in terms of comparing NS and NNS patterns in (ing) is the fact that these particular NNS data included two additional velar variants which would be absent in most NS research. Glottal variation in /t/, while showing broadly similar patterns between NS and NNS use in terms of PreC being more likely to exhibit glottal replacement (or in this case, something other than released [t]) than PreV and PreP, in fact showed a different ordering between PreV and PreP. The case study speaker, Marta, however, replicated the NS pattern, suggesting this ordering might change at some point. There was also a

different ordering of linguistic environments at a more detailed level within the PreC environment, although it is unclear why this should be the case. It was suggested that this pattern might change with LORs of over 6 years to become more like the NS pattern found in Fabricius (2000), although this time the evidence from Marta did not support this. h-dropping, despite the small numbers, appeared to demonstrate a complete reversal of NS patterning, with function words seemingly more resistant to dropping their /h/ than content words. However, the fact that the case-study data suggested the opposite pattern, therefore replicating the NS pattern, indicates that there might be a stage (or context) at which the L2 influence overrides that of the L1.

In terms of question three, several factors, both linguistic and social, were identified as influencing these types of acquisition. In addition to the nominal-verbal continuum for (ing) and the linguistic environments for t-glottaling, the most significant linguistic factor appeared in the analysis of STRUT. It emerged in the form of the linguistic context of the vowel, with the suggestion that a following voiced sound was more likely to show a change towards the local variant. However, the reason behind this finding remains unclear, and it was felt that it might have to be regarded as a coincidence without additional data. This idea of context was then introduced in relation to possible frequency effects. After a reading of the results in terms of a lexical frequency effect bore little of any value, the possibility emerged that there was indeed a frequency effect, but it existed at the level of the linguistic context of the STRUT vowel. This was interpreted by way of exemplar theory, with more frequent contexts appearing more likely to exhibit the local variant. By focussing on phonetic context rather than lexical item, this represents a slightly different application of exemplar theory, but it is one which might, with further research, in fact add some detail to the model.

The social factors which emerged as exerting an influence showed a certain degree of consistency across the features. Length of residence (LOR) was important for all four features, and level of English (LoE) was important for three, with gender, identity, and attitude all playing more minor, yet no less interesting, roles. Whilst reasons were explored to interpret these social effects individually, their overall function was explained in terms of how they shaped the contexts of L2 use, the all-important social environments in which English is used.

It should be borne in mind that this particular study has focussed on adults who, at a minimum age of 18, are beyond any critical or sensitive period in terms of acquiring a second language, or indeed a second dialect. With this in mind, it would be interesting to carry out a similar study into the speech of the children who arrive in the UK with these adults. It is likely to be the case that the increased exposure to the L2 that comes with being at school, along with the pressure to fit in and make friends, leads to a far greater degree of acquisition than has been shown by the adults. Moreover, a situation in which different generations are engaged in different contexts of L2 use offers an insight into patterns of variation and change along the lines of the studies described in Cheshire (2005) in which the varied use of the L1 and L2 across the generations is examined. In terms of the acquisition of local features, it might be the case that having a child at school increases the likelihood of an adult exhibiting local variants, as the child's variety of the L2 will begin to influence the adult's. This is a factor that was not considered in the present study. A study such as this which includes children would be valuable both in its own right, but also as a way of comparing and understanding the different processes involved between adults and children with regard to this type of acquisition. It would also add another perspective to the question of a sensitive period for dialect acquisition.

To conclude, the study has shown that non-native speakers can and do acquire features of the local accent in their spoken English, but that this acquisition is variable. It is variable in terms of whether or not an individual will exhibit signs of acquisition in the first instance, and it is variable in terms of the degree of that acquisition when it does occur. Just as with studies into people's first language, this variation is influenced by a variety of linguistic and social factors, creating identifiable patterns. Some of these patterns reflect those found in first language studies, others show differences. In both cases, these patters can be interpreted either as illustrating similar processes across NS/NNS language use, or as evidence of different , NNS processes at work.

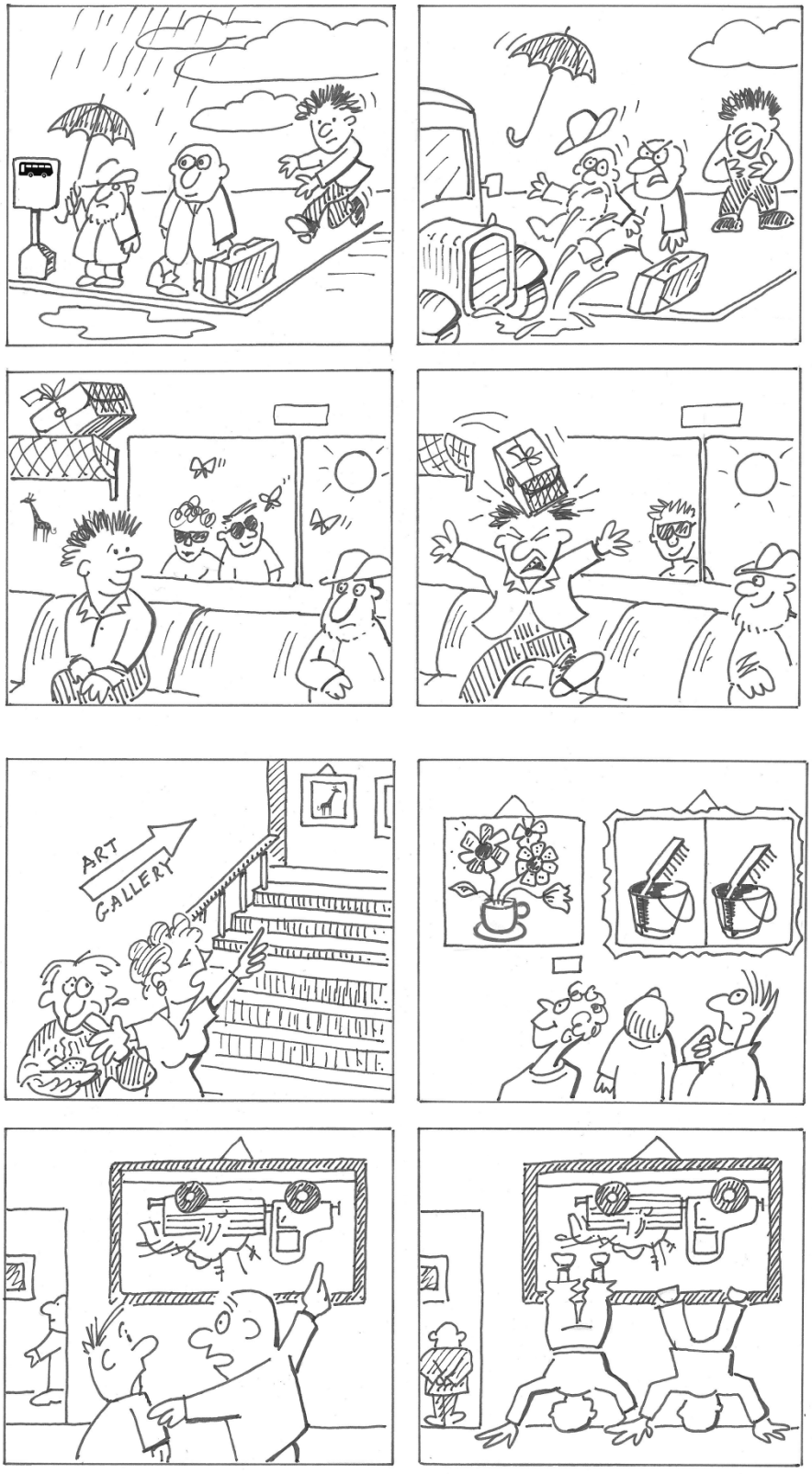
Whatever the particular interpretation of the results presented here, and whatever the nature of future research that is carried out on the basis of this study's findings, it is hoped that by developing this all important link between variationist sociolinguistics and SLA, other studies into different L2 communities and contexts will emerge. It is only by encouraging this link, both ideologically and methodologically, that we can build a

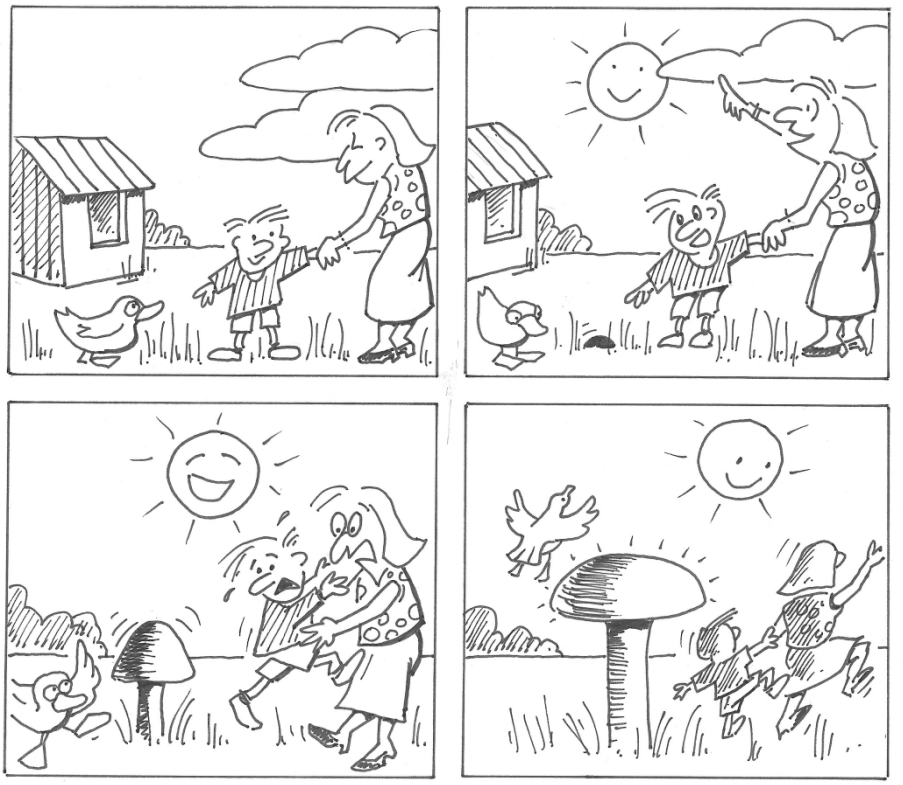
better appreciation of the processes involved in driving these patterns of acquisition, and begin to determine their significance in terms of greater linguistic knowledge, understanding and application.

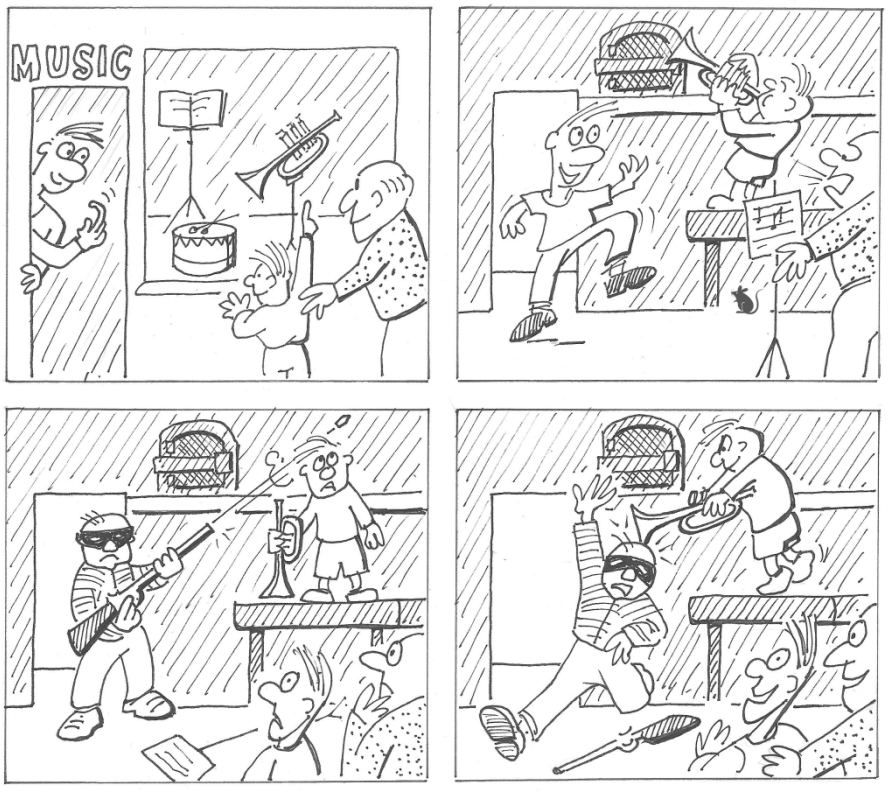
8: Appendices

8.1 Appendix 1

Cartoons used in the picture task. All produced by D.W. Drummond.






MUSIC

8.2 Appendix 2

The word list

few	clock	further
stop	grass	hat
hill	hook	father
starting	heart	hurt
key	please	smart
brush	starbucks	matter
could	class	foot
map	understood	packing
tree	purse	meet
bus	bath	parking
door	sister	kitten
metal	through	son
saw	sort	best
blood	looking	hot
sit	country	put
staff	off	more
up	sock	two
who	step	met
heat	should	hut
food	money	singing
faster	thought	desk
mother	certain	booking
good	took	cat
		church

8.3 Appendix 3

The questionnaire

This questionnaire will help to provide background information regarding Polish people living in Manchester. It will be used solely for Rob Drummond's research.

Please complete the following questions as honestly as possible. All information provided will be treated as confidential, and no individuals will be identifiable in the final report.

Ten kwestionariusz pozwoli na dostarczenie informacji, dotyczących Polaków żyjących w Manchesterze. Wszystkie zebrane informacje będą wykorzystane wyłącznie do potrzeb badań naukowych Roba Drummond.

Proszę szczerze odpowiedzieć na poniższe pytania. Wszystkie dostarczone informacje pozostaną tajne i osoby biorące udział w badaniu nie będą rozpoznawalne w końcowym raporcie.

Section 1 – Personal details *Sekcja 1 – Dane osobiste*

1.1 Age:
Wiek

1.2 Gender: Male / Female
Płeć: Mężczyzna / Kobieta

1.3 What is your first (native) language? _____
Jaki jest Twój rodzimy język?

1.4 When did you arrive in Manchester? (mm/yy) _____
Kiedy przyjechałaś / przyjechałeś do Manchesteru? (miesiąc/rok)

Section 2 – English language ability *Sekcja 2 – Umiejętności języka angielskiego*

2.1 How would you rate your level of English when you arrived in Manchester?
Please circle one option.
Jak oceniłbyś / oceniłabyś swój poziom języka angielskiego w chwili przybycia do Manchesteru? Proszę zakreślić właściwą opcję.

No English *Brak znajomości języka angielskiego*	1	2	3	4	5	6	7	8	9	10	Fluent English *Płynny język angielski*

2.2 How would you rate your level of English now? Please circle one option.
Jak oceniłbyś / oceniłabyś swój poziom języka angielskiego w chwili obecnej? Proszę zakreślić właściwą opcję.

No English *Brak znajomości języka angielskiego*	1	2	3	4	5	6	7	8	9	10	Fluent English *Płynny język angielski*

2.3 How many hours per week of English classes did you have at school…
Ile godzin języka angielskiego tygodniowo miałeś / miałaś w szkole…

2.3.1	… between the ages of 7 and 10	_____ hours per week
	… w wieku od 7 do 10 lat	_____ *godzin tygodniowo*
2.3.2	… between the ages of 11 and 14	_____ hours per week
	… w wieku od 11 do 14 lat	_____ *godzin tygodniowo*
2.3.3	… between the ages of 15 and 18	_____ hours per week
	… w wieku od 15 do 18 lat	_____ *godzin tygodniowo*

2.4 How many hours per week of English classes did you have outside school…
Ile godzin języka angielskiego tygodniowo miałeś/ miałaś poza szkołą…

2.4.1	… between the ages of 7 and 10	_____ hours per week
	… w wieku od 7 do 10 lat	_____ *godzin tygodniowo*
2.4.2	… between the ages of 11 and 14	_____ hours per week
	… w wieku od 11 do 14 lat	_____ *godzin tygodniowo*
2.4.3	… between the ages of 15 and 18	_____ hours per week
	… w wieku od 15 do 18 lat	_____ *godzin tygodniowo*

2.5 Did you have any English classes after leaving school? Yes / No
Czy uczęszczałeś / uczęszczałaś na lekcje języka angielskiego po skończeniu szkoły? Tak / Nie

2.6 If yes, approximately how many hours of English classes did you have in total in Poland between leaving school and coming to the UK? ___
Jeśli tak, ile godzin języka angielskiego (podaj przybliżoną liczbę) miałeś od czasu ukończenia szkoły do chwili przybycia do Wielkiej Brytanii? ___

2.7 Approximately how many hours of English classes have you had since coming to the UK? ___
Ile (proszę podaj przybliżoną liczbę) godzin języka angielskiego miałeś od czasu przybycia do Wielkiej Brytanii? ___

2.8 Which option best describes how much you use English and Polish on an average day at work? Please circle one option.
Która z poniższych opcji określa najlepiej proporcje użycia języka polskiego i angielskiego podczas typowego dnia w pracy. Proszę zakreślić właściwą opcję.

a) 100% Polish / *Polski*, 0% English / *Angielski*
b) 75% Polish / *Polski*, 25% English / *Angielski*
c) 50% Polish / *Polski*, 50% English / *Angielski*
d) 25% Polish / *Polski*, 75% English / *Angielski*
e) 0% Polish / *Polski*, 100% English / *Angielski*

2.9 Which option best describes how much you use English and Polish on an average day at home? Please circle one option.
Która z poniższych opcji określa najlepiej proporcje użycia języka polskiego i angielskiego podczas typowego dnia w domu. Proszę zakreślić właściwą opcję.

a) 100% Polish / *Polski*, 0% English / *Angielski*
b) 75% Polish / *Polski*, 25% English / *Angielski*
c) 50% Polish / *Polski*, 50% English / *Angielski*
d) 25% Polish / *Polski*, 75% English / *Angielski*
e) 0% Polish / *Polski*, 100% English / *Angielski*

2.10 Which option best describes how much you use English and Polish on an average day when you are socializing with friends? Please circle one option.
Która z poniższych opcji określa najlepiej proporcje użycia języka polskiego i angielskiego podczas typowego dnia w gronie przyjaciół. Proszę zakreślić właściwą opcję.

a) 100% Polish / *Polski*, 0% English / *Angielski*
b) 75% Polish / *Polski*, 25% English / *Angielski*
c) 50% Polish / *Polski*, 50% English / *Angielski*
d) 25% Polish / *Polski*, 75% English / *Angielski*
e) 0% Polish / *Polski*, 100% English / *Angielski*

2.11 Which of these statements best describes you? Please circle one option.
Które z tych zdań najtrafniej Cię określa? Proszę zakreślić właściwą opcję

a) I plan to return to Poland permanently in the next year.
Planuję wrócić na stałe do Polski w przyszłym roku
b) I plan to return to Poland permanently in the next two years.
Planuję wrócić na stałe do Polski w ciągu dwóch lat
c) I plan to return to Poland permanently in the next five years.
Planuję wrócić na stałe do Polski w ciągu pięciu lat
d) I plan to return to Poland permanently in the next ten years.
Planuję wrócić na stałe do Polski w ciągu dziesięciu lat
e) I plan to stay permanently in the UK.
Planuję zostać na stałe w Wielkiej Brytanii
f) I have no plans at the moment.
Nie mam obecnie żadnych planów.

Section 3 – Attitudes — *Sekcja 3 - Opinie*

Please circle one option — *Proszę zakreślić właściwą opcję*

3.1 Manchester is a good place to live.
Manchester jest dobrym miejscem do życia

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.2 If my English pronunciation was better, I could get a more interesting job.
Jeśli moja angielska wymowa byłaby lepsza, mógłbym / mogłabym dostać bardziej interesującą pracę.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.3 I am very self-conscious about my English pronunciation.
Czuję się bardzo skrępowany / skrępowana moją angielską wymową.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.4 English people in Manchester speak differently compared to other English people.
Anglicy w Manchesterze mówią inaczej w porównaniu do innych Anglików.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.5 English people in Manchester are not trustworthy and honest.
Anglicy w Manchesterze nie są uczciwi i godni zaufania.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.6 I have no need to improve my English pronunciation.
Nie mam potrzeby udoskonalenia mojej angielskiej wymowy.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.7 I like the Manchester accent.
Podoba mi się manchesterski akcent.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.8 I would like to lose my Polish accent when I speak English.
Chciałbym / chciałabym pozbyć się mojego polskiego akcentu, kiedy mówię po angielsku.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.9 English people in Manchester are friendly and kind.
Anglicy w Manchesterze są przyjazni i mili.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.10 More accurate English pronunciation will help me make more friends in the local community
Bardziej dokładna wymowa angielska pomoże mi zdobyć przyjaciół wśród lokalnej społeczności.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.11 It is not important for me to feel able to read in English.
Nie jest dla mnie ważne, by móc czytać po angielsku.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.12 Accurate English pronunciation is important for my job.
Dokładna angielska wymowa jest ważna w mojej pracy.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.13 More accurate English pronunciation will help me take part in the local way of life.
Bardziej dokładna wymowa angielska pomoże mi uczestniczyć w życiu lokalnej społeczności.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.14 There is no need to try and sound like an English person when you live in England.
Nie ma potrzeby, by próbować brzmieć jak Anglik, kiedy mieszka się w Wielkiej Brytanii.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.15 It is not important for me to be a part of the local community in Manchester.
Nie jest dla mnie ważne, by być częścią lokalnej społeczności w Manchesterze.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.16 I feel nervous when I have to speak in English in case people can't understand me
Denerwuję się, kiedy muszę mówić po angielsku, bo obawiam się, że ktoś mnie może nie zrozumieć.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.17 If I don't have accurate English pronunciation I can still be part of the local community.
Nawet jeśli moja angielska wymowa nie jest dokładna, mogę ciągle być częścią lokalnej społeczności.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.18 It is important for me to speak with a standard British English accent, not a Manchester accent.
Jest dla mnie ważne, by mówić ze standardowym angielskim akcentem, nie zaś z akcentem manchesterskim.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.19 I don't worry about the way I speak English in public.
Nie przejmuję się tym, jak mówię po angielsku w miejscu publicznym.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.20 It is important for me to be able to write in English.
Jest dla mnie ważne, aby móc pisać po angielsku.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.21 I am happy with my English pronunciation.
Jestem zadowolona z mojej angielskiej wymowy.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.22 Polish people who try to sound like native English speakers are betraying their Polish identity.
Polacy, ktorzy próbują brzmieć jak rodowici Anglicy zdradzają swoją polską tozsamość.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.23 I find it harder to understand people from Manchester than other English people.
Jest mi trudniej zrozumieć mieszkanców Manchesteru niż innych Anglików

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.24 I don't think Polish people need to learn English to live in England
Nie myślę, że Polacy muszą nauczyć się języka angielskiego, by mieszkać w Wielkiej Brytanii.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.25 It is not important for me to be understood by British people in Manchester in order to make new friends.
Nie jest dla mnie ważne, by być rozumianym przez Brytyjczyków w Manchesterze w celu zdobycia nowych przyjaciół.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.26 I would like to be mistaken for a native English speaker.
Chciałbym /chciałabym być wzięty / wzięta za rodzimego Anglika /Angielkę.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.27 I do not enjoy living in Manchester.
Nie podoba mi się życie w Manchesterze.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.28 It is important for me to be understood by British people in Manchester in order to get through each day.
Jest dla mnie ważne, by być rozumianym przez Brytyjczyków w Manchesterze po to, by swobodnie poruszać się każdego dnia.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.29 I am confident speaking English where both Polish and English speakers are present.
Czuję się pewnie mówiąc po angielsku w towarzystwie Polaków i Anglików.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.30 It is not important for me to have accurate English pronunciation in my day to day life.
Nie jest dla mnie ważne, by mieć dokładną angielską wymowę w codziennym życiu.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.31 I haven't noticed any difference in the way English people in Manchester speak compared to other English people.
Nie zauważyłem / zauważyłam żadnej różnicy między sposobem mówienia mieszkańców Manchesteru a innych Anglików.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.32 I am more confident reading in English since I came to Manchester.
Czuję się pewniej w czytaniu po angielsku, odkąd przybyłem / przybyłam do Manchesteru

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.33 It is important that I sound like a Polish person when I speak English.
Jest ważne, bym brzmiał / brzmiała jak Polak / Polka, kiedy mówię po angielsku.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.34 More accurate English pronunciation will allow me to be more at ease with local people.
Bardziej dokładna wymowa angielska ułatwi mi kontakty z lokalnymi mieszkańcami.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.35 My English has not really improved since I have been living in Manchester.
Mój angielski nie poprawił się za bardzo odkąd zamieszkałem / zamieszkałam w Manchesterze.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.36 The more I get to know English people in Manchester, the more I like them
Im bardziej poznaję Anglików z Manchesteru, tym bardziej ich lubię.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.37 As long as I can be understood, I don't need to improve my English pronunciation.
Jeśli jestem rozumiany, nie muszę udoskonalać mojej angielskiej wymowy.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.38 It is important to sound like a native speaker when speaking English
Jest ważne, by brzmieć jak rodzimy Anglik, kiedy mówisz po angielsku

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.39 I am concerned that people won't understand me on the telephone.
Martwię się, że nie będę zrozumiany, kiedy mówię przez telefon.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.40 I would like my pronunciation to be more like that of the local Manchester people.
Chciałbym / chciałabym, żeby moja wymowa była podobna do tej typowej dla Manchesteru.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.41 English people in Manchester won't respect me more just because I have accurate English pronunciation.
Anglicy w Manchesterze nie będą mnie bardziej szanować tylko dlatego, że mam dokładną wymowę angielską.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

3.42 I have learned many new English words since I came to Manchester.
Nauczyłem / nauczyłam się wielu nowych słów odkąd przyjechałem / przyjechałam do Manchesteru.

Strongly Disagree *Zdecydowanie się nie zgadzam*	1	2	3	4	5	6	7	Strongly Agree *Zdecydowanie się zgadzam*

Thank you. Your help is very much appreciated.

Bardzo dziękuje. Jestem wdzięczny za Twoją pomoc w wypełnieniu powyższego kwestionariusza.

8.4 Appendix 4

Calculations regarding internal consistency and correlations of the attitudinal section of the questionnaire.

Factor	Cronbach's alpha (standardized)	
Anxiety (anx)	0.809	Most factors reach the suggested (for L2 research) threshold of 0.7, and none dip below the absolute minimum of 0.6 (Dornyei 2002).
Attitude (att)	0.647	
Awareness (aw)	0.797	
Attitude towards local accent (awa)	0.694	
Desire to lose one's accent (ch)	0.629	
Instrumental (ins)	0.731	
Integrative (int)	0.803	
Motivation (see below)	0.882	

		LOR	ch	anx	att	aw	awa	ins	int
ch	Pearson Correlation	-.077	1.000	.386*	.022	-.209	-.007	.361*	.455**
	Sig. (2-tailed)	.637		.014	.892	.197	.968	.022	.003
	N	40	40	40	40	40	40	40	40
anx	Pearson Correlation	.066	.386*	1.000	.052	.096	.070	.402*	.696**
	Sig. (2-tailed)	.687	.014		.750	.557	.666	.010	.000
	N	40	40	40	40	40	40	40	40
att	Pearson Correlation	-.164	.022	.052	1.000	-.178	.448**	.124	.261
	Sig. (2-tailed)	.311	.892	.750		.272	.004	.445	.104
	N	40	40	40	40	40	40	40	40
aw	Pearson Correlation	.248	-.209	.096	-.178	1.000	.087	.087	-.008
	Sig. (2-tailed)	.122	.197	.557	.272		.594	.593	.962
	N	40	40	40	40	40	40	40	40
awa	Pearson Correlation	.175	-.007	.070	.448**	.087	1.000	-.196	-.027
	Sig. (2-tailed)	.279	.968	.666	.004	.594		.225	.870
	N	40	40	40	40	40	40	40	40
ins	Pearson Correlation	.023	.361*	.402*	.124	.087	-.196	1.000	.549**
	Sig. (2-tailed)	.887	.022	.010	.445	.593	.225		.000
	N	40	40	40	40	40	40	40	40
int	Pearson Correlation	-.236	.455**	.696**	.261	-.008	-.027	.549**	1.000
	Sig. (2-tailed)	.142	.003	.000	.104	.962	.870	.000	
	N	40	40	40	40	40	40	40	40

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Due to certain factors showing significant correlation, the following factors were removed: *anx, awa*. In addition, the two motivation factors, *ins* and *int* were conflated.

8.5 Appendix 5

An example of the process behind the frequency lists. The first column shows a selection of words taken directly from the conversation data. The second column shows the result of conflating these words into base words; for example, *come, comeback, comer, comes* and *coming* all conflate into the base word 'come'. The third column shows the result of removing any base words which are used by fewer than three different speakers. A similar process was carried out in relation to the words in the BNC frequency list; related

STRUT words from conversation data		Conflated into base words	Only those base words used by 3 or more speakers
above	consultant	above	another
acupuncture	countries	acupuncture	blood
adjust	country	adjust	brother
adult	countryside	adult	bus
another	couple	another	but
assumption	cousin	assumption	come
assumptions	cousins	become	company
becoming	cover	blood	country
blood	crunch	brother	couple
bloody	cultural	brussels	cousin
brother	culturally	budget	crunch
brothers	culture	buffer	culture
brother's	cultures	bump	
brussels	cup	bunch	
budget	come	bus	
buffer	comeback	but	
bump	comer	butter	
bunch	comes	button	
bus	comfortable	club	
buses	coming	colours	
but	companies	come	
butter	company	comfortable	
button	confronted	company	
buy	construction	confront	
club	constructions	construction	
colours		consultant	
		country	
		couple	
		cousin	
		cover	
		crunch	
		culture	
		cup	

words were conflated, and their frequencies added together. If any remaining conversation words did not appear in the resulting BNC list, they were discarded. This was rarely the case, as the least frequent words in the BNC list had usually already been discarded by virtue of them being used by fewer than 3 speakers.

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