A Sociophonetic Study of Aberdeen English: Innovation and Conservatism

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To my parents

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Abbreviations

MC	middle-class
WC	working-class
SSE	Scottish Standard English
ScE	Scottish English
SVLR	Scottish Vowel Length Rule
LMM	Linear mixed-effects model
GLMM	Generalised linear mixed-effects model
f1	Vowel formant 1
f2	Vowel formant 2
WF-ratios	Watt-Fabricius ratios
sd	standard deviation
ED	Euclidean distance
CoP	Community of Practice

1 Introduction

> The advent of the North Sea petroleum industry in the early 1970s led to a sudden massive influx of immigrants, with which the city's [Aberdeen] physical and social infrastructure have coped remarkably well: however the long-term effects on the language of the North-East, as well as other aspects of the city's and the region's traditional culture, remain to be assessed (McClure 2002: 5).

While there is a large body of sociolinguistic literature on a number of varieties of Scottish English and Scots, the accent of Scotland's third largest city has so far received only very little attention. This is unfortunate, since Aberdeen is a very attractive place for a sociolinguist to carry out research. For a start, it is quite remotely located on the coast of North-East Scotland and has developed fairly independently from the other urban varieties in Scotland and has retained its very distinct linguistic features for a long time. Also, being the northernmost major city in Britain makes Aberdeen the natural termination point of the diffusion of the many accent changes that have spread in a wave-like fashion from London (Kerswill 2003), some of which are by now well-established in the speech of many younger Glaswegians (Stuart-Smith et al. 2007). Most interesting, however, are the very recent changes to the city described by Derrick McClure in the quotation at the top of this page. Since the discovery of oil in the North Sea, Aberdeen has changed dramatically from being a city with a very provincial character to becoming the cosmopolitan oil capital of Europe. Along with this came a large-scale immigration of people from elsewhere in Scotland and abroad seeking jobs in the new industry, breaking up the long-standing close-knit network that had existed before.

This study sets out to fill the current research gap and describe and discuss the "long-term effects on the language" (McClure 2002: 5) in the accent of Aberdeen about 35 years after the initial migration wave started. Adopting a dialect contact framework (Trudgill 1986), it traces variation patterns in the speech of 44 Aberdonians from three age groups and covers six phonological variables typically associated with North-East Scotland, the varieties of the Central Belt and those spreading from London. The main aim is to provide a macro view on current variation patterns and shed some light on the development of the urban variety in the light of the social changes. This will also allow us to test current theories of the diffusion of linguistic features in general and following migration in particular. In addition, I propose and test a methodology of measuring an individual's variation patterns as regards innovation and conservatism in comparison to their peers.

In the following chapter, I will first outline the non-linguistic setting to provide the necessary background on the historical developments of Aberdeen and the North-East before and particularly since the oil boom. Furthermore, it contains a section on the social structure of the city today. Chapter 3 describes the linguistic situation in Scotland. After a brief historical overview I focus on the influential Aitken model of the polar of Scots and English (Aitken 1984a) and previous work on regional and social variation in Scots and English in Scotland in general and the North-East in particular. The fourth chapter provides the theoretical frameworks, which form the backbone of this study. Taking Trudgill's (1986) original dialect contact framework as a starting point, I discuss more recent developments in the assessment of contact-induced change in the diffusion of phonological features. Also, this chapter provides an overview of how innovation has been modelled so far by scholars working in variationist sociolinguistics. Chapter 5 puts the Aberdeen study in relation to previous work carried out within a dialect contact framework and outlines three research propositions that will be addressed in the current study. In chapter 6 I outline the study design as well as the methods of the phonetic and statistical analysis. Also, in this chapter I propose a methodology of measuring a speaker's innovation and conservatism based on the results of the statistical measurements. The following chapter treats the linguistic variables under study. The sub-chapters follow the same pattern. I first provide a more detailed background discussion to the specific variable, focussing on previous research both in Scotland and, where appropriate, elsewhere. This is followed by a section that provides more detailed information on the methodology used in the analysis of the variable under question. In the 'Findings' sections I first outline the results on the descriptive level before turning to the findings of the statistical analysis. Each sub-chapter is rounded off by a discussion of the findings in relation to previous research. In chapter 8 I first provide a more general assessment of the results presented in the previous chapter before picking up on the research question posed in chapter 5. The final chapter provides a brief conclusion and points out desiderata for future research.

2 Non-linguistic setting: Aberdeen and North East Scotland

With a population of approximately 207,000 (June 2006, Aberdeen City Council 2007b) Aberdeen, located at the mouths of the Rivers Don and Dee is Scotland'sthird-largest city after Glasgow and Edinburgh. It is the administrative, cultural and financial centre of the North East (also see Map 2.1). Aberdeen is the northernmost city in the United Kingdom and has a very remote location. The next sizeable city (Dundee) is about 70 miles away, the populous Central Belt about 200 miles.

The North East of Scotland is – as McClure (2002: 1) puts it – "not simply a geographical expression" but rather one of a distinctive regional identity. Between 1890 and 1975 the North East comprised the counties of Aberdeenshire, Banffshire, Kincardineshire and the County of Moray. After the 1973 Local Government Act, which came into effect on 16 May 1975, the same area was referred to as the Grampian Region. It was made up of the City of Aberdeen, Banff & Buchan, Gordon, Kincardine & Deeside and Moray (Scottish Office 1979-1992, 1980: 1). Following the 1994 Local Government Act, in 1996 the internal borders were redrawn again. The former Grampian Region is now made up of Aberdeen City, Ab-

Map 2.1: The location of Aberdeen in Scotland

erdeenshire (subsuming the former counties of Banff & Buchan, Gordon and Kincardine & Deeside) and Moray (Office of Public Sector Information 1994).[1]

The aim of this section is twofold. First, I will give a very brief overview of main historical events in the city of Aberdeen and – where appropriate – the North East in general. I will then turn to the post-1960s effects of the oil boom on the city's economic and particularly social scape and will also discuss the current socio-demographic structure, which is important for the analysis of the linguistic data in Chapter 7.

2.1 The historical developments up to 1970

The area around Aberdeen was first inhabited around 8,000 years ago by a Mesolithic culture which settled at the mouths of the Rivers Don and Dee. From around 3000 to 2500 BC there are traces of Neolithic settlers who only had little influence and left only few traces. About 2000-1800 BC a new people began to land in the North East, coming from what is today Holland and the region around the Rhine (Simpson 1963: 68–71). By the time of the Roman invasion in the first century AD at least the "upper strata of the population were of Celtic race" (Simpson 1963: 74). After the collapse of the Roman power, the North East became part of the Pictish kingdom. Until 1136, Aberdeen comprised mainly the area south and north of the River Don, which today is known as Old Aberdeen. Starting in that year under the rule of King David I, there was a development of a settlement around the river Dee which was referred to as New Aberdeen. For several decades the two places developed more or less independently. In 1319, King Robert the Bruce granted the town the status of a *royal burgh*. The foundation of *King's College*, now part of the University of Aberdeen and the fifth oldest in the UK, in 1495 is another milestone in the city's history. From 1593, when George Keith, 5th Earl Marischal founded *Marischal College*, to 1860 Aberdeen even had two separate universities (Simpson 1963: 84). By the 17th century the estimated population of the burgh was 8,000. Up until the

[1] This information is helpful and necessary in order to understand the complex migration patterns as well as current population distributions referred to below. Furthermore, recent studies such as that of Llamas (2000), (2006), (2007a) in Middlesbrough or Burbano-Elizondo (2006) in Sunderland have pointed out the impact of changing county boundaries on speaker's local identities and resulting speech patterns.

18th century, the main source of income and employment was fishing (Gray 1963: 100).

Like many cities Aberdeen saw large-scale population growth and a rise in wealth as a result of the Industrial Revolution. In 1755 there were about 15,400 inhabitants in the two city parishes of Oldmachar and St Nicholas; by the time of the first census conducted in 1801 the population had risen to just under 27,000. The industrialisation of Aberdeen was largely determined by its location and the natural resources that were available. Since it was poorly located for the North American markets, the major branches were the exploitation of natural resources, such as fishing and granite extraction, as well as shipbuilding, ship repairing and marine engineering (cf. Lee 1996: 212).

The fast-growing local textile industry had a major effect on the city's population and by 1851 there were nearly 72,000 people in Aberdeen. The following years saw a partial decline of this industry, but the vibrant fishing industry that developed over the last 25 years of the 1800s led to another extreme population increase and by the turn of the century the population figures stood at 153,000. In the first half of the 20th century the population increased modestly by about 20% (Blaikie 2000: 47–48).

By 1951 Aberdeen had a population of about 180,000. However, the post-war period brought many negative changes. The traditional industries – fishing, paper-making, food processing, marine repairing, shipbuilding and plant handling machinery – that had been well established for several decades were in decline and as Harris et al. (1988: 1) point out "the Aberdeen economy was relatively depressed". This included indicators such as bad housing and ill health, but overall the situation was far better than in Glasgow at the same time.

The economic problems were mostly due to the lack of well-paid job opportunities so that during the 1960s Aberdeen and the whole North Eastern region of Scotland experienced large-scale out-migration of people trying to find jobs elsewhere. In fact it had the highest rate of emigration in Britain (Harris et al. 1988: 6; Ng 1969; Jones 1982a: 37). Aberdeen alone lost more than 10,000 people because of out-migration between 1951 and 1961 and another 15,000 by 1971. Nevertheless, the population figure was fairly stable because of very high birth rates (Blaikie 2000: 47f.). For the Grampian region as a whole Jones (1982b: 18) gives the total population change as -0.4% for the period 1961-1971; a natural increase of 5.5% as against a -6.0% by migration.

A very important observation that also helps us understand why until very recently (Chapter 3.5) the Aberdeen dialect was considered very traditional and much more homogenous than the urban varieties of Dundee and the Central Belt comes from Blaikie (2000: 70):

> Although most inward migrants came from the North East hinterland, following the advent of the oil industry greater numbers arrived from farther afield. Once the prevalence of North East origins among its populace was cited as the reason for Aberdeen having a more provincial character than most cities of comparable size. Indeed before the Second World War no more than 5 or 6 per cent of the population came from outwith Scotland. Since then, however, the city has become increasingly cosmopolitan.

This was going to change drastically over the next decade and a half with the discovery of gas and oil in the North Sea.

2.2 The effects of the oil boom

While the post-war years were characterised by out-migration, the discovery of oil and gas reservoirs in the British waters of the North Sea reverted this trend and made Aberdeen the oil capital of Europe. Gas was first discovered by British Petroleum (BP) in 1965 but was serviced mainly from English ports. Oil was first discovered in the Montrose field four years later with most of the larger oil fields discovered in the first half of the 1970s (Harris et al. 1988: 16).

The effects the oil findings had on the city comprised all possible areas – including the cityscape, culture, local environment, housing, and not least population structure. However, the oil industry did not transform the city overnight. In fact, as Newlands (2000: 127) points out the beginnings almost went unnoticed in the local press, perhaps because Aberdeen was only one of several centres of North Sea oil at that time besides Edinburgh/Leith and Dundee. In the end, the main reasons put forward for the choice of Aberdeen were the existence of a good harbour and airport, its size, the preference of oil companies to congregate together and particularly the efforts of the local council (Mackay & Moir 1980: 10–14; Newlands 2000: 127–129).

At this point I want to briefly outline the major developments as regards the oil industry in the city, particularly between 1970 and the mid-1980s. It is particularly the changes in occupational structure, population change and social effects that are important to our understanding of the current linguistic situation. One major problem in outlining this has been commented on by a number of scholars from different backgrounds: the lack of comprehensive statistical data (e.g. Hunt 1977: 105; Mackay & Moir 1980: 30; Newlands 2000: 133).

The main economic effects of the discovery are described by Harris et al. (1988: 32f.) as

1. an increase in total employment
2. a rise in average income and
3. pressures on the local economy and rising prices, and even shortages of some goods.

The rate at which the oil industry changed the city is astounding: while in 1970 there was a total of 86 oil-related companies in Aberdeen, this figure had almost doubled a year later and continued to rise to 745 in 1979 (Mackay & Moir 1980: 28).

Of course the oil boom also affected the labour market, especially as about 90% of the oil-related jobs in the North East were located in Aberdeen itself (McDowall and Begg 1981; cited in Harris et al. 1988: 33). Furthermore, for every four jobs in the oil industry another three jobs were created in other sectors such as local shops, restaurants, transport, schools and hospitals. By 1981, more than a quarter of the city's employment force relied on oil-related jobs, a figure that was going to rise to over 40% by 1985 (Harris et al. 1988: 38). The oil industry continued to be of great importance for the Aberdeen economy through the 1990s (Newlands 2000: 151) and the 2000s, with more than 33,000 jobs of a total of 142,000 in the energy sector (Aberdeen City Council 2007c).[2]

Another major effect of the oil boom that is of particular importance to the current study is that of population change and especially in-migration. The local workforce was not sufficient to cover all the new jobs available; furthermore specialists were needed for some of the tasks. In the following I will outline the different groups of incomers. Again, however, we encounter the problem that much of the statistical data that would be required to give a full account is either not available

[2] Unfortunately, the report does not state explicitly how many of these 33,000 jobs are in the oil industry.

to me because of data protection policies[3] or has not been collected or published to a sufficiently detailed degree. As Mackay & Moir (1980: 79) point out

> i]t is not possible to obtain migration data for individual districts and the only relevant source is the Registrar General's analysis of the National Health Service Central Registrar data (i.e. doctors' lists).

Because of a large number of publications by the North Sea Oil Panel, a research group that focussed mainly on the economic and to a lesser degree sociological effects of the oil industry in Scotland, we can draw a fairly comprehensive picture for the period between 1970 and approximately 1982. However, after that much less dedicated research work is available so that the description of possible effects from then on becomes sketchier.

Before I go into discussing migration trends I shall briefly define the term 'migration' and 'migrant' and the different types of migration as they are used in the present study. As Pavlinić (2001: 505) points out the conception of what constitutes a migrant is different "according to whether it is viewed from a legal, economic, sociological, anthropological, psychological, pragmatic, or political point of view". He then goes on to define a 'migrant' on the basis of the Council of Europe's *Project No. 7* (1986, Pavlinić 2001: 505-506.) depending on whether the definition is by his past, present or future as "*someone uprooted from his homeland*", as a "*settler*" or as a "*cultural traveler* caught in a transit situation" (italics in the original), thus excluding internal migrants, i.e. people changing place permanently within one country. Therefore, it is more useful to apply a definition of migration such as that provided by Bogue (1959: 489, cited in Jones 1982a: 1–2) which uses the term migration

> for those changes of residence that involve a complete change and readjustment of the community affiliations of the individual. In the process of changing his community of residence, the migrant tends simultaneously to change his employers, friends, neighbours, parish membership, and many other social and economic ties.

This definition is still accepted today, as e.g. Scott & Marshall (2009: online) show:

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[3] I have tried to get access to several sources of census and inter-census data that would be most helpful for my argumentation, especially the data provided as part of the CIDER (Centre for Interaction Data Estimation and Research), CeLSIUS (Centre for Longitudinal Study Information and User Support) and LSCS (Longitudinal Studies Centre - Scotland) projects provided by census.ac.uk. However, this data is exclusively made available to researchers affiliated with a higher education organisation in the United Kingdom (personal communication, most recently: 30 June 2009).

> Migration involves the (more or less) permanent movement of individuals or groups across symbolic or political boundaries into new residential areas and communities.

Furthermore, scholars usually distinguish between external (or international) migration, i.e. between countries and internal migration, that is population shifts within a nation state (e.g. General Register Office for Scotland 2009a; Scott & Marshall 2009: online: internal migration). This requires some refinement for the present study in order to distinguish between those migrants coming from Scotland and those from the rest of the UK (e.g. Mackay & Moir 1980: 82; General Register Office for Scotland 2009b: 3). Therefore, I will use the following terminology: 'internal migrants' for people moving within Scotland, 'external migrants' for those coming to Scotland from the rest of the UK and 'overseas migrants' for those coming from places outside the UK.

Another distinction has to be made as regards types of migration. The UNESCO (2005) gives six such types:

- 'temporary labour migration' is for a limited period of time to take up employment
- 'highly skilled and business migration' involves people with qualifications moving within internal or external labour markets
- 'irregular or illegal migration' is that by people coming to a country without the necessary documents or permits
- 'forced migration' involves people having to move because of external factors
- 'family reunion migration' is defined as bringing family members to the host country
- 'return migration' is that of people who return to their countries of origin after a period of time in another country.

In the context of the present study it is particularly the second type of migration that is of interest, although temporary labour migration has been a major issue in the 1970s (e.g. Marr 1975; Taylor et al. 1981). However, it is unlikely that labour migrants who only stayed in the region for a short while will have left their mark on the local accent. We can also discard illegal and forced migration in this context. However, the last two types are more difficult to ignore if we take family reunion migration to also apply to those people who started out as travelling workers and after a while moved to the Aberdeen area permanently and brought their families. Also a slightly modified definition of return migration would be useful in the present context, taking into account that in the 1960s many young people emigrated from the region because of the poor situation on the job market and would return to take up employment in the new economy. Therefore, return migration will be used in this sense.

One early study (Marr 1975) describes the status of foreign – in the sense of non-UK – nationals in North East Scotland in greater detail for the autumn of 1974. The author also mentions some definitional and other shortcomings (Marr 1975: 2–3) but points out on the following page that about 80% of all foreigners living in the region were identified.

In the 1971 census of the total population of the Grampian Region of 452,145 only 634 or 0.1% were registered overseas foreigners; by June 1974 this figure had risen to 1,576 of 456,841 or 0.3%, so while in absolute terms the figures increased sharply, their number relative to the population is almost negligible. Most overseas migrants (approximately 75%), of whom the majority were in the oil business and from the United States of America (approximately 78%) and the rest of Europe (approximately 19%), often did not stay longer than 18 months (Marr 1975: 8–10).

The data provided by Mackay & Moir (1980: 78–82) is a description of the population changes in the Aberdeen area for the period 1974-1979 which clearly demonstrates the substantial population increase and allows for more detailed assessment of the immigrants' origins. The net immigration for this period separated into regions of origin is summarised in Table 2.1. It shows that within six years almost 41,000 people migrated into the Grampian Region[4].

Almost one third of these migrants came from overseas and with the exception of a small number of foreign students were almost exclusively oil workers and their families. An indication of the country of origin is not available so that they assume a distribution similar to that of Marr (1975) cited above. It is difficult to assess how many of those settled in the region on a more permanent basis, but the 2001 census (Aberdeen City Council 2004: 43) statistics for place of birth gives 1,851 North Americans for Aberdeen City – thus excluding the children of immigrants who were

[4] No further information is provided on the make-up and role of the group of migrants from the Armed Forces so that they will not be considered here.

Table 2.1: Net immigration to the Grampian Region 1974-1979 (based on Mackay & Moir 1980: 81: Table 4.2)

Area of origin	N
Ayrshire	868
Borders	58
Argyll	1,825
Fife	1,154
Glasgow	2,223
Highland	1,628
Lanark	1,395
Orkney	65
Lothian	963
Tayside	1,610
Forth Valley	878
Western Isles	153
Dumfries	58
Shetland	-130
Total Scotland	12,758
England & Wales	8,713
Northern Ireland	628
Overseas	14,287
Armed Forces	4,523
Total	40,909

born in Scotland. Their linguistic input to the changing, or rather developing, urban Aberdonian variety was probably much less significant than that of the other immigrant groups. Overall, their presence, though, has contributed to the city becoming more cosmopolitan and more prone to linguistic change through the break-up of the tight regional ties.

The second largest immigrant group is that of external migrants, i.e. those coming to Aberdeen from England & Wales and Northern Ireland. They account for over 9,300 people, but unfortunately there is no further regional or social division. However, as Taylor et al. (1981: 99–102) point out, the external and overseas migrants that moved to Aberdeen were generally highly qualified white-collar workers.

This leaves us with the internal migrants numbering just under 13,000. Here we note straightaway the very large number of people from the Central Belt, and particularly those from Glasgow (2,223) and the surrounding areas of Argyll (1,825) and Lanark (1,395). This can to a large degree be attributed to the living conditions in Glasgow, which was severely overcrowded up to the mid-1970s, and also to the two major recessions that hit the region’s shipbuilding and other heavy industries between the 1950s and 1970s, in which in total over 230,000 jobs were lost. Thus, it is not surprising that particularly people from these areas moved to the North East to take the emerging job opportunities. Most of these migrants were blue-collar workers, who initially came to Aberdeen as so-called ‘travelling workers’, i.e. as temporary labour migrants, to work onshore or on the oil rigs. Initially, the workers’ families would stay in their home regions and move to Grampian only at a later stage (Taylor et al. 1981: 99–102). The other major internal migrant groups are those from Tayside, including the city of Dundee, Fife and the Highlands. There is no more detailed background information on these.

A survey of the offshore workforce by the Department of Energy carried out in 1979 to elicit information on place and permanence of residence, migration family size and occupation cited by Mackay & Moir (1980: 37–40) provides further insights into the migration structures. Of the 8,164 persons that are covered in this study, about 16.5% lived in Aberdeen City, with another 7.3% in the Grampian Region. About 31% gave their place of residence as somewhere else in Scotland, with Strathclyde – including Glasgow City – (13.2%) being by far the largest group followed by Tayside (5.6%). Of those not living in Scotland, the vast majority live in England (30.2%). There is no further regional subdivision. Compared to a study from the previous year, they note an increase of offshore workforce living in the city and region, which “support[s] the view that over time more and more offshore workers will move their homes to the Aberdeen area” (Mackay & Moir 1980: 38). However, they also point out that “it is still too early to be firm about that conclusion” since the proportions vary by the type of offshore activity. Results of a study carried out by the authors show a steady increase in residence of offshore workers in the Aberdeen area between 1975 and 1979. They conclude by noting that at the end of the 1970s “[h]ouse prices, rents and the general housing shortage are still deterrents in Aberdeen but as these problems decrease in scale more and more offshore personnel are moving with families to the Aberdeen area” (Mackay & Moir 1980: 40).

For the period between 1981 and 2001 Blaikie (2000: 58–59) notes an overall increase in the population in Aberdeen City of approximately 10,000 people due to further in-migration. He describes a development that saw both the emergence of large-scale new housing in the city with the population of Bridge of Don (now a lower MC/upper WC area) rising from 1,500 in the 1950s to over 25,000 by 2001 but also counter-urbanisation, that is the out-migration from Aberdeen to old and new towns on the outskirts of the city.

I will now describe relevant parts of the migration data sections of the censuses 1981, 1991 and 2001 in detail.[5] The data stems from questions about the area of usual residence in the year prior to the census.

For 1981 we find that of the people numbering just over 8,000 who had moved to Aberdeen from elsewhere in Scotland 29% came from the Grampian Region, 7.5% (599) came from Strathclyde and just over 5% (427) from the Lothian Region. The Tayside region (which includes Dundee) and Highland region (including Inverness) are the other two areas from which relatively large numbers of people migrated (just under 4% respectively). Some 1,740 people moved to Aberdeen from England. This includes 580 of Scottish origin and some 1,045 born elsewhere in the UK (Registrar General Scotland 1984: 102). Here, by far the single most significant group are former residents of the South-East (41%). 496 people came to Aberdeen from countries that are outside Europe and do not belong to the Commonwealth. They are not split up any further, so that we can only assume that many of them are of American origin.

More detailed information is available, e.g. for economical activity of migrants or distance of move. For the former there is no clear diverging pattern between groups, but for distance of move, we note that considerably more males (1021) than females (783) moved to Aberdeen from England and Wales, which may lead us to conclude that many of the male workers had not yet brought their families to Aberdeen (Registrar General Scotland 1984: 104).

At the same time some 5,400 people had left Aberdeen for locations elsewhere in the region, the rest of Scotland and England & Wales (Registrar General Scotland 1984: 104). We note that some 400 people had left the city for a location in Strathclyde and some 230 moved to the Lothian region. Some 520 people of non-Scottish UK origin left Aberdeen for England and Wales.

[5] The notes to the 1981 census data on migration (Registrar General Scotland 1984: v) define migrants as “those people in the usually resident population whose usual residence one year preceding Census was different from their usual residence at Census date.” This is of course a much broader definition of migrants than that given above and will thus also include people who moved house within the same area or city.

It is difficult to assess the significance of the emigration data in the greater migration context, since we do not know anything about the migrants' status or regional origin beyond country of birth, i.e. we cannot say if it was a case of Aberdonians leaving the city, people from the Central Belt returning or people from elsewhere who happened to live in Aberdeen and then moved to other regions.

The migration data from the 1991 Census (General Register Office for Scotland 2007) show that in the year before the data collection of internal migrants, numbering approximately 5,000 (excluding the city itself), over 48% moved from Aberdeenshire, with people from Edinburgh accounting for just over 6% and people from Glasgow and the former Strathclyde for over 14%. Another 2,100 people moved to the city from England and Wales. In total, about 9.5% of its inhabitants at that time were of English or Welsh origin, a figure just below that of Edinburgh, but twice as high as those of Glasgow and Dundee (Blaikie 2000: 71). 2,200 people came from overseas. Overall, this shows that in comparison to the previous census, there is a reduction in incomers to the city itself; however the Grampian region saw a population rise of 5.3% between 1988 and 1993 (Blaikie 2000: 59).

We find that similarly to 1981 more people migrated to Aberdeen from Glasgow and former Strathclyde than in the other direction, since only approximately 580 people moved away from Aberdeen to somewhere in the Western Central Belt. There is no data in General Register Office for Scotland (2007) on how many people left for places outside Scotland or as regards country of birth.

The 2001 census migration data (Fleming 2005: Tables 1A-1B) shows that in the year before the census some 6,700 people moved to Aberdeen City from the rest of Scotland with about the same amount of people leaving the city. About 2,100 external migrants moved to the city with approximately 2,700 people moving from Aberdeen City to a place outside Scotland but within the UK (Tables 2A-B). Similarly to the 1981 results, there is also data on the local authority areas in England that the incomers came from (Tables 3A-B). We find that people from the South East of England still make up by far the single largest group of immigrants (32%) with 'Northeners' (North East, North West, Yorkshire & the Humber) following closely.

Summing up, over the last five decades Aberdeen and the North East have seen major changes that have reshaped the region not only in terms of population structure, but even more so on the socio-psychological level. Until the oil boom, the city and region were strongly interwoven and while the standards of living were in decline and young people were leaving the area, there was still a very strong feeling of North Eastern identity that expressed itself not least in a peculiar and very distinct regional variety of Scots, the Doric (cf. Chapter 3 for a more thorough discussion). While the oil industry brought many benefits to the city it was “not the unqualified success story that the image of a ‘boom town’ suggests” (Newlands 2000: 152). The psychological impact which the sudden and enormous influx of people seeking work in the new industry must have had on the local community is hard to imagine. There were almost 41,000 immigrants in the six years of 1974-1979 alone; the changes in the cityscape, the sudden shortage of affordable housing as well as the displacement of the traditional industries were dramatic. Also, the large-scale suburbanisation and the emergence of a growing commuter belt in the 1980s and 1990s contributed strongly to the break-up of the dense social network ties that had existed before the immigration began. Describing and evaluating the sociolinguistic effects of these processes will form the backbone of this study.

2.3 The social structure of the city today

In this section I will briefly discuss those parts of the social structure of Aberdeen City today that are relevant to the present study. I will particularly focus on the areas of the city in which I carried out my fieldwork. The most comprehensive data available is that collected in the 2001 census and made available subsequently in a number of publications. Where more recent data is available I will also include this.

In 2001, Aberdeen City had a population of 212,125, the seventh highest of Scotland’s 32 local authority units[6] and third highest of the major cities. 15.7% of the inhabitants gave a country of birth other than Scotland, of which people born in England (8.4%) are by far the most populous group. People from the rest of the UK and Ireland make up about 1.4% of the population with people from other EU countries accounting for 1.5%. 4.4% were born elsewhere. As regards the overall number of people born outside Scotland, Aberdeen City fares above the Scottish average and both Glasgow and Dundee, but has considerably fewer English-born inhabitants than Edinburgh and Aberdeenshire (both about 12%) but double the

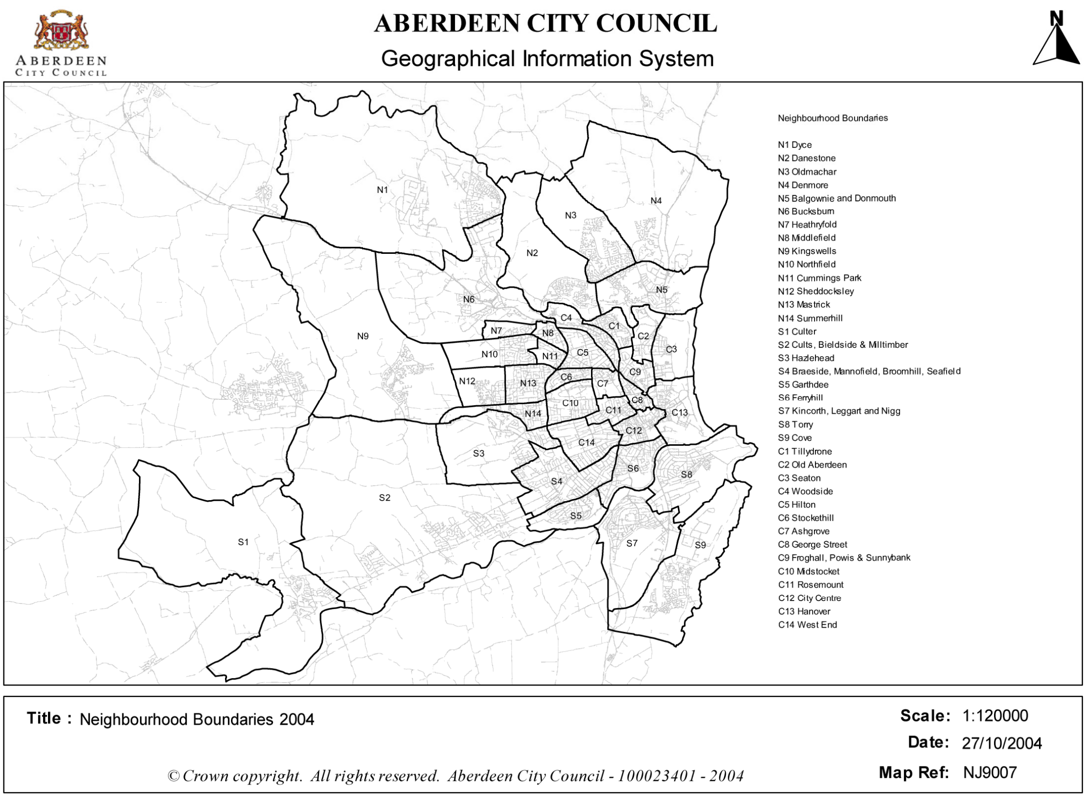
[6] The others being in the Central Belt and Aberdeenshire.

amount of Glasgow (4.2%) (Aberdeen City Council 2003: tables 1.5). Of all people aged 16-74 in 2001, 68% were economically active (table 9a) – higher than the Scottish average of 65%. About 8.6% of the city's workforce has a job in the mining and quarrying sector which includes oil and gas. This figure is well above the Scottish average (1.2%) and the three major cities (between 0.2 and 0.5%); only Aberdeenshire with a percentage of 6.5 has a similarly strong affiliation to oil and gas (table 11a).

I will now turn to the description of some individual neighbourhoods. These neighbourhoods belong to the very large majority of people participating in this study. For a detailed discussion of the informant groups, see Chapter 6.

Six neighbourhoods of Aberdeen City (see Map 2.2) are of particular relevance to the current study. These are: C14 West End, N6 Bucksburn, N10 Northfield, N13 Mastrick, S2 Cults, Bieldside & Milltimber and S8 Torry, the population of which are shown in Table 2.2.

The make-up of these areas is very different. The West End is a centrally located part of town, just to the west of Union Street, the main shopping street in Aberdeen City. It comprises the areas of Queen's Cross and Holburn and offers a



Map 2.2: Aberdeen City neighbourhood boundaries 2004 (Aberdeen City Council 2004: 4)

Table 2.2: Total population of Aberdeen neighbourhoods most relevant to this study (Aberdeen City Council 2004: Table 1a)

Neighbourhood	Total population
West End	9,499
Bucksburn	7,381
Northfield	5,672
Mastrick	7,871
Cults, Bieldside, & Milltimber	9,737
Torry	9,508

large amount of amenities as well as a selection of highly-rated state and public schools. It has a good reputation and is one of the preferred residential areas. Bucksburn is located about 4 miles to the north-west of the city centre. It is a fairly peripheral part of town cut in two by the A96 trunk road, bordering Aberdeenshire to the west, Stoneywood to the north and Northfield to the south-east. Bucksburn has a fairly mixed population and lies on the final approach to Aberdeen Airport at Dyce. Northfield and Mastrick are located next to each other in north-west Aberdeen. Both are working-class (henceforth WC) areas with a relatively poor reputation among Aberdonians. Northfield is different from Mastrick in that it has less social housing. Cults, Bieldside and Milltimber – located in the south-west of Aberdeen – are areas with a very large (middle-class) MC population. These parts of town are fairly rural. Torry is generally considered a WC community, although there is some up-market housing in a small part near the seashore. Torry is different from the rest of Aberdeen in that it has its own rather different history, despite being located just across the River Dee from the harbour and city centre. It was not much more than one of many fishing villages outside Aberdeen before it was granted the status of a town in 1495 (Bathgate 2006: 6). Over the centuries it developed rather differently from its larger neighbour. Relations were not always friendly; it supported the development of an identity of its own that is still prevalent today (McClure 2002: 73), more than a century after its incorporation into the city of Aberdeen in 1891 (Smith 2000: 28). Thus, it is very common to hear Torry people talking about going to the '*toon*' when referring to crossing the Dee into Aberdeen.

I will argue that the area of the city in which the subjects participating in this study reside will have some impact on their linguistic behaviour and, as is common practice in sociolinguistic studies, I will give further key facts as regards the social

Table 2.3: Household tenure and accommodation type (based on Aberdeen City Council 2004: Tables 7a, 8a)

Neigh-bourhood	All house-holds	Owned (in%)	Social rented (in%)	De-tached house (in%)	Semi-de-tached house (in%)	Ter-raced house (in%)	Block of flats (in%)
West End	4,588	76.5	2.7	8.9	15.1	13.4	48.9
Bucksburn	3,332	64.3	26.8	7.7	30.5	31.7	23.9
Northfield	2,180	43.3	50.8	2.2	30.2	51.0	15.9
Mastrick	3,413	42.9	51.0	2.5	18.6	50.2	28.2
Cults, Bield-side & Mill-timber	3,422	86.3	3.8	60.6	24.1	4.6	8.3

structure of the neighbourhoods. I will do this on the basis of a selection of data from Aberdeen City Council (2004); Aberdeen City Council (2006).

As can be seen in Table 2.3 there are quite striking differences as regards the household tenure and accommodation type of the neighbourhoods that are most relevant to the current study. Northfield, Mastrick and Torry show all the signs typical of urban WC districts, such as a fairly low amount of owner-occupied housing and large numbers of people living in council housing. Particularly Cults, Bieldside & Milltimber on the other hand has one of the highest rates of owned housing and the second-highest rate of detached and semi-detached houses in the city. The West End is very urban, so that the large amount of flats in that area is not surprising. Torry is at the other end of the scale with over 70% of its population living in flats. However, it should be noted that unlike in other areas of Aberdeen – particularly Seaton – these are usually not high-rise buildings.

Taking into account relevant ethnic groups and country of birth (Table 2.4, Table 2.5) we can see some further very important differences. Whereas the WC areas

Table 2.4: Ethnic group (based on Aberdeen City Council 2004: Table 17)

Neighbour-hood	All people	White Scot-tish (in%)	Other White British (in%)	Other White (in%)
West End	9,499	75.0	13.6	7.7
Bucksburn	7,381	93.9	4.0	1.2
Northfield	5,672	95.5	3.3	1.0
Mastrick	7,871	95.1	3.4	1.0
Cults, Bieldside & Milltimber	9,737	68.2	17.7	11.2
Torry	9,508	92.2	5.0	1.6

Table 2.5: Country of birth (based Aberdeen City Council 2004: Table 18)

Neighbour-hood	All people	Scotland (in%)	England (in%)	Other UK & Ireland (in%)	North America (in%)
West End	9,499	73.1	13.7	2.5	3.6
Bucksburn	7,381	92.6	4.8	0.7	0.4
Northfield	5,672	94.2	4.1	0.4	0.2
Mastrick	7,871	94.2	3.8	0.6	0.3
Cults, Bieldside & Milltimber	9,737	66.2	16.7	2.1	3.5
Torry	9,508	90.6	5.8	0.9	0.3

as well as Bucksburn are very homogeneously Scottish, both the West End and Cults, Bieldside & Milltimber have extraordinarily large proportions of people of Other White British and particularly English backgrounds. More recently, some parts of Aberdeen (particularly Torry) have seen a fairly large influx of people of Eastern European descent. However, for the purpose of the current study their (linguistic) influence as well as that of the other ethnic groups can be neglected.

One other important factor that is usually used in describing the social structure of a city is the unemployment rate (Table 2.6). However, in the context of the neighbourhoods in question this is not very revealing since all have rates below the city average of approximately 5% (Aberdeen City Council 2004: table 25a).

The relationship between the inhabitants of the individual neighbourhoods and the industries that employ them produces a very interesting picture. Traditional inner-city working-class areas like Tillydrone and Woodside, but also areas like Torry, Mastrick, Northfield and Seaton, have rates well below the city average of about 10% of people working in the 'mining & quarrying' industry. The West End and Cults, Bieldside & Milltimber with 13.2% and 13.3% respectively on the other hand are fourth and second in this sector (Aberdeen City Council 2004: table 28).

Approximated social grade and highest qualifications received are also very

Table 2.6: Unemployment rate (based on Aberdeen City Council 2004: Table 25a)

Neighbourhood	All people
West End	9,499
Bucksburn	7,381
Northfield	5,672
Mastrick	7,871
Cults, Bieldside & Milltimber	9,737
Torry	9,508

Table 2.7: Approximated social grade (based on Aberdeen City Council 2004: Table 31)

Neigh-bourhood	All people aged 16 and over in households	Grade 1 (in%)	Grade 2 (in%)	Grade 3 (in%)	Grade 4 (in%)	Grade 5 (in%)
West End	7,774	44.7	32.4	6.8	9.0	7.2
Bucksburn	6,178	13.5	24.4	17.4	21.3	23.4
Northfield	4,358	6.4	21.2	19.3	30.1	23.0
Mastrick	6,300	6.7	20.0	17.8	25.4	29.3
Cults, Bieldside & Milltimber	3,959	52.9	28.0	5.5	5.8	7.8
Torry	7,615	8.2	23.1	18.3	27.1	23.3

Table 2.8: Qualifications (based on Aberdeen City Council 2004: Table 32)

Neigh-bourhood	All people aged 16-74	No qualifications or qualifications outwith these groups	Group 1 (in%)	Group 2 (in%)	Group 3 (in%)	Group 4 (in%)
West End	7,460	9.5	14.7	18.5	8.9	48.8
Bucksburn	5,682	35.1	31.7	13.8	6.8	12.6
Northfield	4,052	45.1	34.7	10.3	4.2	5.7
Mastrick	5,698	44.6	33.8	10.5	4.6	6.5
Cults, Bieldside & Milltimber	6,821	13.8	14.8	15.3	7.1	48.9
Torry	7,209	39.5	30.4	12.4	6.2	11.4

good indicators of the different social structures (Table 2.7 and Table 2.8): The West End and Cults, Bieldside & Milltimber have very high ratios of highly qualified and socially favoured occupations, whereas Mastrick, Northfield and Torry are more or less the direct opposite. Bucksburn once again emerges as an ‘in-between’ area although with a slight tendency towards the lower end.

Finally, the data in Aberdeen City Council (2006); Aberdeen City Council (2007a) provide some valuable information on the social structure of the city. The former is a description of deprivation levels in Aberdeen based on the Scottish Index of Multiple Deprivation 2006[7] of which Aberdeen has 27 data zones[8] in the most deprived 15% of Scottish data zones. The latter is a report on the socio-economic profile of six so-called ‘masterplan regeneration areas’ in Aberdeen with a total population of about 22,000, approximately 10% of the city’s population. Seaton, Woodside, Tillydrone, Middlefield and Cummings Park are irrelevant for the present study, but Torry is home to a large number of speakers researched.

On the basis of the data described above, it becomes very clear that the social backgrounds of the speakers involved in the current study (also see Chapter 6 for a more detailed discussion) are very different. Summing up, we can see that people living in the West End and Cults, Bieldside & Milltimber are generally much more likely to be higher on the social ladder than those who reside in Mastrick, Northfield or Torry, which by most standards are WC areas. Bucksburn – and this is also my personal impression – is more of an intermediate area.

[7] There are seven domains of deprivation: current income, housing, employment, health, geographic access to services and education, skills and training.
[8] A data zone is made up of a population of about 750; in total there are 267 data zones in Aberdeen (Aberdeen City Council 2006: 3).

3 The linguistic situation in Scotland

Besides Scottish Gaelic, which is spoken by only a minority of 92,400 people or 1.9 per cent of the population (General Register Office for Scotland 2001) and very much restricted to the Highlands and the Western Isles, and a large number of immigrant languages, the linguistic ecology of Scotland is coined by the complex interplay of Scots and Scottish Standard English (SSE). This is due the fact that "Scotland has always had a linguistic tradition rather different from that of England" (Wells 1982: 393). The historical developments of language in Scotland will be outlined only very briefly in section 3.1 before I describe the sociolinguistic situation in Scotland today in section 3.2. The remainder of this chapter is devoted to the summary and discussion of previous research on regional and social variation in Scots and SSE phonology (3.3) and a brief account of previous linguistic research on the North-East (3.4) and particularly the status of Scots in the region (3.5).

3.1 A brief history of Scots and Scottish English

The historical developments of language in Scotland have been described by a number of scholars (particularly cf. the contributions in Jones 1997 and Corbett et al. 2003b, but also McClure 1997, Aitken 1991 and Murison 1979). A detailed discussion is beyond the scope of this section, in which I will only briefly summarise the key events.

The first traces of the Northumbrian variety of Old English in today's Scotland go back to the year 547 when the Angles invaded what is now North-East England and south-eastern Scotland and established the kingdom of Bernicia. Until then, the country was occupied by three major groups of Gaelic-speaking tribes (Corbett et al. 2003a: 5), of which the Picts were the largest, occupying the land north of the Firth of Forth. The exact status of the interplay between Pictish and Northumbrian is difficult to determine but as McClure (1994: 24) points out the English form must have been dominant in the Lothians and eastern Borders by the ninth century. After the invasion of Northern Scotland by the Vikings in 867, a variety of Old Norse was established in this area, of which some traces can still be found today, particularly in the Shetland dialect.

Following the Norman Conquest of 1066, the English royal family consisting of Edgar the Ætheling and his sisters Margaret and Christina together with some royal noblemen fled to Scotland, where King Malcolm gave them refuge and later married Margaret. Since she did not speak any Gaelic but Malcolm knew English from the time he was exiled under the reign of Macbeth, "the Saxon tongue became, if not yet the medium of government, at least the private language of the royal family" (McClure 1994: 28). During the reigns of his successors Alexander I and David I English gained further influence. It was used as the language of commerce in the burghs and as Gaelic-speaking traders from the hinterland moved to the burghs they acquired some working knowledge of English. Under the rules of Alexander II and III English was the dominant language of trade and law, though it was not the language of the court – which was French – and the peasants "were most likely not disturbed in their linguistic preferences" (Romaine 1984: 56) and would have continued to use Gaelic. By the thirteenth century English was spoken as far as eastern Scotland north of the Forth, i.e. the modern county of Fife (Aitken 1984a: 518). The death of Alexander III in 1286 marks a historic event in the linguistic history of Scotland as the throne passed on to Lowland families, who identified much more with the English language and later shifted the royal capital from Perth to Edinburgh, where English had had a strong foothold for a long time. Also, as Aitken (1991: ix) points out English was now spoken by "all ranks of Scotsmen east and south of the Highland Line" with the exception of Galloway, which remained Gaelic-speaking until the seventeenth century.

The period from 1375 to 1450 is described as the Early Scots period. The change is marked by John Barbour's epic *Brus*, the first important piece of literature in the Scottish variety of English published in 1375.[9] Until then there were no written records of Early Scots with the exception of a few vernacular words and phrases and place names. From 1424 onwards the statutes of the Scottish parliament were written in Scots and it gained further prestige. In 1494 the language was first referred to as *Scottis* and by 1513 the first major writer used it in opposition to *Inglis*.

As Murison (1979: 8–9) writes,

> [t]he years 1460-1560 can be considered the heyday of the Scots tongue as a full national language showing all the signs of a rapidly developing, all-purpose speech, as dis-

[9] Aitken (1991: x) gives the year as 1376 while McClure (1994: 31) dates it as 1377.

> tinct from English as Portuguese from Spanish, Dutch from German or Swedish from Danish.

The high status of Scots declined after that since English found its way into the domains of everyday life of the Scottish people, such as schooling. Since there was no Scots translation of the Bible, the English version was used when teaching Scottish children to read. In 1603, after James VI of Scotland came to the throne left vacant by the death of Elizabeth I, there was a resolution that the English spoken in England should be the official written language of Scotland. Anglicisation went on and by 1700 “only few distinctive points of Scots grammar remained” (Romaine 1984: 59).

As Corbett et al. (2003a) point out the Treaty of Union of 1707, in which the Scottish and English parliaments were merged, “is sometimes presented as the final nail in the coffin of Broad Scots.” The development of SSE – Standard English spoken with a Scottish accent – during the eighteenth century could support this view. However, as Stuart-Smith (2004: 48) points out, spoken Scots remained strong in rural areas and much of the urban working classes, where despite constant levelling with English, it is still persistent today.

No attempt is made at describing or discussing in any detail the historical developments in the phonological system of Older Scots, which have been covered inter alia by Aitken (1977, 1984b), Johnston (1997a) and Macafee (2003) and to which the reader is referred. There was only fairly little development and change in the consonant system, briefly covered below in 3.3.1. The Older Scots sources for the current vowel word classes introduced by Johnston (1997b: 453) are given in column 2 of Table 3.3.

3.2 The polar structure of Scots and Scottish Standard English and the current sociolinguistic situation

The current sociolinguistic situation in Lowland Scotland is characterised by the – at times complex – interplay of Scots and English. Models have been put forward to capture this interplay by Aitken in his two seminal papers on ‘Scottish accents and dialects’ (1984b) and ‘Scots and English in Scotland’ (1984a) and more recently by Johnston (1997b: 438–440) in his article on regional variation in Scots phonology. Both are generally accepted today, but the focus is different. Whereas Aitken argues for a stylistic continuum modelled on the individual speaker, Johnston’s approach is more concerned with communities and adopts a view of centre and periphery based on a gravity model (Chambers & Trudgill 1998: 178–185). In Aitken (1984a), Scottish speech[10] is modelled as a bipolar stylistic continuum ranging from 'Scots' at one end to 'English' at the other (Table 3.1). Column 3 contains the "large 'common core' of invariants", i.e. elements shared between Scots and English with the outer columns containing "variants or options of selectional phonology and of vocabulary and grammar" (Aitken 1984a: 519).

Table 3.1: Aitken's (1984a: 520) model of modern Scottish speech

'Scots'			**'English'**	
1	2	3	4	5
bairn	hame	name	home	child
brae	hale	hole	whole	slope
kirk	mare	before	more	church
ken	puir	soup	poor	know
darg	muin	room	moon	job of work
cuit	yuis (n.)	miss	use (n.)	ankle
kenspeckle	yaize (v.)	raise	use (v.)	conspicuous
birl	cauld		cold	spin
girn	auld	young	old	whine
mind	coo	row /rʌu/	cow	remember
sort	hoose	Loudon	house	mend
	loose	winter	louse	
	louse /lʌus/	feckless	loose	
ay /əi/	pay /pəi/	bite /bəit/	pay	always
gey /gəi/		tide /təid/	way	very
kye /ka·e/	way /wəi/	tie /ta·e/		cows
een	deed /did/	feed	dead	eyes
shuin	dee /diː/	see	die	shoes
deave /diːv/	scart	leave	scratch	deafen, vex
gaed	twaw, twae	agree	two	went
ben the hoose	no /noː/	he	not	in or into the inner part of the house
	-na, -nae	his	-n't	
		they		
		some		
	/ʌ/ (= I)	I		
	/o/ (= of)	of /ʌv/		
		'Obligatory covert		

[10] No attempt is made here to contribute to the question of whether Scots should have the status of a language in its own right or be considered 'just' a dialect of English (e.g. McArthur (1979); Macafee (1983b); Dósa (1999)) and the problems that can arise in its determination Maté (1996). Scots is considered a language by the European Bureau for Lesser-Used Languages Stuart-Smith (2004: 48).

	Scotticisms'
	Most of word-order
	Morphology
	Syntax
	Phonology (system and rules of realization)

The items described there differ considerably as to their social and stylistic markedness. Columns 1 and 2 are generally marked as 'Scotticisms', which must be subdivided into 'covert Scotticisms', 'overt Scotticisms' and 'vulgarisms'. 'Covert Scotticisms' are often used without speakers being aware of them or in an unself-conscious manner. They mainly include lexical items, such as the use of *mind* instead of *remember* or referring to one's little finger as *pinkie* and only few phonological and morphosyntactic features (Aitken 1984b: 105–107). 'Overt Scotticisms' are "used for special stylistic effect" (p. 107) by many MC speakers and include many of the items from column 2. 'Vulgarisms' or 'Bad Scots' (Aitken 1982) are explicitly stigmatised Scotticisms, many of which operate on the phonetic-phonological level. He considers the most prominent to be the use of a glottal stop in intervocalic position, lowered and centralised realisations of /ɪ/, fronting of /u/, retracted variants ([ʂ̺r-], [çɹ] or [ɹ̥]) in a *thr*-onset cluster and the [h] realisation of /θ/, e.g. in *nothing* [ˈnʌhɪn] (Aitken 1984b: 8). Vulgarisms are restricted to the WC speech of the larger cities.

Aitken (1984a: 521–522) describes four major speaker groups. Some speakers take their choice almost exclusively from columns 1 to 3 (groups 3 and 4), while others choose almost entirely from columns 3 to 5 (groups 1 and 2). The majority of speakers will usually move up and down the continuum depending on the formality of the situation. The groups' main characteristics are summarised in Table 3.2.

I follow Aitken in labelling the varieties of groups 1, 2 and 4. The label for group 3 is taken over from Stuart-Smith (2003: 112). She describes 'Urban Scots' as the variety spoken by urban WC speakers in Glasgow

> […] living in now relatively tight-knit communities, which have witnessed substantial geographical and social upheaval from the city's housing policies during the mid-twentieth century, and sharp economic deprivation from the decline of heavy industry [and have no] dialect contact with forms of English other than Scottish Standard English.

Table 3.2: Varieties of Scottish speech (based on Aitken 1984a: 521–522)

	Group 1	Group 2	Group 3	Group 4
features	draw almost exclusively from columns 3 to 5 smallest stylistic variation between formal and informal styles speak SE with a Scottish accent	preponderantly draw from columns 3 to 5 moderately frequent, but inconsistent use of words from column 2, mainly for function words or weak forms (e.g. [ɕ] for I) use words from column 1 only in overt Scotticisms	frequent recourse to words from column 2 some column 1 items preference for some items from these groups, but inconsistency in others biased towards the Scots end	firmly based on columns 1 to 3 may be monodialectal → fail to adjust their style to columns 4 and 5 when speaking to non-local interlocutors or in formal settings
usually spoken by	(educated) MC LMC and WC speakers in public or when addressing MC interlocutors	LMC UWC	(urban) WC	elderly WC from rural districts
variety	ESSE / SSE	Near-SSE	Urban Scots	Broad Scots

This continuum is not a recent phenomenon. Stylistic variation as well as mixing of and transfer between Scots and English have been described by many scholars going as far back as Mutschmann (1909: 67), who comments on the "disturbing" influence of the standard language on the Scots consonant system. Similar comments on the influence of Standard English and/or other dialects of Scots on the speakers' pronunciations are also common in Nehls (1937: e.g. 114). Grant & Dixon (1921: xxi) note that speakers would "tone down [their] district peculiarities" in public speech. More recently, Wölck (1965: 13–17) describes his Buchan speakers as being bilingual in Scots and a form approaching SSE as well as the fact that language mixing ("Sprachmischung") between Scots and SSE is very common phenomenon. He notes his speakers' ability to switch quite readily between the local Buchan dialect and a more Scottish English form. In his introduction to sample transcripts of two recordings (one he labels "Buchan", the other "Standard") with the same speaker that he carried out at different points of time of his fieldwork he writes:

> At this time [the time of the ‘Standard’ recording], my practical mastery of the dialect was still so poor that I predominantly spoke so-called Standard English. Thus not only was I recognised as a foreigner par excellence by my interlocutor, but also as being foreign to the dialect, and correspondingly addressed in Standard Scottish.[11] (Wölck 1965: 63)

Johnston’s (1997b: 436–440) approach to the classification of Scots dialects and their sociolinguistic characterisation is another useful baseline against which we need to see the current variation patterns in Aberdonian. Following Chambers & Trudgill (1998: 178-185, outlined in more detail in Chapter 4) he argues for a gravity model in which each variety forms part of the core or periphery of “several ‘influence zones’ based on Glasgow, Aberdeen, Belfast, Newcastle, Kirkwall and Lerwick” from which “many recent innovations” (436f.) spread out. These are further divided into three “spheres of influence”: the Central Belt with a focus on Glasgow and Edinburgh, the North-East with Aberdeen and non-Scots speaking cities such as Belfast and Newcastle and the Insular Scots spheres based on Kirkwall and Lerwick. He argues that one can make predictions of the features of a particular variety in relation to these focal points.

He suggests four major speech patterns, not so much based on social class, but rather on a social network approach (Milroy 1980). In a Pattern I community, nearly all speakers will use localised Scots speech, even to outsiders. Pattern II communities are characterised by the virtually exclusive use of Scots to in-group members, with possible SSE-speaking inhabitants being statusful, but marginal to the network. MC speakers are usually able to code-switch between Scots and SSE easily, depending on the situational context. Pattern III communities at first sight can appear to be similar to Pattern II ones, but code-switching will occur more radically and there will usually be a small group of SSE monodialectals (mainly middle-class children of middle-class parents) or speakers who disparage Scots for other reasons. Pattern III is most frequently found in small towns and villages. Pattern IV communities have a “‘classic’ Labovian pattern” in which Scots is the language of the working-class, whereas middle-class speakers are usually SSE monolinguals who “may use bits and pieces of Scots as ‘set pieces’ within an otherwise standard matrix” (Johnston 1997b: 439). Codeswitching predominates in the

[11] My translation of “Zu diesem Zeitpunkt war meine praktische Beherrschung des Dialekts noch so mangelhaft, daß ich vorwiegend sog. Standard-Englisch sprach und somit von meiner Gesprächspartnerin nicht nur als Fremder schlechthin angesehen, sondern auch als Dialektfremder erkannt und dementsprechend auf Standard-Schottisch angesprochen wurde.”

upper working- and lower middle-classes, i.e. those speakers who Aitken describes as Near-SSE, but also in less statusful groups with rather loose network ties. This pattern is generally found in the urban Central Belt and the "major centres of innovation (except for Aberdeen)", whereas Patterns I-III are associated with more peripheral communities (Johnston 1997b: 439). A discussion of this approach in the Aberdeen context will be carried out in section 3.5 below and in more detail in Chapter 8.

3.3 Previous research on regional and social variation in Scots and SSE phonology

The dialects of Scotland can be subdivided into four major groups, each with several subdivisions. The classification goes back to Grant (1931: xxiv–xli) and with the exception of Ulster Scots is still accurate today (Johnston 1997b: 43). *Southern Scots* comprises the West and Central Borders. *Mid Scots* is the variety spoken in the Central Belt, Galloway, Fife, Perthshire and the Eastern Borders. *Insular Scots* is spoken on Shetland and Orkney. *Northern Scots* has subdivisions into *South Northern* (Angus and the Mearns), *Mid-Northern A* (Aberdeen and Buchan), *Mid-Northern B* (Morayshire) and *North Northern A* and *B* (Black Isle and Caithness). The area to the west of the Highland Line is usually not included in the classification of Scots dialects because of its different linguistic history.

There is a wide range of previous work covering the current state of the phonologies of SSE and Scots and their regional and social interrelations on both a more general or country-wide level (e.g. Abercrombie 1979; Aitken 1979, 1984b; Wells 1982: 393–417; Mather & Speitel 1986; McClure 1994; Johnston 1997b; Macafee 2004; Johnston 2007 as well as work on individual urban varieties, such as Glasgow (e.g. Macaulay 1977; Macafee 1983a; Stuart-Smith 1999a, 2003; Stuart-Smith et al. 2007; Lawson 2009), Edinburgh (e.g. Reid 1978; Romaine 1978; Johnston 1983, 1984; Speitel & Johnston 1983; Chirrey 1999; Schützler 2011) and also on more rural varieties (e.g. Macaulay 1991 and Pukli 2004 in Ayrshire or Clark 2008; Clark & Trousdale 2009 in Fife). A relatively large body of descriptive and sociolinguistic accounts also exists for the rural varieties of North-East Scotland (Mutschmann 1909; Grant & Dixon 1921; Dieth 1932; Wölck 1965; McClure 1977, 2002; Smith 2001, 2004, 2005; Smith et al. 2007; Marshall 2003, 2004; Millar

2007). The variety spoken in Aberdeen City itself, however, has been studied far less thoroughly. The first account of the urban accent is that of Nehls (1937). His data is based on recordings of six male speakers made in prisoner-of-war camps following World War I, either born in the city or having lived there for a substantial amount of time in their youth. There is no exact information as to the age of the speakers. Apart from one speaker, he describes their social background as working-class. The material consists of both spoken data (reading out a story and reciting poems) and songs. The story is written in English, whereas the poems and songs are in Scots. However, not all speakers provided data on all the elements (Nehls 1937: 13-14; 34-40). More recent comments can be found in the sections on Aberdeen in Robinson & Crawford (2001: 77–93) and Hughes et al. (2005: 105–109) and in Millar (2007: passim). The findings and comments of the previous accounts will be included in the discussion in the following sections.

The authoritative and most recent comprehensive outline of the patterns of geographical and sociolinguistic variation in the phonologies of the Scots dialects is Johnston (1997b). It is also the benchmark against which I can compare the most recent changes in the Aberdeen variety. The data he considers comes from an array of different sources available to him at the time of writing, most of which are also mentioned in my overview above. Also included are his unpublished "own observations from travels throughout Scotland" (Johnston 1997b: 450) that were collected as part of project on collecting dialect material for teaching purposes. This material is the most recent on the North-Eastern variety he considers. Johnston does not provide the period or methodology of his data collection, but it is reasonable to assume that it was carried out in the late 1970s to early 1980s. This data together with that from the phonology section of the *Linguistic Atlas of Scotland* (Mather & Speitel 1986) gathered in the 1950s and 1960s forms the backbone of his outline. Therefore we need to stress that the features and variation patterns he outlines for the North-Eastern and Aberdonian varieties in particular describe the state before and at the very beginning of the large-scale immigration of the 1970s outlined in section 2.2 and the dialect contact that was to follow.

In the following I will briefly summarise the key findings of sociolinguistic and regional variation in Scots and Scottish English phonology. I will first turn to the consonants, which are separated into subsections on stops and affricates, fricatives, nasals and liquids before looking into variation on the vocalic level, where I will introduce Johnston's Scots equivalent to Wells' (1982) lexical sets and discuss previous findings and point out variation patterns.

3.3.1 Consonant variation

SSE and Scots share the majority of features of their consonant phonologies with other varieties of English: /p b t d k g f v θ ð s z ʃ ʒ h tʃ dʒ r l m n ŋ w/. Furthermore, both have the two additional phonemes /ʍ/ and /x/, which allow for minimal pairs of *which* /ʍɪtʃ/ vs. *witch* /wɪtʃ/ and *loch* /lɔx/ vs. *lock* /lɔk/, although their status may be changing (see below). There are only a few alternations, which have their roots in Scots lexical incidence, i.e. where the realisation of particular sounds is determined by individual words: /v ~ ∅/, e.g. in *give/gie*, /θ ~ ∅/, e.g. *with/wi'*, /nd ~ n/, e.g. *stand/staun*, /t ~ d/, e.g. *bastard/bastart*, /l ~ V/, e.g. *football/fitbaw* (Stuart-Smith 2004: 59–60). The summary of regional and social variation in SSE and Scots will be divided into four parts: stops and affricates, fricatives, nasals and liquids.

3.3.1.1 Stops and affricates

The voiceless plosives /p t k/ are usually unaspirated or more weakly aspirated in SSE and Scots than in other varieties of English, although some aspiration can be found in speakers from Glasgow and Edinburgh (Wells 1982: 409; Johnston 1997b: 505). For Aberdeen, Hughes et al. (2005: 106) attest "comparatively little aspiration", however a more recent acoustic study by Watt & Yurkova (2007: 1521–1522) gives more diverse results. For the majority of the 9 speakers analysed, voice onset time was comparably high, i.e. word-initial /p t k/ were strongly aspirated in younger speakers and slightly less in older ones. /b d g/ are usually voiced stops in all dialects and can be pre-voiced in Aberdeen English. A simplification of the /ltʃ/ and /ntʃ/ clusters to /lʃ/ and /nʃ/ has been attested variably in Northern Scots and other varieties.

The glottaling of the voiceless plosives is a well-known phenomenon in many varieties of British English. By far the most common is t-glottaling, i.e. the realisation of non-initial /t/ with a glottal plosive in words such as *bit*, *butter* or *bottle*, which according to Macafee (1994: 27) was first attested in Glaswegian in 1892 and remains a strong social marker in the city (Stuart-Smith 1999b; Stuart-Smith et al. 2007) as well as elsewhere in Scotland.

Glottaling or pre-glottalisation (e.g. [ʔt]) has also been described for /p/ and /k/, although it is much less common than for /t/. /k/ can be realised as an ejective [k’] word-finally (Johnston 1997b: 500–501) before a pause.

The coda /nd/ and /ld/ clusters as in *hand* or *hold* are regularly simplified to /n/ and /l/ respectively in most dialects of Scots, and particularly in the Mid-Northern varieties (Johnston 1997b: 502). Furthermore, Scots, but not SSE generally, has the simplification of obstruent + /t/, e.g. in *accept* > *accept, act* > *ac* (Johnston 2007: 113).

3.3.1.2 Fricatives

A stereotype of Glaswegian English is the realisation of intervocalic /ð/ in words like *mother* or *brother* as [ɾ]; fronting is much less common, although it has now been added to the inventory especially in word-final position (Stuart-Smith 2004: 63–64; Brato 2004: 43) and has also been attested in Livingston (Robinson 2005: 190–191). It is absent in Northern Scots (Millar 2007: 63). In word-initial position /ð/ is often elided completely (Wells 1982: 412; Macafee 1983a: 33). Stopping of /θ ð/ in Aberdeenshire coastal varieties is sharply recessive now (Dieth 1932: 109, cited in Johnston 1997b: 506). The urban varieties of Scots in the Central Belt have the stereotypical [h] realisation for /θ/ in a confined set of words and more recently, TH-fronting has been added to the inventory (Stuart-Smith 1999a: 209), but cf. section 7.6 for a more thorough discussion of the status and variation patterns of /θ/.

The status of /x/ in Scots is currently changing. It used to be present in a far greater range of words (such as *night* or *bought*) but is now restricted to place names, personal names and words without an English cognate (Johnston 1997b: 506). Recent studies from urban varieties in the Central Belt show that – at least for younger speakers – the distinction between /x/ and /k/ is being lost. A merger of the two as [k] and intermediate forms such as [kx] have been reported for Glasgow (Stuart-Smith et al. 2007: 239), Edinburgh (Chirrey 1999: 227) and Livingston (Robinson 2005: 185–186).

The second additional phoneme, /ʍ/, a labial-velar fricative, is also currently undergoing major changes in the Central Belt varieties, where it is being replaced by [w] (Stuart-Smith 1999a: 210; Chirrey 1999: 227). The North-East has the stereotypical [f] realisation, e.g. in *what* [fɪt], which, however, is receding (Millar 2007: 62). The changing status of this feature will be discussed in section 7.3.

Unlike most English non-standard varieties, word-initial /h/ is generally realised in stressed syllables (Wells 1982: 412).

3.3.1.3 Nasals

There is only little variation in the nasals. Intervocalic /ŋg/ as in finger is realised as [ŋ] in dialect pronunciations (Johnston 1997b: 510), but [ŋg] can be present in speakers influenced by SSE (Millar 2007: 62). The [n] realisation for word-final /ŋ/ is commented on by Nehls (1937: 64). Both Speitel & Johnston (1983) for Edinburgh and Pollner (1985: 210–231) for Livingston attest the [n] variant following the typical style and class patterns.

3.3.1.4 Liquids

Both SSE and Scots tend to have dark [ɫ] in all positions in the word (Johnston 2007: 113). The most common realisations in Scots are strongly velarised or pharyngealised variants (Johnston 1997b: 510; Stuart-Smith 1999a: 210). Some MC speakers at the SSE end prefer clear [l] in a prevocalic context as would be typical in most English English accents (Stuart-Smith 2004: 63). In Older Scots, /l/ has developed vocalised forms in which it occurs in coda position after the back vowels /a, o, u/ so that the sequences /al, ol, ul/ yield the forms [ɔ, u, ʌu] (Stuart-Smith et al. 2006). The process was blocked before /d/.This is no longer productive but usually retained in most dialects including the North-Eastern ones (Millar 2007: 63) in a small set of words. A more recent development is the vocalisation of /l/ in environments not permitted by the Scots rule, which was first noted in the working-class Glaswegians where it has quickly gained ground (Stuart-Smith 1999a: 210; Brato 2004: passim). This variable will be discussed in greater detail in section 7.4.
The phoneme /r/ is traditionally realised in all positions in Scotland, although R-vocalisation is increasingly common in urban accents. The realisation of /r/ varies

greatly and is determined by both regional and social factors. R-loss is outlined and discussed in section 7.5.

3.3.2 Vocalic variation

The discussion of the vowel systems of SSE and Scots is potentially more complex than the largely shared inventory between the two varieties might suggest. This is because we have to look at the systems from the two poles of the sociolinguistic continuum outlined in Table 3.1 which in effect result in “two distinct but intersecting systems of lexical incidence” (Stuart-Smith 2004: 52–53). Whereas, for example, Johnston’s (1997b) BET class maps fairly directly onto Wells’ (1982: 128–129) lexical set DRESS, CAT comprises the lexical sets TRAP, BATH, PALM and START. In their descriptions of Scottish varieties, different scholars have tackled this problem in different ways.[12]

In the context of the present study, an approach has been taken that combines Johnston’s (1997b: 453–499)[13] description of the Mid-Northern A variety of Scots with the outline of the Urban Scots and SSE varieties of Glasgow (Stuart-Smith 2004: 56: Table 2). The former is to provide a baseline of the traditional system of vowel realisations in the region and city. This is not ideal, but against the background of a lack of previous detailed sociophonetic descriptions of both the ‘toonser spik’, i.e. Urban Scots, and SSE varieties spoken in the city, it is probably a reasonable compromise. The latter will be a useful reference category against which we can compare the current patterns of variation in Aberdonian English since a) people from Greater Glasgow form the single largest immigrant group to the city (chapter 2) and b) Glaswegian Vernacular is a likely role model for younger WC speakers for its association as being ‘tough’ or ‘hard’ (Lawson 2009: 12–14), a picture that is also conveyed in popular TV programmes set in Glasgow such *Rab C. Nesbitt* or the character of the ‘Big Man’ in *Chewin’ the Fat.*

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[12] Stuart-Smith (1999a), Chirrey (1999),Marshall (2004) and Millar (2007: 22) use Wells’ (1982: 127–168) lexical sets and additional subsets or equivalents for Scots and SSE. Others make use of Johnston’s (1997b: 453) word classes for Modern Scots vowels in their description of the vowel systems, e.g. Eremeeva & Stuart-Smith (2003) and Lawson (2011) in the Glaswegian context. Stuart-Smith (2004: 53–55) describes the vowel systems first as viewed from SSE using Wells’ lexical sets and then as viewed from Scots using the Johnston class.

[13] The comments on Aberdeen vowels in Robinson & Crawford (2001), Hughes et al. (2005) and Millar (2007) will be integrated into the discussion of the vowel system below.

Before discussing the vowel systems outlined in Table 3.3 I will first cover two other important features of Scottish vowels, the Scottish Vowel Length Rule (SVLR, also called 'Aitken's Law') and the system of common and alternating vowels. The most detailed study of the SVLR is that by Aitken (1981). Vowels can be short or long depending on the context in which they occur. They are long if followed by a voiced fricative, /r/, word-finally or before a morpheme boundary (Aitken 1984b: 98–99). Thus the vowels in *leave* [liːv], *dear* [diːr] and *agreed* [ʌˈgriːd] are longer than the ones in which the MEET (FLEECE in Wells' terminology) vowel occurs in other environments such as before plosives as in *meat* [mit] or voiceless fricatives, e.g. *thief* [θif]. More recent empirical work in Glasgow and Edinburgh (Scobbie et al. 1999) as well as Ayrshire (Pukli 2004) suggests that the SVLR may now be restricted to the /i/, /u/ and /ai/ contexts.

The concept of common and alternating vowels in Scots has been described by Stuart-Smith (2003: 117) in the following way:

> [...] we can identify in Urban Scots two main types of vowel, those which are common or shared, whose phonetic realisation is felt to be continuous, and those which are alternating or optional, and whose realisation is felt to be discrete[...]. [...] This alternation may be considered stereotypical of Scots, and Urban Scots in particular.

Among the former, we find for example the vowels in BIT and BET; the latter comprises amongst others the classes BOOT and OUT (discussed in more detail in sections 7.1 and 7.2).

Table 3.3 is an outline of the traditional vowel systems of the Mid-Northern A and Glaswegian varieties of Scots and their typical counterpart in the speech of SSE speakers from the Central Belt. It suggests that the typical local pattern consists of eleven (ten, if we assume a merger of COAT/COT) vowel phonemes, of which four are diphthongs. Millar (2007: 25) separates COAT from COT and CAUGHT in his outline of monophthongs, but adds in his discussion that the three can be (partially) merged. CAUGHT can merge with CAT in the North-East. Robinson & Crawford (2001: 79–80) attest a slightly retracted MEET/BEAT vowel and a centralised realisation in BIT; BET can be raised towards [ɪ]. Lip rounding can be reduced in COAT, COT and CAUGHT. Words that are subject to the [o ~ e] alternation (Table 3.1) such as *home/hame* can be raised to [i]. Furthermore, Hughes et al. (2005: 107) argue that the traditional separation of the RP NURSE set into /ɪr/, /ɛr/ and /ʌr/ may be merged in the speech of younger Aberdonians as /ɜr/. The present study focuses on the vowels in BOOT and OUT and these will be discussed in more detail in the respective sections in chapter 7.

Table 3.3: A comparison of the vowel systems of Mid-Northern Scots A and the Glaswegian varieties of Urban Scots and SSE (based on Johnston 1997b: 453–499; Stuart-Smith 2004: 56; ↔ indicates alternation)

Johnston Class	Older Scots source	Mid-Northern Scots A	Urban Scots (Glasgow)	Urban Scots (Glasgow – in practice)	SSE
MEET	eː	i(ː)	i	i	i
BEAT	ɛː	i(ː)	i	i	i
MATE	aː	e(ː)	e	e	e
BAIT	ai	e(ː)	e	e	e
BOOT	ɔː	i(ː), but Wells' FOOT generally takes BIT realisations	ɛ̈	ɛ̈ ↔ ʉ	ʉ̠
BIT	ɪ	ɨ ~ ɛ̈	ɛ̈	ɛ̈	ɪ
BET	ɛ	e(ː) ~ e̝(ː)	ɛ̝	ɛ̝	ɛ
OUT	uː	u(ː) ~ ü(ː), ʉ(ː) attested in younger speakers	ʉ	ʉ ↔ ʌʉ	ʌʉ̠
COAT	ɔː	o(ː) ~ ɔ̝(ː)	o	o	o
COT	ɔ	ɔ̝(ː) ~ o(ː)	o	o ↔ ɔ	ɔ̝
CAT	ɑ	ɑ(ː)	a̠	a̠	a
CAUGHT	ɑu	ɑ(ː)	ɔ	ɔ	ɔ̝
CUT	ʊ	ʌ	ʌ̈	ʌ̈	ʌ
NEW	iu	jʉ(ː)	jʉ	jʉ	jʉ̠
DEW	ɛu	jʉ(ː)	jʉ	jʉ	jʉ̠
BITE	iː	əi ~ ɛ̈i	əi	əi	əi
TRY	iː	ɑˑe	ae	ae	ae
LOIN	ui	ɑˑe	əi	əi ↔ oe	oe
VOICE	ɔi	əi ~ ɛ̈i ~ oe	oe	oe	oe
LOUP 'JUMP'	ɔu	ɔ̈u ~ ʌu ~ ɒu, but əʉ prevalent among young Aberdonians	ʌʉ	ʌʉ	(ʌʉ)

3.4 Previous accounts of the language in North-East Scotland

The previous section has already outlined phonological features and variation patterns of the speech of the residents of North-East Scotland. The aim of this section is to summarise the findings of more general and non-phonological studies carried out in and around Aberdeen and discuss the status of Scots in the region. Two recent publications (McClure 2002; Millar 2007) provide a detailed description and analysis of the historical and current linguistic situation in the North-East and the reader is referred to these for a more comprehensive treatment than that below.

The first signs of an earlier form of Scots in what is now North-East Scotland go back to the thirteenth century with the establishment of royal burghs in Aberdeen, Elgin and Banff and contact to traders from Southern Scotland. It was further strengthened by the slaughter of mainly Gaelic-speaking peasants and their replacement by Scots-speaking tenants in 1308. However, Gaelic continued to be spoken in parts of the area until "almost within living memory" (McClure 2002: 9). Its development continued over the centuries and was considered the native language of the region from the fourteenth to the eighteenth century, by when it was considered a clearly differentiated dialect area and Gaelic had lost much of its functions. Similarly to the other regions of Scotland, English gained ground from the eighteenth century onwards. However, the remote location ensured that the process of Anglicisation took longer than further south (McClure 2002: 8–9) and the Buchan variety of Scots was clearly the everyday language well into the last century, with English used in very formal settings. The current label for the rural variety, (the) Doric, is a fairly recent term that was probably not in common use before the 1930s (Löw-Wiebach 2005: 16). Doric is variably used to describe either the rural varieties that are spoken by 'teuchters'[14] or the classical forms of Broad Scots that are found in the past or in literature, or, to use Imamura's (2003: 219) term, those which today are a "museum piece".

Grammatical variation in the region has been studied by McRae (2000) who analysed the use of demonstrative pronouns in Inverurie showing that non-standard *this* and *that* for plural forms is still quite common. Work by Smith (2001) describes negation patterns in Buckie and Smith et al. (2007, 2009) focus on the development of local dialect features in children.

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[14] Teuchter [tʃuxtər] is originally the term given to Highlanders, but can now refer to any country person from the North of Scotland and is usually used in a contemptuous manner Macleod (2006: 201).

3.5 The status of Scots in Aberdeen and the North-East

In assessing the status of Scots in Aberdeen and North-East Scotland we need to differentiate between the pre-oil stage and the developments that have since taken place. Before the immigration waves of the 1970s and 1980s there is clearly more uniformity and conservativeness in the regional dialect, whereas more recent comments draw a more varied picture.

Scholars agree that the remote location, the lack of the large-scale industrialisation that affected much of the Central Belt (and Dundee), plus a strong sense of local identity caused Northern Scots to remain more conservative than most of the varieties further south (cf. e.g. McClure 2002: 1).

Murison (1963: 201) points out that

> [d]espite the overwhelming pressure of school, university, radio, cinema, and the social rat-race, which have made serious inroads on the richness of the old speech, it [the Doric] still manages to exist probably better than in most other parts of Scotland, perhaps because the area of its currency is to a fairly large degree geographically separate and socially and economically self-contained.

This view is clearly supported by Johnston (1997b: 445), who stresses the fact that

> the language of the Scottish north and north-east has been associated traditionally with rural lifestyles, which usually correlates with cultural and linguistic conservatism. Even Aberdeen took most of its people from its own immediate hinterland until the recent oil boom, so that there was no need for the extent of koineisation that affected Glasgow until the last few decades or so. […] The relative isolation and geographic semi-independence from the rest of Scots has assured a strong linguistic identity, and for many north-easterners their 'Doric' *is* Scots, and the fact that strict class-tying is either lacking or a recent consequence of the oil boom helps to assure the vitality of the dialect.

Not only is the location peripheral to the highly influential Mid-Scots varieties of Glasgow, but also in relation to other English dialects, most notably that of London, which over the last decades has made inroads into the speech of younger working-class speakers in a number of urban varieties in Northern England and the Central Belt. Thus, Johnston (1997b: 439) suggests that despite its size, Aberdeen is not a Pattern IV community in which there is a clear divide between the working-class speakers of Urban Scots and the middle-class SSE monolinguals. This view is supported by Millar's observation that unlike the Central Belt and Dundee, an urban vernacular in Aberdeen – "*Toonser spik*" (Millar 2007: 116) – was slow to develop and was probably only established after the Second World War.

Macafee & McGarrity (1999: 166) point out the attitudinal difference towards Scots in the Central Belt and in the North-East, noting the low status and strong social stratification in Glasgow and Edinburgh opposed to

> a self-sufficient, locally rooted, proudly Scottish bourgeoisie who set a quite different tone with regard to local and Scottish culture, including the Scots language [… which] is perceived to be a linguistic entity distinct from English, and is focused by code-switching, rather than the code-mixing of the Central Belt.

Thus, it is no surprise that Macafee (1997: 546) believes that the North-East will remain a stronghold of Scots:

> It seems likely that broad Scots will survive only in communities that have some degree of immunity to hegemonic external forces, which usually means rural communities with sufficient economic resources to prevent massive migration of the younger generation and sufficient self-assurance to absorb and nativise incomers. The north-east, Orkney and Shetland are the places that best fulfil these criteria. A particular characteristic of these areas is the vertical integration of the community. Middle-class people, including teachers, who have grown up in the area speaking the local dialect and participating in the local culture, are able to provide children with role models, demonstrating by example that local people can succeed, and that they can be bidialectal.

Sociolinguistic studies on developments on the use and knowledge of Doric lexis and phonology and attitudes towards the local variety and more recent comments on its status paint a rather different picture. Attitudes towards the rural 'museum piece' variety are generally positive, both in locals and incomers (e.g. Macafee & McGarrity 1999; Löw-Wiebach 2005) as well as in an educational context (Imamura 2003). Aberdonians, however, are not happy being associated with 'Toonser spik' (McGarrity 1998: 147, cited in Millar 2007: 117 which indicates a shift towards the 'good' and 'bad' Scots (Aitken 1982) attitudes that prevail elsewhere.

McClure (2002: 17) gives a very negative outlook on the future of the Doric for which he identifies a range of factors:

> […] the decline in farming, fishing and other long-established industries, the breakdown of communities and of traditional social structures, the lack of a strong emphasis on the dialect or any other aspects of local culture in primary and secondary education, the dilution of the population (especially since the advent of the petroleum industry) by large numbers of incomers, and above all the culturally levelling effect of the television, cinema, pop music, and the now ubiquitous internet, have cumulatively produced an environment of ongoing social change in which neither the dialect nor anything else can possibly remain unaffected.

A very important point is made by Millar (2007: 118) who comments on the rapidity of the linguistic changes, the reason for which– among other factors such as globalisation and mass communication – he identifies the role of Aberdeen in the exploitation of North Sea oil. I have already commented on the importance of this and the effects it had on the social structure, and most notably, the breaking-up of the close-knit, dense multiple social networks (chapter 2). He notes that not only have many of the immigrants only stayed for a short while, but also that they and their children have failed to create network ties with the local community and in some parts of Aberdeen and Deeside "have often outnumbered locals, in particular in schools" (Millar 2007: 118). Nevertheless, this of course meant that local school-children were suddenly confronted with a range of non-local varieties which we can assume will have had some major effects on their sociolinguistic development.

What is more, the changes do in fact seem to progress in a radial manner as suggested by Johnston (1997b: 436). There is evidence that places close to Aberdeen are affected more strongly and earlier than those further away. This can for example be seen in the patterns of /ʍ/-labialisation in my Aberdeen data compared to that from Huntly of Marshall (2004) and Buckie of Smith (2005), which will be discussed in greater detail in section 7.3. Whereas especially the younger Aberdonians are now avoiding [f] and adopting the nonstandard [w], and in Huntly we find a decrease in the labial variant, but in favour of the supralocal [ʍ], Buckie speakers show no signs of moving away from the local form at present.

Summing up, we can say that before the oil boom, the linguistic ecology of the North-East was characterised by its self-containedness and immunity against external social and linguistic forces resulting in little social and stylistic variation and in great linguistic homogeneity. The mass immigration of the 1970s of 1980s not only had significant impacts on the social structure, but the rapidity and magnitude of the linguistic changes that went along with it bear resemblance to the koineisation processes that were attested by Kerswill & Williams (2000) for Milton Keynes (see chapter 4).

4 Theoretical frameworks

As discussed in chapter 2, the social situation in Aberdeen has changed quite radically over the last few decades. Large numbers of internal and external migrants have moved to the city and surrounding areas. The profound effects of this on a range of linguistic levels have already been discussed in the previous chapter. It is clear that the current linguistic situation of Aberdonian English is best captured within a dialect contact framework (Beal 2004). Therefore, I will begin by outlining Trudgill's original model and – where appropriate – point out criticism, adaptations, extensions and illustrations that have since been put forward by a range of scholars working in this field, most notably by Kerswill (e.g. 1996; 2000; 2002b; Kerswill & Williams 2002a, 2005). I will also discuss several models of the spatial diffusion (4.1.1) of linguistic features with a particular focus on recent changes in urban varieties of British English. In 4.1.2 I focus on the linguistic processes in and the outcomes of dialect contact, for which particularly Kerswill & Williams' (2000) work on Milton Keynes provides a good starting point. Since children and adolescents play a vital role in the establishment of new variants in post-contact varieties, I will explicitly discuss their importance in 4.1.3. The final section will deal with the question of how we can assess innovation and conservatism. Stuart-Smith & Timmins (2010) provide a model of innovation diffusion (Rogers 2003) in the context of the spread fronted variants of /θ/ into Glaswegian English. The original model will be discussed here and provides the background to my adaptations in the Aberdeen context (see chapter 6).

4.1 Dialect contact

Dialect contact is defined by Trudgill (1986: 1) in a very general way as "contact between varieties of language that are mutually intelligible at least to some degree", the outcome of which is usually some form of linguistic accommodation (Giles & Smith 1979) between the speakers. Accommodation can take place between both social and regional varieties and can be short-term and long-term. Short-term accommodation has been illustrated amongst others by Coupland (1980) in his study of the speech of an assistant in a Cardiff travel agency. He found that the assistant adapted her pronunciation of some phonological features so that it matched that of her clients' social background to quite a high degree. Also, in an analysis of his own speech in his Norwich recordings, Trudgill (1986: 5–11) finds that he adapts his style to approach the speech of his interlocutor as regards t-glottaling, a clear indicator of social class and overtly stigmatised, but not /aː/ which in Norwich is a feature that varies but which speakers are not particularly aware of. Thus, following Labov (1972), Trudgill concludes that t-glottaling is a so-called sociolinguistic *marker*, whereas /aː/ is an *indicator*. A marker is subject to both social and stylistic variation, an indicator varies only according to social factors. In accommodation as well as contact with speakers of another dialect, speakers will usually modify the markers, since these are the features of their variety that they are most aware of.

As regards long-term accommodation between speaker groups, he argues that this is usually a regular process that follows fixed routes and that the linguistic outcomes can be predicted (Trudgill 1986: 24). The reason for this is the *salience*[15] that is attached to markers: "[s]alient features will be accommodated to *unless* other factors intervene to delay, inhibit or even prevent accommodation" (Trudgill 1986: 16, emphasis in the original). Three factors are most important:

1. phonotactic constraints, e.g. the distribution of /r/ in non-rhotic accents
2. the possibility of homonymic clash, such as the change from /ɒ/ to /ɑː/ in English speakers moving to the US which would result in the words *hot* and *heart* to be pronounced in the same way and
3. a variant that is too salient, e.g. the pronunciation of words of the BATH lexical set with an /æ/ vowel by English speakers in the US (Trudgill 1986: 11–21).

Trudgill must concede, though, that even in phonology there are counterexamples of the fixed route hypothesis. He illustrates this with a discussion of the different paths of accommodation taken by twins who had moved from Britain to Australia at the age of seven.

[15] Trudgill's notion of salience has been criticised as being 'circular' by Kerswill & Williams (2002a: 89), since salient features are both those being noticed and adopted as well as avoided. Rather, extra-linguistic (social) factors can help explain the outcomes of dialect contact.

Taking this framework as a starting point, several scholars have modified, improved and extended the model to explain particular variation patterns in the communities under study. I will refer to these in the following sections, in which I will discuss the mechanisms behind dialect contact and their effects on linguistic communities that bear directly on the current study. For this, we need to take into account the different types of diffusion of linguistic innovations. Of particular importance in the present context are those which have originated in South-East England and are now spreading northwards and for which Aberdeen, being the northernmost large city in Britain and at the same time furthest away from London, would be the theoretical termination point.

4.1.1 Spatial diffusion

The spread of linguistic innovations is referred to as diffusion, defined by Trudgill (1986: 40) as the adoption of a feature not originally present in a speaker's variety in the absence of a speaker in whose variety the feature is found. Diffusion is the theoretical framework underlying dialect contact. Different models have been put forward to explain linguistic innovations on the macro level summarised by Chambers & Trudgill (1998: 167) as spreading from

1. social group to social group (sociolinguistic diffusion)
2. word to word (lexical diffusion)
3. linguistic environment to linguistic environment (linguistic diffusion) and
4. place to place (spatial diffusion).

In the context of the present study, the focus will be on sociolinguistic and particularly spatial diffusion, i.e. on the external factors, but I will also briefly comment on the effects of linguistic environment (see chapter 6). A more detailed analysis of the internal factors, also including possible effects of the lexicon on variation patterns in Aberdeen English phonology, is currently in preparation (Brato in prep.) and will be published separately.

When linguistic innovations spread from one geographical area to another, we speak of spatial diffusion, or alternatively *geolinguistics* (Britain 2006). Spatial diffusion has been theorised quite differently by various scholars to explain the patterns they found in their respective studies. Furthermore, the effects of spatial diffusion on particular varieties or the spread of particular features has been a major focus of sociolinguistic research in the British Isles over the last two decades. In this section I will outline the different theoretical models that have been suggested to explain the pathways of the diffusion of linguistic features over geographical space as well as the effects this can have on a community.

The earliest work on spatial diffusion of linguistic features (cf. Britain 2002b: 608–609) adopts a methodological framework developed by human geographers in the 1950s known as the gravity model. It has, for example, been used by Trudgill to explain and predict changes spreading from London to East Anglian cities and towns (Trudgill 1974; Chambers & Trudgill (1998: 178–186). The model assumes that there is a direct relationship between total population and physical distance between two communities which allows a prediction of the impact these will have on one another. Chambers & Trudgill (1998: 179) provide Formula 4.1:

Formula 4.1: $\mathrm{Iij} = \mathrm{S} \cdot \frac{\mathrm{PiPj}}{(dij)^2} \cdot \frac{\mathrm{Pi}}{\mathrm{Pi} + \mathrm{Pj}}$

whereby

Iij	=	influence of centre i on centre j
P	=	population
d	=	distance
S	=	index of prior-existing linguistic similarity (the higher the index the greater the similarity)

Using the loss of initial /h/ in words like *hat* or *hum* as an example of a variant spreading from London, they thus argue that the first centre to be affected is Ipswich, a city of about 150,000 some 120 kilometres from London. From here it spreads further to Norwich, which with 250,000 inhabitants is the largest city in Norfolk and lies about 90 kilometres to the north of Ipswich. As we move away from London the influence of these two centres on the smaller centres of Lowestoft, Great Yarmouth and King's Lynn increases considerably, whereas that of London decreases. So only after h-dropping has taken off in Ipswich and Norwich does it diffuse to the smaller towns. This model has been greatly criticised by other human geographers, most notably Derek Gregory (1985; 2000; cited in Britain (2002b: 609–610); Britain 2010b: 149–151), because it does not take into account social factors and the consequences of innovation diffusion for a community. In his critique of gravity models in linguistics, Britain (2002b: 609–610); Britain (2010b: 149–151) argues that these adopt a strictly geometric view of diffusion and do not take into account any social, physical (such as mountains, rivers or lack of infrastructure, e.g. Britain 2002a; Britain & Trudgill 2005 on the English Fens) and perceptual or attitudinal factors. Furthermore, one assumption in a gravity model is that every speaker who uses an innovation has an equal chance of passing it on and that everyone in the geographical path has an equal chance of adopting it. Britain (2010b: 150–151) cites several scholars who find that constraints operate both along traditional sociolinguistic variables like age and gender but also national boundaries such as the US-Canadian border. Also, the Milroys' work on Belfast mentioned above has shown that weak ties often promote change whereas speakers belonging to a more close-knit network tend to be more conservative and may not adopt an innovation (but see e.g. Stuart-Smith et al. 2007 on changes in which speakers with no apparent ties outside their community lead the changes towards non-local features).

Furthermore he notes that in contrast to the predictions of a gravity model, traditional variants are often not levelled (see 4.1.2) away completely. The result can be seen in hybrid forms that are neither present in the diffusing, the receiving nor local variety as described by Rekdal (1971; cited in Trudgill 1986: 63) for two varieties of Norwegian. Furthermore, innovations that are considered nonstandard and possibly are even greatly stigmatised in the diffusing variety can be socially revalued – or reallocated (see 4.1.2) – in the receiving dialect so that for example in Cardiff (Mees & Collins 1999: 201) using a glottal stop for /t/ became the "more sophisticated and fashionable" form.

A gravity model can also not explain the resistance to innovation in particular varieties or larger areas such as Northern England, where the replacement of the typical [a] and [ʊ] realisations in the lexical sets BATH and STRUT has never caught on. This can also occur with what is referred to as structural contradictions in Liverpool English (Watson 2006), in which the glottal stop variant for /t/ has not gained ground, despite the strongly marked lenited [h] and [θ] forms being prime candidates in a model of dialect levelling.

Finally, structural and social consequences may determine the adoption (or not) of a linguistic innovation. Non-adoption can be seen as a sign of expressing one's local identity. On the other hand, sometimes an innovation is adopted alongside a more traditional form. In that case what usually happens is that one form is then 'reallocated' (e.g. Dyer 2010) and fulfils a different sociolinguistic function.

More recent theories on the spatial diffusion of linguistic features have been summarised e.g. in Britain (2010a, b). Britain (2010b: 148–151) discusses four main models that always have to be considered within a specific context. In *wave* or *contagion* diffusion features spread out from an urban centre like waves around pebbles in a puddle reaching nearby places first before arriving in places further away. This model has e.g. been applied by Bailey et al. (1993) in their discussion of phonological change in Oklahoma and by Labov (2003) in the spread of a lexical feature from Philadelphia to the rest of Pennsylvania.

Urban hierarchical diffusion works in a similar way in that the innovations originate in an urban centre but spread first to the nearest urban centre and only then to smaller towns and more rural areas in-between. This model has been very influential over the last two decades in explaining the spread of a number of consonant variants traditionally associated with the working-class speech of London and the south-east variably referred to as "youth norms" (Williams & Kerswill 1999: 159), "Estuary English" (Britain 2002b: 617) or "[t]orchbearers of geographical diffusion" (Kerswill 2003) amongst others. These features – glottaling of /t/, labiodental [ʋ] for prevocalic /r/, fronting of /θ ð/ to [f v] and L-vocalisation are spreading northwards from London and have been attested in many northern English cities as well as Glasgow (e.g. Milroy et al. 1994; Llamas 1998 and many of the contributions to Foulkes & Docherty 1999). By way of the variation patterns in /θ ð/ Kerswill (2003: 231–238) illustrates that the innovative variants were first attested in cities close to London before spreading to cities sometimes several hundred kilometres away and only after that to the smaller places in-between. At the same time, he addresses the importance of social-psychological factors such as regional identity promoting or discouraging the adoption of the fronted variants. He illustrates this with data from Newcastle (approx. population: 259,000), Durham (87,000) and Middlesbrough (139,000), three cities in the North-East of England. Whereas in the latter, the first birth cohort to front fairly consistently was born in around 1970, for the other two cities this was around 1980. This hints at the same time at geographical diffusion (Middlesbrough is further south than Newcastle) and attitudinal factors. Despite rather negative attitudes by people from Middlesbrough towards Newcastle (Llamas 2000: 140), they have adopted some 'Geordie' features, but index these as 'north-eastern, but from Middlesbrough' (143). At the same time, adopting TH-fronting contributed to distinguishing them from Tyneside. The reasons put forward for this lie in the reconfiguration of county boundaries in the 1970s leaving Middlesbrough (until then a part of Yorkshire) with no traditional region to identify with.

In the Australian context (Horvarth & Horvarth 1997, 2001, 2002; cited in Britain 2010b: 148) find that /l/-vocalisation is first attested in Adelaide and the surrounding area before spreading elsewhere in the country. This type is referred to as *cultural hearth* diffusion.

Innovations that spread *contra-hierarchically* originate in rural areas and diffuse towards urban ones. This type is relatively infrequent, but was found alongside hierarchical and even more complex patterns in a study on the diffusion of some grammatical, phonological and lexical features on Oklahoma (Bailey et al. 1993) and by Sandøy (1998, cited in Kerswill 2003: 231), who finds this pattern for an innovation involving simplification in Norwegian.

Migration (as discussed in section 2.2) has played an important part in the recent history of Aberdeen City and it “is a key extra-linguistic [i.e. socio-political and economic] factor leading to externally-motivated [i.e. contact-based] change” (Kerswill 2006: 2271). Kerswill further argues (2006: 2272) that the processes of diffusion I have described above have until quite recently been conceptualised differently to those involved in linguistic variation and change following migration, which is generally referred to as *relocation diffusion* (Britain 2002b: 622). This type can be defined rather generally as an innovation resulting from an individual or a group of speakers migrating to a different location. It is, of course, very important in pidgin and creole studies, in which new languages are formed by the contact of speakers of different linguistic backgrounds, but also forms the background of much of the processes discussed below.

4.1.2 Linguistic processes in and outcomes of dialect contact

In this section we shall focus on the kinds of processes involved when speakers of mutually intelligible varieties of one language come into contact as well their linguistic outcomes. These depend to a high degree on the type of diffusion as outlined in 4.1.1 (cf. Trudgill 1986: 83). Whereas in the majority of types of diffusion outlined above linguistic features spread over a large geographical area and between long-established dialects in which there is relatively little room for intermediate dialect forms, more extreme results are expected in cases of relocation diffusion. The exact results are dependent on a range of factors, most notably the demographics of the 'receiving' area, the make-up of the migrants and their number in comparison to the receiving area and the linguistic distance between the different groups. We would expect the most extreme results in cases of language or dialect transplantation. This is, for example, the case when large numbers of speakers of different varieties of a single language settle in a place that has so far been settled only relatively sparsely (as is the case for the majority of so-called 'New Towns') or during colonisation.

In such settings we usually find that *new-dialect formation* (amongst others cf. Trudgill 1986: 83; Britain & Trudgill 1999; Hickey 2003; Trudgill 2004; Kerswill & Trudgill 2005) or *koineisation* (Siegel 1985; Kerswill 2002; Kerswill & Williams 2000, 2005)) takes place. The result is a so-called *koiné* defined as

> the stabilized result of mixing linguistic subsystems such as regional [...] dialects [...] and is characterized by a mixture of features of these varieties and most often by reduction or simplification in comparison. (Siegel 1985: 363)

Following Trudgill (2004: 84–89), we can identify six stages in the formation of new dialects: mixing, levelling, unmarking, interdialect development, reallocation and focusing.[16] If focusing – the process whereby a new variety develops its own norms and becomes stabilised (Le Page & Tabouret-Keller 1985) – does not occur, he refers to the process as koineisation rather than new-dialect formation.

Mixing, quite straightforwardly, occurs in the very early stages of koineisation and involves the contact of speakers from different varieties. The second step in Trudgill's model is levelling, which he refers to as "the loss of demographically minority variants" (2004: 84). This means that of the potentially many forms that can be found in the mixing stage, those will survive which are found in the majority of speakers and not those that are marginal in the sense of being used by smaller groups. A somewhat different notion of levelling is that put forward by Williams & Kerswill (1999: 149), who define it as "a process whereby differences between regional varieties are reduced, features which make varieties distinctive disappear, and new features emerge and are adopted over a wide geographical area". In a later

[16] In Trudgill (1986: 127) new-dialect formation involves three stages: mixing, levelling and simplification with reallocation (152-153) of competing variants as a further possible outcome.

paper (Kerswill 2003: 224–225) further differentiates this into *regional dialect levelling*, an equivalent to spatial diffusion and *levelling* as linguistic changes which are the outcome of accommodation and argues that the difference between the two is gradual vs. rapid diffusion over a given geographical area. A good example of levelling is provided by Watt's (1999; 2002) work on contact-induced changes in the Tyneside vowel system. He argues that these have to be seen before the background of "a trade-off between modernity and regional loyalty [triggering] the development of a north-eastern regional standard" (Watt 2002: 57–58). Trudgill's notion of levelling is more radical Trudgill (2004: 85). He argues that social factors such as status or identity do not play a role, but rather that it is the demographics, i.e. the proportions of different dialect speakers, which determines which variant will be adopted. In this study, levelling will be used in the sense of Kerswill (2003). Processes of regional dialect levelling will be referred to as supraregionalisation or supralocalisation (cf. Britain 2010c).

The third step in Trudgill's model (2004: 85–86) is that of unmarking, which he argues is a subtype of levelling. In levelling, usually the majority variant is adopted. However, in cases in which there are many competing variants we may find that it is not the variant with the highest currency that is adopted, but one that is linguistically less complex. Trudgill provides a sample from Fiji Hindi and shows that usually the variant present in two out of three dialects was used, but that in the case of some plural endings the unmarked non-nasalised forms were preferred over the marked nasalised ones. Similar processes can occur e.g. in the case of regular and irregular past tense forms. In a contact situation, if these two classes were to merge, usually the marked irregular form would be replaced by the more regular variant. Here, speakers would usually settle on the regular form.

Interdialect forms, i.e. variants that are not present in any of the input varieties, but have arisen through contact, are part of step four. Three such categories may be identified Trudgill (2004: 86–87):

1. Forms that are simpler or more regular than any of the forms that are found in the input varieties
2. forms that are intermediate between two variants of the input varieties and
3. forms that result from hyperadaptation (also cf. Trudgill 1986: 78–81), of which hypercorrection is the most common.

In step five, reallocation can happen. It refers to a situation in which

> two or more variants will only survive – or so it seems – if they acquire distinct functions in the new dialect. In other words, variants in the mixture which were originally from different regional dialects may avoid extinction by acquiring different sociolinguistic or other functional roles in the outcome of the mixture. (Britain & Trudgill 1999: 247)

It was, for example, found in Britain's (2002a) work on the English Fens, where different variants of the PRICE vowel and past tense BE are used to fulfil different internal functions. External functions of reallocation were found *inter alia* by Dyer (2002) and Watt (2002). Both addressed the impact of language attitudes and ideologies in constructing group identities following dialect contact. In her study of Corby, a town in the East Midlands, which saw large-scale immigration of workers from Glasgow and Lanarkshire, Dyer (2002: 108–113) claims that the simple dialect levelling framework cannot account for her findings since it is the stigmatised Glaswegian features which have been adopted by younger speakers with no Scottish ancestry. She argues that the use of these features helps to promote an 'us' (Corby) vs. 'them' (outsiders from the surrounding places) identity.

In the final step, which according to Trudgill separates new-dialect formation from koineisation, focusing can take place. Here, the new variety acquires its own norms and becomes stable.

In the discussion of the outcomes of their Milton Keynes study Kerswill & Williams (2000: 84–85) take up Trudgill's (1986) original model of koineisation and extend it substantially. They propose eight principles:

> Outcomes in post-contact varieties:
>
> (1) Majority forms found in the mix, rather than minority forms, win out.
>
> (2) Marked regional forms are disfavoured.
>
> (3) Phonologically and lexically simple features are more often adopted than complex ones.
>
> The migrants and the first generation of native-born children:
>
> (4) Adults, adolescents, and children influence the outcome of dialect contact differently.
>
> (5) The adoption of features by a speaker depends on his or her network characteristics.
>
> The time scale of koineisation:
>
> (6) There is no normal historical continuity with the locality, either socially or linguistically. Most first and second generation speakers are oriented toward language varieties that originate elsewhere.
>
> (7) From initial diffusion, focusing takes place over one or two generations.

(8) Because of sociolinguistic maturation, the structure of the new speech community is first discernible in the speech of native-born adolescents, not young children.

Comparing Trudgill's and Kerswill & Williams' modelling of koineisation, we note that they agree on the linguistic outcomes of the dialect contact situation (principles 1-3), but the latter identify language-external aspects as key contributory factors to the koiné (principles 4 and 5). The final three principles (6-8) provide a measure of the time scale of the development of the new koiné. We shall refer to these principles below and try to contextualise the current findings from Aberdeen on the basis of these principles.

4.1.3 The importance of children and teenagers in contact-induced change

Age is one of the key factors in sociolinguistics and it is particularly the role of children and adolescents that has received much attention in the classic and more recent theories of language variation and change. Labov (1972: 138) suggests four stages in the development of the sociolinguistic norms of a community by children. In the first stage (2-3 years old), the main input the child receives is that of their parents. The acquisition of the local dialect takes place from the ages of 4-13, when the child is for the first time influenced more strongly by their peer group. In their teenage years, the speakers become more aware of the social significance of their own form of speech and that of others and acquire sociolinguistic competence. However, this process is not completed until towards the end of the adolescent stage at the age of 17 or 18.

Much work has been carried out on the acquisition of stable sociolinguistic features as well as the role of children and adolescents in promoting changes in progress. Structured variation has been found in children as young as 3 by (Wolfram) (1989, cited in Llamas 2007b). The importance of age in second-dialect acquisition has been stressed e.g. by Payne (1980) and Chambers (1992). Payne showed that children moving to Philadelphia before the age of 8 or 9 were able to make adjustments to parts of their vowel system, but were not able to pick up the variation patterns in /a/, which required the knowledge of word-class assignment. This knowledge seems to have been passed down only by Philadelphia-born parents. Chambers' study of six Canadian children moving to Britain showed a clear difference in the acquisition of the LOT/THOUGHT split. Whereas the nine year-olds assimilated to their peers quite readily, the older children were far less successful in this. More general overviews on the role of children in language change are discussed in Romaine (1989) and Chambers (2003: 169–203) and particularly Kerswill (1996), whose key concepts sum up much of the research mentioned and which I will outline before turning to the role of children and teenagers in dialect contact scenarios.

Kerswill (1996: 178) addresses four major points in his discussion:

> the interplay between *what* an individual is capable of acquiring at a particular age, *who* is exerting the influence on the individual at that age, and *how great an influence* that individual is able to exert at a particular age – and on *whom*. (emphasis in the original)

He therefore adopts the view that linguistic change takes place on a continuum with Neogrammarian, i.e. exceptionless, change on one end and lexical diffusion on the other. He further follows previous comments that the former is usually easier to acquire than the latter and is therefore more likely also to be found in older speakers. He reviews processes involving three "key interlocutor combinations in the transmission of language and change" (Kerswill 1996: 181): caregiver-infant/young children, peer group-preadolescent and (older) adolescents and adults on adolescents. Another very important concept in his model refers to the acquisition of 'sociolinguistic competence', which he defines as "a person's ability to recognize language varieties within the community, to evaluate those varieties socially, and to exploit them in the communication of social meanings" (Kerswill 1996: 181).

In the following I will summarise Kerswill's argument as regards phonological features and sociolinguistic competence for the three stages and point to previous research carried out in these. In the first stage, the main caregiver (often the mother) provides the main input to the child's language acquisition. In both stable communities and those affected by recent migration, the period is characterised by the transmission of the mother's dialect features and first acquisition of sociolinguistic competence by the child. It is also here that complex local patterns are transmitted. As Trudgill (1986: 35) points out, the Norwich /uː/-/ʌu/ distinction is only mastered by children whose parents (or in some cases at least the mother) were born in the city. He goes on to discuss the findings on a study of morphologically conditioned variation in Tyneside English (Local 1983, cited in Kerswill 1996: 184–185), in which there is a split in the FLEECE set, so that *freeze* [friz] and *frees* [frᶦiz] form a minimal pair. Starting out with a wide range of variants (representing different input varieties) at the age of 4;5 (four years, five months), this narrowed down and began to resemble an adult distribution by 5;6. Other examples include the acquisition of -t/d deletion and patterns of *-ing/-in* variation first presented in Labov (1989), which showed that sociolinguistic constraints are acquired before the internal ones. He concludes by noting that the transmission of such complex features takes place over the first five years, but that some restructuring is possible at a later age.

Phonologically complex rules, such as those briefly discussed above (Payne 1980; Chambers 2003) have a more complex patterning that seems to be influenced by the local context as well as the feature in question. Features with 'simple' rules follow a Neogrammarian pattern in that changes are not phonologically, morphologically or lexically constrained. Kerswill (1996: 187–188) refers to his own work in Milton Keynes and shows on the basis of fronting in the onset of the GOAT vowel that this feature is widespread in the groups of eight and twelve year-olds, but that the four year-olds employed three strategies. Some children accommodated to their older peers, others modelled their speech on that of one parent and the third group used a compromise between the parents' variants.

Yet another pattern was discovered for changes with no apparent caregiver model. TH-fronting was found in all six four year-olds, but only in two of their caregivers. Also, in the two other age ranges [f] variants were found much more frequently than for the parents, so that we can assume that it is not due to incomplete acquisition of the standard variant. Kerswill concludes that in a high-contact situation the lack of consistent adult norms may facilitate changes towards more 'natural' variants that otherwise would be suppressed due to communal norms. In conclusion (Kerswill 1996: 190–191), children acquire the majority of phonological features of their local variety by the age of six and there are constraints determined by complexity on which and how such rules can be acquired later in life.

By the time a child reaches the second (preadolescent) stage, most areas of language are matured (Kerswill 1996: 191). As has already been pointed out above, children acquiring a second dialect in this period can still adopt some of the local features, but since they are approaching the so-called critical age, options become more limited. Following Labov (1970), he notes (1996: 192) that children acquire the local vernacular between the ages of five and twelve. In the context of the Milton Keynes dialect contact scenario, Kerswill (1996: 192–194) provides evidence on the basis of results for GOAT onset-fronting that with the exception of the youngest speakers, there is no correlation between the variant of the caregiver and that of the child. He argues, therefore, that the children are focusing (in the sense of Le Page & Tabouret-Keller 1985) on a norm that is different from the adults' and thus may constitute a step towards the establishment of a new variety. Summing up, this stage is characterised by a move away from caregiver models towards the speech of their peers and older children.

In adolescence (12-17 years old) speakers are passing the 'critical age' of second-dialect acquisition posited by Chambers (1992) and their capabilities of language acquisition are getting increasingly limited. Still, this time is considered to be one of the most important linguistically since speakers are torn between adult norms and their wish to differentiate themselves and express their teenage identity. Adolescents are "bearers of change" (Kerswill 1996: 198) because– in comparison to younger children – of their larger social networks and willingness to modify their speech.

Table 4.1 summarises Kerswill's discussion. It shows a difficulty hierarchy for the acquisition of second dialect features and the age (range) by which each of these features can be acquired. I will refer to parts of it in the discussion of the variation patterns in the current study.

Table 4.1: Difficulty hierarchy for the acquisition of second dialect features (Kerswill 1996: 200)

Rank	Feature		Age acquired
1 (most difficult)	i	lexically unpredictable phonological rules, which may reflect lexical diffusion nearing completion and which are not sociolinguistically salient (Trudgill, 1986)	by 3 (?)
	ii	new phonological oppositions	by 3-13
	iii	grammatical change: parameters	by 8 (?)
2	iv	prosodic systems	by 12-15
3	v	grammatical change: new morphological classes (in creoles, may be tied to lexical acquisition)	peaks in adolescent years? lifespan?
4	vi	morphologically conditioned changes	not before 4-7; then lifespan
5	vii	reassignment of words or lexical sets	lifespan

		to other morphological classes	
6	viii	mergers	lifespan
7	ix	Neogrammarian changes (exceptionless shifts, easier if they are connected speech processes)	lifespan
8	x	lexical diffusion of phonological changes, especially those which involve an existing opposition and are salient	lifespan
	xi	borrowing: new lexical forms of old words; new phonetic forms of morphological categories	lifespan
9 (least difficult)	xii	borrowing: vocabulary	lifespan

4.2 Assessing innovation and conservatism

The concept of leaders or innovators in linguistic change is modelled quite differently by different scholars (as discussed at length in e.g. Milroy 1992 and Labov 2001). In this study, the focus is not on language change in stable communities, but on dialect contact following the rapid and large-scale in-migration to Aberdeen and the North-East. I have shown in chapter 2 and section 3.5 that this has had severe impacts on the social structure of the city and region, both socially as well as linguistically, manifested in the loss of distinct local features in favour of levelled variants. As Milroy (2002: 7) quite rightly points out:

> This process [levelling] might reasonably be viewed as a linguistic reflex of the large scale disruption of close-knit localized networks which have historically maintained highly systematic and complex sets of socially structured linguistic norms. Such disruption arises from (for example) internal and transnational migration, war, industrialization and urbanization.

A recent theoretical model of speaker innovation that combines a number of factors discussed above is presented by Stuart-Smith & Timmins (2010). Although this model cannot be applied on a one-to-one basis to the Aberdeen context for a number of reasons (discussed in section 0), it inspired the technique of measuring innovation and conservatism in the current study, so that it is outlined here. Based on ethnographic work as well as more formal data collection methods, Stuart-Smith & Timmins (2010) try to explain two current changes in Glaswegian phonology, the adoption of labiodental variants of /θ/ and /ð/, in working-class teenagers. On the group level, they find robust links for TH- and DH-fronting with both linguistic and extra-linguistic factors, "including strong relationships with variables relating to anti-establishment social practices, contact with relatives in southern England and

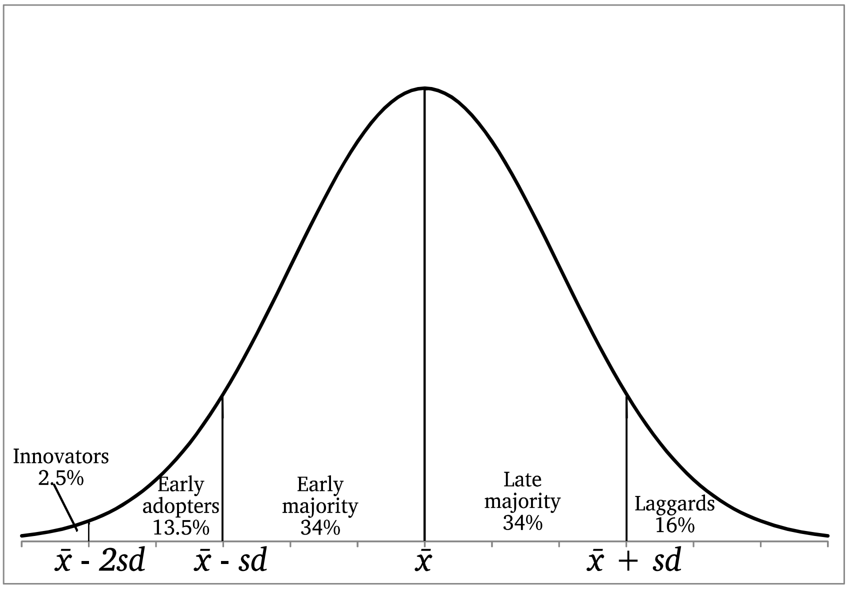

Figure 4.1: Adopter categorisation on the basis of innovativeness, redrawn from Rogers (2003: 281. fig. 7-3)

engagement with the TV soap, *East Enders*" (Stuart-Smith & Timmins 2010: 42). They find that a model that includes different social factors (dialect contact, attitudes, social practices) yields considerably better results (by about three times) than a model only including one of these categories.

To explain an individual's "causal pathway" (Stuart-Smith & Timmins 2010: 13) and their variation patterns, they propose a model based on Rogers' model of *diffusion of innovations*. Individuals hereby follow five steps in this process, "(1) knowledge, (2) persuasion, (3) decision, (4) implementation, and (5) confirmation" (Rogers 2003: 37), of which the third is the most important since here an innovation can be adopted or rejected. He further argues that an individual's innovativeness can be classified on the basis of five adopter categories which follow the S-curve of the spread of innovations or changes, whereby in its initial stages only a small number participate in the innovation, followed by a rapid increase until about half of the population have adopted it. From then on the adoption rate starts to decrease again because the majority have already adopted the new feature until it either reaches completion or a few individuals (the residual) remain who have not adopted the innovation.

According to Rogers (2003: 282–285) there are five adopter categories based on when an individual adopts an innovation (also see Figure 4.1):

1. Innovators – *venturesome*: Innovators are very much interested in new ideas and often have rather weak ties and high contact to other innovative individuals outside their local community. An innovator may not be respected by the locals, but plays an important role in the diffusion process by introducing new concepts.
2. Early adopters – *respect*: Unlike innovators, early adopters are usually well integrated in their local system. They take the position of opinion leaders, to whom other possible adopters look in order to check how they react as regards the innovation and are the triggers for the critical mass.
3. Early majority – *deliberate*: The early majority adopt an innovation just before the average. Because they are a large group they are an important link in the diffusion process.
4. Late majority – *sceptical*: The late majority is another major group, making up one third of the population. Peer pressure and/or economic necessity are needed to convince this group to adopt an innovation.
5. Laggards – *traditional*: This group is the last to adopt an innovation and may be described as strongly localised and rather looking towards the past than the future in deciding on whether or not and when to adopt an innovation.

On the basis of Rogers' description of structural, social and personality traits, (Stuart-Smith & Timmins 2010: 46–49) assigned an adopter category to each individual in their study on the basis of four factors:

1. their observed participation in social relationships
2. their social behaviour towards each other during the course of the project (who respected and followed whom)
3. their innovativeness regarding social pursuits and technology and
4. their observed personality traits.

Stuart-Smith & Timmins (2010) propose three categories of social identification in Glasgow: 'Ned' is a pejorative term for someone involved in anti-social behaviour and wearing a distinct type of clothing that usually consists of trainers, tracksuits and baseball caps. The second group, the 'geeks/wimps' are the opposite of neds in nearly every respect. 'Goths' are set apart from the other groups, particularly the neds, by their clothing, preferring usually black clothes. Incidentally, none of the neds fall into either the innovator or laggard group. Of the four innovators two are labelled as goths, two are unlabelled. At the other end we find that two of the three laggards are goths, the other is a geek/wimp. The second geek/wimp falls into the late majority. It is odd that the goths end up at the two opposite ends of the continuum, which leads Stuart-Smith & Timmins (2010: 49) to conclude that self-identification (the two goths in the innovator category labelled themselves in that way, the other two did not) must play a role here.

As regards a correlation between adopter category and the two variables discussed in the study, they find a relatively good fit for DH-fronting. Laggards completely avoid fronted variants, the late majority use some (peaking at 14% for one speaker) with the early majority being rather varied. Whereas two speakers do not front at all, the majority have some fronting with a peak at 19%. In the early adopter group we find a general trend towards a higher usage of [v] in general, but there is still one speaker who does not use it. Interestingly, of the four innovators three have rather low (< 10%) figures for [v] but one uses it in 81% of his tokens. They can explain (2010: 51) quite convincingly why the latter's behaviour fits his category well as an innovator. However, stressing that "innovators do not always have to innovate", but that their profile means that they more marginal, independent members of a society, which may also lead them to not participate in an innovation is more difficult to grasp. One possible explanation for this behaviour lies in what Rogers (2003: 241–243) terms *compatibility with values and beliefs*. The fit between adopter category and fronting is less obvious, but still there seems to be room for allocating individuals' [f] use in line with their respective adopter categories.

5 Research context and research propositions

This study is the first major research project on accent variation and change in Aberdeen, a variety that so far has received only comparatively little attention in sociolinguistic research in Scotland despite its size and – more importantly – the social changes that were brought about by its recent history. I have outlined in chapter 2 that following the discovery of North Sea oil in the late 1960s, there has been a massive influx of people seeking work in the new industry. While the oil has brought many benefits to the city, most importantly by reversing the outward migration of the 1960s and bringing jobs, greater wealth and higher incomes to the city, there are a number of negative effects. These include the displacement of the older industries, but also the break-up of the very tight-knit community and the strong feeling of local identity. In this chapter I will briefly locate the present study in the context of previous research carried out in migration-based dialect contact and the diffusion of sociolinguistic features and outline the research aims of the current study.

5.1 Aberdeen in the context of previous dialect contact research

In the previous chapter I have outlined several models of dialect contact, of which the model of post-contact variation and change in urban accents put forward by Kerswill & Williams (2000) in their discussion of Milton Keynes is one of the most influential. This study as well as many of the comments in Trudgill (1986; 2004) as regards stages of principles of koineisation describe developments in new towns, where a large number of people have come together in a place that was formerly settled only relatively sparsely. In the case of Trudgill's discussion of the Norwegian town of Høyanger, the population grew almost 20-fold from 120 to over 2,200 in only 14 years. At the time of the designation of Milton Keynes there were approximately 40,000 people in the area. This figure had risen to about 145,000 at the time of the study.

Compared to these numbers, the situation in Aberdeen is, of course, radically different (described in greater detail in chapter 2). The 1950s and 1960s were characterised by emigration from the city and region. Still, by the time of the beginning of the immigration wave, the city had about 180,000 inhabitants, a long history and a stable and distinct dialect. This goes hand in hand with Johnston's (1997b) classification of Aberdeen as a Type III community which lacks the clear social divide between speakers of Urban Scots and SSE typical of Glasgow, Edinburgh and Dundee (see section 3.5). In the ten years between the 1971 and 1981 censuses the city saw a net inflow in excess of 30,000 people, which during the 1980s and 1990s continued at a slower pace while at the same time many people migrated from the city itself to the growing commuter belt.

5.2 Research propositions

Taking the above as a starting point, this study will look at the linguistic situation in Aberdeen about 35 years after the initial immigration wave started. The study adopts a dialect contact framework as outlined in chapter 4. In addition, since it is the first major research project on the phonology of Aberdeen English, I consider it more useful to take a variationist (first wave in Eckert's 2005 terminology) approach and establish the larger picture of variation in six key phonological variables: (BOOT), (OUT), (HW), (L), (POSTVOCALIC R) and (TH). These can be seen as being representative of local features, features found in the original dialect mix that followed immigration, features representing variation along the Scots-SSE continuum and features known to be spreading from London to other urban accents in the British Isles. The results of the present study could then be the foundation stone of more fine-grained analyses taking into account additional features and/or ethnographic approaches.

5.2.1 Linguistic processes and outcomes of dialect contact in Aberdeen

Clearly, the different migration trends over the last four or five decades, which have led to a break-up of the complex close-knit social network structures and intraregional ties that had been in place for many years, will have had a major impact on the local variety. Aberdeen used to be strongly endonormatively oriented and seemed to be relatively immune to variants from outside the region, but following Milroy (2002: 7), a typical consequence of the break-up of high-density multiplex networks is the trend towards the adoption of less localised and more supraregional variants. This goes along with the loss of traditional features, the emergence of interdialect variants and the reallocation of the traditional or innovative features to more specific social or linguistic contexts as was outlined in chapter 4.

A related point addresses how Aberdeen's geographical location and recent social changes affect the adoption of more recent innovations from the Central Belt and the linguistic features spreading through urban varieties of the United Kingdom. Aberdeen is peripheral to the urban centres further south, which is why it is anticipated that more recent linguistic innovations originating in Glasgow and Edinburgh, but also those spreading through the UK from London, will be less advanced in Aberdeen.

Scottish innovations include, amongst others, the derhoticisation of postvocalic /r/, which is now very common in younger WC Glaswegians (Stuart-Smith 2003). As regards the UK-wide features, here particularly the fronting of /θ/ to [f] in words such as *think* is the most notorious. As previous research has shown, many of these, most notably TH-fronting, but also DH-fronting, its voiced equivalent –, and L-vocalisation are now well-established in the Urban Scots of Glasgow (Brato 2004; Stuart-Smith et al. 2007). If we assume that these features do in fact spread in an urban-hierarchical-like fashion as discussed by Kerswill (2003: 231–238), we would at least expect to find these similarly well established in Edinburgh, on the rise in Dundee and possibly incipient in Aberdeen.

The most recent work on Edinburgh does not mention TH-fronting and Ole Schützler (2011, personal communication) does not find it in his sample of Edinburgh middle-class speakers. This is not surprising, given its stigma and association with working-class speech. However, Lynn Clark (2011, personal communication) confirms informally that fronted realisations are now commonly heard in both Edinburgh and Dundee. On the other hand, despite the fact that these features probably were – if at all – only sporadic and idiosyncratic in the speech of young working-class Glaswegians in the 1970s when the major migration movements took place, they may have been transported to Aberdeen alongside the more traditional [h] variant for /θ/.

At the same time, based on the features analysed in this study, Aberdeen will be clearly distinguishable from the rural accents of the North-East. With rural accents generally being more conservative and based on current diffusion models, we would expect to find that innovations are picked up and/or developed in the city before being diffused outwards from there. Therefore, we expect to find levelling of the traditional features, such as the loss of the [f] realisation of /ʍ/, or the merger of the two subsets of (BOOT) as well as features from the south to be more advanced in the urban accent of Aberdeen. In addition we expect to find innovations that have developed in relative isolation to developments in the Central Belt and the rural varieties and are therefore not present in either of the other accents.

5.2.2 The role of age and other social factors

Current theories of koineisation stress the importance of the second- and third-generation immigrants as the catalysts of change. Out of the large pool of variants that exists immediately after the contact, features are adopted and developed in the direction of the new variety. In the context of the present study I pick up on these findings and argue that speakers of different age groups promote or inhibit the adoption of innovations in Aberdeen in different ways and that effects of age will be stronger than any other social factor. Adult speakers will show more conservative variants because their language acquisition process was mainly complete by the time of immigration. They will have the largest amount of traditional local features and will only have adopted the easier innovations according to Kerswill's (1996: 200) difficulty hierarchy. By contrast, the children and teenagers will be the driving force in the linguistic changes. The effects of other factors such as social class or gender will be less pronounced, particularly in comparison to the social stratification that is usually found in urban accents with a more stable linguistic history. In order to address these concerns I am taking into account the speech of 44 Aberdonians from three age groups (children, teenagers and adults – see section 6.1 for a more detailed discussion of the study design).

5.2.3 Assessing innovation and conservatism using mixed-effects regressions

The final aim touches on a methodological point and tackles the question of how we can model a speaker's innovation and/or conservatism in linguistic change. In section 4.2 I have outlined the model adopted by Stuart-Smith & Timmins (2010) in order to discuss the role of the individual in language change in Glasgow. This model cannot be applied to the context of the current study for a number of reasons (see section 0) that lie mainly in the very different designs of the studies. Yet, inspired by their work, I have developed a model of speaker innovation and conservatism on the basis of mixed-effects regression modelling, a relatively recent technique that allows us to objectively assess a speaker's contribution in relation to other shared social factors.

Using by-speaker coefficients of mixed-effects regressions is a useful addition to other methods of assessing a speaker's innovation and conservatism. The model proposed by Stuart-Smith & Timmins (2010) greatly relies on ethnographic work and an overall more qualitative approach in the assessment of speaker variation and innovation. Because of the focus of this study, an ethnographic approach was deemed not viable,[17] so that detailed qualitative data is not available. Also, using coefficients allows for a more objective assessment of the data.

[17] In addition, there were more practical reasons for the choice of methodological approach. Amongst others, the most important were a combination of time and financial constraints. Ethnographic fieldwork is very time-consuming and therefore expensive if the fieldworker does not live in or near the community under study. Moreover, not being a local or even a native speaker made this approach more difficult.

6 Methodology

This chapter describes the methodology used in this study. It has four main parts. I will first outline the study design, and then turn to the description of the methodology of the phonetic and statistical analysis before presenting a model of assessing innovation and conservatism.

6.1 Study design

This section describes the methods of informant selection, recording procedure and the types of material and background information I gathered. As has been outlined in the previous chapter, the aim of this study is to provide a snapshot of the ongoing koineisation in the accent of Aberdeen following the immigration waves of the last decades. In line with the theoretical framework discussed in chapter 4 and other variationist studies carried out within a first-wave approach (Eckert 2005)[18], the focus is on the role of speakers of different ages and socio-economic backgrounds.

Table 6.1: Speaker groups

	young female	young male	teen female	teen male[19]	adult female	adult male
middle-class	4	4	4	4	3	3
working-class	4	4	4	4	3	3

The overall sample analysed for this study consists of 44 speakers from two broad social backgrounds, middle class (MC) and (WC) and three age groups: young speakers (nine and ten years old), teenagers (14 and 15 years old) and adults (38-65 years old). Table 6.1 shows the breakdown of the speaker groups[20]. The process of informant selection is outlined the following section.

[18] Eckert distinguishes three waves of theoretical approaches in the quantitative study of urban socially conditioned linguistic variation and change. The three waves are not strictly ordered. The focus of first-wave studies is on the establishment of the bigger picture of a speech community along the lines of large social categories like age, social class or ethnicity. The second-wave approach challenges the variationist assumption that a city constitutes a single speech community and focuses rather on social networks Milroy (1980). In a third-wave approach as introduced by Eckert (2000) linguistic variation is understood as conveying social meaning.

[19] There is one speaker (TWM3) who had just turned 16 at the time of the recording. He is from the same year group as the other speakers from this school, though.

[20] For a full account of the speaker metadata, see Appendix 9.2A-2.

Each speaker is identified by a four-digit code. The first element describes their age group. *Y* denotes the youngest speaker group, *T* stands for teenagers and adults are coded as *A*. The second digit refers to social class, whereby *M* is for MC and *W* for WC speakers. Gender is coded in third position as *F* (female) and *M* (male). The final digit (1-4) is for the individual speaker in the particular group. Thus, TWM3 is the third speaker from the working-class teen male group.

6.1.1 Informant selection

The informant selection process follows previous studies in variationist sociolinguistics in that it is a judgment sample based on a range of social and other demographic factors (Milroy & Gordon 2003: 30–31). Most importantly, the choice of speaker groups was determined by the models of koineisation discussed in chapter 4 and in previous variationist research on Scottish English and Scots in urban setting.

All adults were born before the migration wave to North-Eastern parents and they all had passed the most formative years of language acquisition by the time of migration took off. Only for the youngest speakers in this age group (38-42 years at the time of the recordings in 2006/2007) we cannot exclude that they came into contact with age peers from elsewhere during the period children usually the acquire the local vernacular (5-12 years old, Kerswill 1996: 192). However, all spoke the majority variety and since the first period of migration was characterised by adults seeking work in the new industry with families often moving to the North-East only at a later stage (see chapter 2), it is not likely that they have picked up any non-local features at this time.

The two younger age groups are made up of speakers from quite diverse social backgrounds. What they have in common is that they were all born and brought up in Aberdeen. The majority of speakers is born to two North-Eastern parents. Some speakers have a mixed parentage, with either the father or mother from the North-East, but there are speakers who have no parental roots in the region. Previous research (summarised in section 4.1.3) has shown that parents' birthplaces can very strongly influence if and how a child adopts linguistic features and/or innovations. But also, the younger speakers' age is important. The teenage speakers in this sample were born in 1990 and 1991, so about 20 years after the initial immigration.

The young speakers were eight and nine at the time of the recordings in 2005, so they were born in 1996 and 1997. It is these age groups that, following the koineisation models, are leading the changes towards the new variety.

After having established which age groups would be the most interesting and valuable to study, other social and demographic factors were taken into account to establish the final sample. The social background data stems from the 2001 census (Aberdeen City Council 2003) tables for economic activity, economic inactivity, occupation, National Statistics Socio-economic Classification, social grade and qualifications (Aberdeen City Council 2004) and a report on deprivation in Aberdeen based on the Scottish Index of Multiple Deprivation (SIMD) (Aberdeen City Council 2006). The SIMD provides data on the neighbourhoods that are represented in the worst 20% in Scotland. There are six individual domains: income deprivation, employment deprivation, health deprivation, education, skills and training deprivation, housing deprivation and geographic access & telecommunications deprivation.

This allowed for a classification of the neighbourhoods roughly corresponding to what could be referred to as middle-class areas (e.g. high proportion of social grades 1 and 2, occupation groups 1-3, university degree), working-class areas (e.g. high proportion of un- and low-qualified inhabitants, social grades 4 and 5 and high degree of deprivation) and areas that were socially mixed, i.e. with the majority of inhabitants from a lower middle-class or upper working-class background.

In a second step I took into account the performance data of all the secondary schools in the city (Aberdeen City Council 2005). The schools were assessed on the following criteria: percentage of awards at levels 3, 4 and 5 or better at the end of S4[21], the staying-on rates to S5, leaver destinations (Higher Education, training, employment, other, not known) and free meal entitlement. Schools that performed very well were primarily located in the city centre and serving a large area of the city or in those areas that were considered middle-class based on the socio-demographic analysis. Schools that performed well under the Scottish and local average were all located in areas in the lower social spectrum.

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[21] In the Scottish school system, S4 describes the fourth year of secondary school at the end of which the majority of pupils will take their ‘Standard grades’ (roughly corresponding to the English ‘GCSE’). Students aiming for a place at university can stay on for another two years to obtain their ‘Highers’ and ‘Advanced Highers’.

In order to make sure a fairly similar local and social background of all the informants in a given area, the initial idea was to take the data outlined above as a baseline and first contact the secondary schools under consideration to fill the teenager groups. Once these had agreed to participate in the study, I was going to contact the respective feeder primary schools for the younger pupils. The adults were to be recruited from the pupils' parents.

Two secondary schools from top and bottom groups from two socially different areas were contacted first, but were unable to participate in the study. Thus, I chose a public school in the city centre that offered both primary and secondary education to represent the middle-class groups and a secondary school located in a working-class area on the southern side of the city. The younger working-class pupils were recruited from two feeder primary schools in the same neighbourhood.

Originally the adult speakers were to be largely recruited from the schoolchildren's parents, but the turnout was generally very low. I therefore contacted community centres in different areas of the city in order to establish contacts with potential interviewees. In the end adult speakers from a rather diverse age range (38-65) were recorded. Since the adults are to be seen as the baseline against which we can compare recent innovations in Aberdonian, it was further decided that all the adults had to be locally born and brought up. This is another reason why a number of parents who responded positively to the interview request had to be discarded. The speakers of the two younger speakers' groups had to be born locally (or to have moved to the city below the age of two) and lived there all their lives.

6.1.2 Sociolinguistics questionnaires

Prior to the interviews, sociolinguistic questionnaires were sent to the schools selected for the study and the contact persons were asked to distribute these among potential participant groups (i.e. classes that would fall into the age range I was looking for) and also the pupils' parents who I was hoping to be able to recruit as my adult informants.

The sociolinguistic questionnaires for the adult and teenage speakers asked in essence the same questions, but were different when it came to the section regarding personal information. Those for the children were considerably shorter and worded differently so that they could be managed by them.

The questionnaires for adults and teenagers consisted of five major sections covering a range of topics considered to be useful for the analysis and discussion of the variation patterns I found. Section 1 asked about some general knowledge about the local variety and Scottish Standard English and included self-rating as regards the proficiency in the Doric dialect and on a Scots-Scottish English speech continuum. In the second section the informants were asked about their attitudes towards the local dialect and Standard English using a Likert-scale. In section 3, the participants were asked to comment on a range of different television programmes from Scotland and England since at that time I was hoping to be able to correlate these findings with linguistic variation in a similar way to the findings reported in Stuart-Smith & Timmins (2010). However, it quickly turned out that this would have required a more ethnographical approach in the data collection methodology so that the data were not used. The next section covers questions about relatives and friends in Aberdeen and the North-East and elsewhere that could influence a speaker's pronunciation because of regular contact to speakers of another variety. The same was true for the questions covering whether and how often an informant had travelled to the other cities in Scotland and London, since frequent and extensive visits and/or having relatives and contacts in the region could lead to them being 'language missionaries' (Trudgill 1986: 57), i.e. speakers who 'import' features from other varieties into Aberdeen. The final section covers more personal information and was used to deduct a speaker's social and educational status as well as family background. The questionnaire designed for the children covers some basic questions on their ability to differentiate the local dialect from the standard as well as their personal backgrounds as well as relatives and travel to other cities.

6.1.3 Linguistic variables chosen for this study

This study focuses on six phonetic-phonological variables in the speech of Aberdonians. These are the vowel sounds in (BOOT), and (OUT) (Johnston 1997b) and the consonants (HW), (L), (POSTVOCALIC R) and (TH). These variables were chosen on the basis of four parameters:

1. salient North-Eastern features
2. features known to vary along the Scots-SSE continuum
3. features typical of the (Western) Central Belt varieties and

4. features spreading in an urban hierarchical manner from London.

A more thorough discussion of the (socio-)linguistic background of the individual variables will be presented in chapter 7, so that here a brief summary shall suffice. The BOOT vowel was not originally intended to be part of the study, but turned out to vary strongly sociolinguistically. Highly fronted variants are typical of the Central Belt, whereas traditionally in the North-East the realisation was fully back. The (OUT) vowel is known for its clear social polarisation depending on whether a speaker tends towards the Scots or SSE end of the continuum, with monophthongal realisations typical in the former. The variable (HW) is interesting in two respects in that it has a stereotypical [f] realisation in the North-East, with the rest of Scotland preferring [ʍ]. However, recently [w] has made great inroads into the speech of Glaswegian WC children, so that we might expect some three-way variation. (L) refers to the possible vocalisation of the liquid /l/ in coda position. This feature is spreading from London. The typical Scots reflex of the same kind in some environments is not taken into account here. As regards (POSTVOCALIC R) we need to bear in mind that both Scots and SSE are traditionally fully rhotic. r-loss has been attested recently in Glaswegian and also many of the incomers' varieties are non-rhotic so that we should expect both to have some influence. The variable (TH) also has two rather different innovative forms, indexing different associations: [h] and [f]. The former is a traditional Glaswegian WC variant restricted to a small set of words; the latter has spread rapidly over the last decades from London together with other consonant features.

6.1.4 Recording procedure and types of material

Data collection with the schoolchildren was carried out in different rooms in the various schools. Wherever possible, care was taken to ensure the best acoustic environment, but it was sometimes impossible to avoid noise from adjacent rooms, corridors or other sources like the school bell or streets. Also, I tried to make sure that the pupils felt at ease by asking them in the sociolinguistic questionnaire distributed before the recording sessions who they would like to be interviewed with and then trying to make sure such pairs were possible. However, unfortunately some pupils had to come with another pupil from their class because their friend was not available at the time the interview was scheduled. The interviews with the adults were carried out in different places, mainly the participants' homes. Some interviews were also carried out in a room at the University of Aberdeen, a community centre and interviewees' offices. Again, care was taken to minimise other noise sources, e.g. by conducting interviews in the living room and making sure that television or radio sets were switched off. The majority of interviews with the adults were carried out on a one-to-one basis.

The data analysed consists of two types of material, a sociolinguistic interview and read speech data from a wordlist. Most interviews are about 50-75 minutes long; those with single speakers are on average about 35-45 minutes long. The interview did not follow a strict pattern and were loosely based on the different kinds of modules suggested in the sociolinguistic literature on data elicitation (Labov 1984; Milroy & Gordon 2003: 57–68; Tagliamonte 2006: 37–49). I tried to ask questions that would give the speakers a possibility to give long answers and would ideally lead on to different questions and/or topics.

The wordlist was recorded following the sociolinguistic interviews so that the speakers would not be primed too much about the variables I was particularly looking for. The wordlist consists of 94 items ordered randomly and can be found in Appendix 9.2A-2. It was designed to cover the variables first anticipated to be of greatest interest based on previous comments on the North-East Scotland, other Scottish accents and those features spreading through the UK as discussed by Kerswill (2003) and others (e.g. Milroy et al. 1994 and the contributions to Foulkes & Docherty 1999). It focused particularly on (HW), (L), (POSTVOCALIC R), (TH) and (OUT) so that for some of the variables later chosen to be analysed there is only relatively little data. This is particularly true for (BOOT) for which there are only three items.

6.2 Phonetic analysis

The phonetic analysis of the data was carried out auditorily by listening repeatedly to the sound in question for the consonants and acoustically for the vowels. Vowels can be described acoustically on the basis of formant frequencies, peaks in the spectrum of a speech sound. In the identification of vowels it is particularly the first three formants (labelled f_1 to f_3) which carry the bulk of information. Vowel height is described by f_1. Low values indicate a high or close vowel whereas larger values are typical of low or open vowels. The frontness of vowels is measured using the second formant (f_2). Here, low values indicate back vowels and high values indicate front vowels. Amongst other things the third formant (f_3) provides information on whether the vowel is rounded or unrounded. A lower value indicates rounding, whereas a higher value indicates an unrounded vowel (cf. Ladefoged 1996: 92–113).

The recordings were resampled from the original sample rate of 44.1 kHz to 22.05 kHz and then loaded into *Praat* (Boersma & Weenink 2008). The consonants were repeatedly listened to and the variants entered into a database. For the vowel analysis I used an adapted version of Kendall's (2009) *Vowel Capture Script* for Praat. The script takes measurements of the pitch and the first three formants in three positions of the vowel:

1. 0.035 seconds from the beginning (onset)
2. at midpoint
3. 0.035 seconds towards the end (glide)

In case the vowel is shorter than three times the value entered for onset and glide, i.e. shorter than 0.105 seconds, the measurements are taken 1/3, at midpoint and 2/3 into the vowel respectively.

Since formant values are correlated with a speaker's vocal tract size, we cannot directly compare speakers of different age groups or sexes; instead we need to normalise the data in order to make them comparable. (Thomas & Kendall) (2010, following Disner 1980 and Thomas 2002) give four goals of vowel normalisation:

1. To eliminate variation caused by physiological differences among speakers (i.e., differences in mouth sizes).
2. To preserve sociolinguistic/dialectal/cross-linguistic differences in vowel quality.
3. To preserve phonological distinctions among vowels.
4. To model the cognitive processes that allow human listeners to normalize vowels uttered by different speakers.

In this study, we are interested particularly in the first two goals. There is a range of normalisation procedures available, some of which are more useful for sociolinguistic work than others. Recent discussions of the different methods and their advantages and disadvantages are found in Adank (2003), Adank et al. (2004), Thomas & Kendall (2010), Watt et al. (2010) and Flynn (2011).

A distinction can be made between a method that takes its information for normalisation from a single vowel token (vowel-intrinsic) or by looking at more vowels – ideally the complete vowel system – of an individual. These are termed vowel-extrinsic. Similarly, normalisation methods can be speaker-intrinsic or speaker-extrinsic. In the former the normalised vowel values are calculated on the basis of a single speaker's tokens whereas in the latter, the data from all the speakers in the study are taken into account.

The method chosen for this study was developed by Watt & Fabricius (2002) and later modified slightly (Fabricius et al. 2009) and is a vowel-extrinsic, speaker-intrinsic method. It uses a so-called '*S* transform'

> calibrated from the $F_1 \sim F_2$ plane's 'centre of gravity' *S* by taking the grand mean of the mean F_1 and F_2 frequencies for points at the apices of a triangular plane which are assumed to represent F1 and F2 maxima and minima for the speaker in question. (Watt & Fabricius 2002: 161-162, emphasis in the original)

In practice this means that in order to estimate a speaker's 'vowel triangle' three steps need to be taken. In the first step the average f_1 and f_2 values for a speaker's FLEECE (Wells 1982) realisations are calculated, assuming that these represent the lowest f_1 and highest f_2 values. The average values for the TRAP (or in some varieties the START) lexical set are also measured since it is usually the most open vowel and thus represents the largest f_1 value. In step two we need to estimate a speaker's minimum f_1 and f_2 values. While often this can be represented by the GOOSE vowel, Watt & Fabricius (2002: 163–164) finds that this vowel is subject to a lot of variation, so that in many varieties or individuals there is a relative front realisation. They therefore suggest using a hypothetical value, labelled [u'], in which f_1 and f_2 values equal those of the f_1 value for FLEECE and thus each other. The final

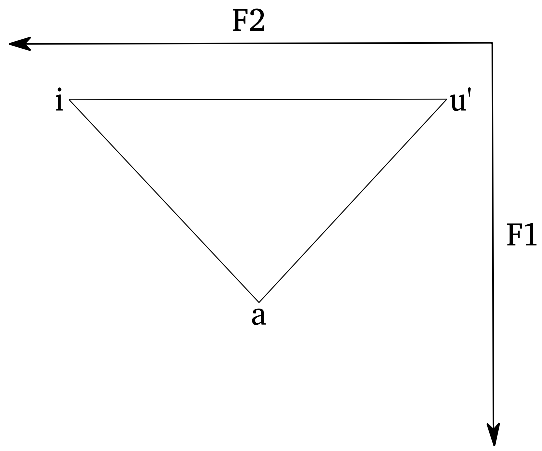

Figure 6.1: The 'vowel triangle' (Watt & Fabricius 2002: 164)

step is to calculate for each individual speaker the "F_n frequencies of the centre of gravity or 'centroid' S […], which is quite simply the grand mean of F_n for i, a and uˈ" (Figure 6.1). Following this, all measurements of F_n are divided by the S value for that formant using Formula 6.1 (Fabricius et al. 2009: 420):

Formula 6.1: $S_{F_n} = \frac{[i]F_n + [a]F_n + [u']F_n}{3}$

The result is a value on a scale labelled $F_n/S(F_n)$, i.e. ratios of S. The coordinates of S in a speaker's vowel triangle are always (1,1) so that vowel tokens with low formant values on the Hz scale will generally have $F_n/S(F_n)$ values between 0 and 1; those with values greater than the S value for that formant will be above 1.

The modified version used in this project and outlined in Fabricius et al. (2009: 420–421) does not rely on the f_2 value of TRAP in the calculation of $S(F_2)$ since this could potentially lead to skewed normalised values in the lower vowel region and thus the "S-value for F2 is equidistant between F_2 of [i] and F_2 of [u'] and calculated only on the basis of these two values, and not three F values as per W&F [Watt & Fabricius method] in its original formulation" (Fabricius et al. 2009: 421). In the comparison of this algorithm with those of Lobanov (1971) and Nearey (1977), two of the best-performing normalisation procedures in Adank's (2003), Fabricius et al. (2009: 421) find that it performs similarly well as regards the sociophonetic goals mentioned above.

In my study I focus on the vowels in the BOOT and OUT sets in Scottish English and Scots. In order to perform the normalisation I also measured at least five tokens per speaker of the vowel classes MEET, CAT, COT and CAUGHT to represent the anchor points of their vowel spaces. Thus, for Scottish English and Scots the MEET class corresponds to FLEECE and CAT to TRAP in the original Watt & Fabricius method. The actual normalisation and plotting was carried out in the *Vowels* package for R (Kendall & Thomas 2010), which also forms the backbone of the normalisation form on the NORM website (Thomas & Kendall 2010).

6.3 Statistical analysis

The statistical analysis was carried out with Rbrul (Johnson 2011). Rbrul is an implementation and enhancement of the variable rule program (VARBRUL, cf. e.g. Tagliamonte 2006: ch.7) in R (R Development Core Team 2010), a language and environment for statistical computing. The concept of the *variable rule* was first introduced in the late 1960s in Labov's discussion of variation in African-American Vernacular English. The 1970s saw the development of a statistical tool (VARBRUL) to estimate the effects of multiple factors (such as phonetic environment or age) on linguistic features that can be treated as a binary choice, such as the absence or presence of third person singular {-s} realisation of *-ing* as (Johnson 2009: 359–360) points out.

6.3.1 GoldVarb vs. Rbrul

The most common implementation of VARBRUL is GoldVarb X (Sankoff et al. 2005). However, GoldVarb has a number of serious restrictions, of which the most important is that it only performs multiple logistic regression. Logistic regression requires categorical data as its dependent variable, e.g. the variants [θ], [t] or [f] of a consonant variable such as /θ/. It cannot deal with continuous dependent variables such as formant values common in the description and analysis of vocalic data. Furthermore, the terminology GoldVarb uses is rather different from that of other statistical software packages.

Johnson (2009: 360–362) gives the following example to illustrate the differences. Suppose we study the realisation of *–ing* as either [ɪŋ] or [ɪn] based on individual styles, e.g. spontaneous speech, reading passage and wordlist. Style would be a factor group and the individual styles being studied would be factors. GoldVarb would return an input probability representing the overall likelihood of [n] in the data and probabilities dependent on the different styles. The latter are called factor weights. A factor weight of 0.5 means that there is no effect, smaller figures such as 0.2 would indicate that [n] is much less likely to occur in that particular style, whereas e.g. 0.85 means that [n] is very likely to occur. In disciplines other than sociolinguistics, such data is usually described differently. Factor groups are usually referred to as factors, which are divided into levels. Factor effects can be reported in the way GoldVarb does as a deviation from the mean, called sum contrasts, or by assigning one group as the baseline with a coefficient of 0 and reporting results for the other levels as a coefficients indicating their departure from the baseline group's figures. This is called treatment contrasts. Furthermore, whereas GoldVarb

Table 6.2: Some factor weights (probabilities) and the corresponding log-odds (Johnson 2009: 361)

factor weight (probability)	log-odds
.000	$-\infty$
.100	-2.197
.200	-1.386
.300	-0.847
.400	-0.405
.500	0
.600	+0.405
.700	+0.847
.800	+1.386
.900	+2.197
1.000	$+\infty$

probabilities can take values between 0 and 1, other software uses log-odds,[22] which can take any positive or negative number. 0 means that there is no influence. Positive numbers indicate that the likelihood is greater, negative numbers that it is smaller. The relationship between factor weights and log-odds can be seen in Table 6.2. Using log-odds instead of factor weights has the advantage that we can simply add up the log-odds of individual levels of different factors such as style, age and gender and the intercept to easily compare differences between two or more groups and speakers.

There are further advantages of Rbrul over GoldVarb (Johnson 2009: 362–363), of which the most important are its versatility and ease of use. Unlike Gold-Varb, Rbrul can deal with continuous dependent (such as vowel formant values) and independent variables (such as age) and can estimate so-called mixed-models (6.3.2). Furthermore, GoldVarb uses a fixed 0.05 threshold for determining factor group significance. In Rbrul this can be either changed manually or by using the Bonferroni correction (Field 2009: 372–373), which divides α (the significance level) by the number of predictors, thus if e.g. we have 10 predictors, we would set α to $0.05/10 = 0.005$.

6.3.2 Using mixed-effects modelling in sociolinguistic research

Ordinary linear or logistic regression assumes that the observations making up the data are independent of each other. However, this assumption is often violated in

[22] The formula is ln(p/(1-p)), whereby p is the input probability, i.e. the proportion of the articulation of a variant. This is also referred to as the logit function.

(socio-)linguistic research where tokens are grouped according to speaker. Since speaker is usually not included as a separate category in a VARBRUL analysis, this can lead to an overestimation of external factors, such as age or gender, when in fact the variation is due to individuals within those groups. At the same time, when we include speaker as a variable, this will often cause effects like age and gender to be underestimated and dropped from a model despite making a significant contribution (Johnson 2009: 363–365).

A way out of this conundrum has been made possible recently by the development of a more sophisticated statistical method called mixed-effects modelling, which is

> a flexible and powerful tool for the analysis of grouped data … includ[ing] longitudinal data, repeated measures, blocked designs and multilevel data. The increasing popularity of mixed-effects models is explained by the flexibility they offer in modeling the within-group correlation often present in grouped data, by the handling of balanced and unbalanced data in a unified framework, and by the availability of reliable and efficient software for fitting them (Pinheiro & Bates 2000: vii, cited in Johnson 2009: 364)

In a mixed-effects model, factors are separated into two groups. Fixed effects are factors with a relatively small number of possible levels, such as gender, social class or phonetic environment. A factor such as speaker or word is usually drawn from a larger population and is referred to as a random effect. A random effect is often not replicable, since e.g. a follow-up or parallel study would usually not involve the same individuals. Including speaker as a random effect means that if an individual's behaviour deviates from the estimate for the rest of 'their' group – be it males, middle-class speakers or ethnicity –, this behaviour can still be taken into account. This, of course, is particularly useful in a situation such as that of the current study in which language change is promoted or inhibited by individual speakers. A mixed-model still captures other external factors, but only if they can contribute to the explanatory power more than the inter-speaker variation. Thus, whereas a fixed-effects-only model will often include quite a large range of factors, making individual effects rather difficult to interpret, a mixed-effects model can clearly reduce the number of significant factors and simplify their interpretation (Johnson 2009: 363–365).

Using both simulated and real data, (Johnson) discusses the advantages and disadvantages of using either type of regression model. Especially, the discussion of "[l]oan word stress shift in Hønefoss Norwegian" (Johnson 2009: 371–373), which is structured in a similar way to my own data, highlights the positive effects of mixed-models. The data consists of 565 tokens collected from 20 speakers and the amount of tokens ranges between 8 and 72. Three external factor groups were included in the fixed-effects regression model: age, gender and education. Gender was not significant and therefore dropped from the stepwise model, leaving age and education as significant factors, both at the level of $p < .000$. In the mixed-effects model, Rbrul first considers individual speakers as a random effect and then adds education, which is now significant only at the $p < .01$ level and thus retained in the model. Age comes out at $p = 0.28$ and is therefore dropped. Not only is education now the only fixed factor; the log-odds for education are now also more extreme. This means that the effect education has is stronger than in the fixed-effects model. Age is dropped from the model because including speaker yields very different means. Averaged over tokens, young adults shifted stress about 27% of the time and older adults about 70% of the time. However, since the number of tokens for the young adult speakers who do not shift is much greater than for those young adults who do, they drag down the group mean considerably. Averaged over speaker the figures are 45% (young adults) and 69% (older adults). Thus, the effect size for age has decreased drastically, making age insignificant. The increase in effect size in education reveals that the score distributions are severely skewed. Half of the university-educated speakers stress-shifted less than 7% of the time while half of the speakers who had vocational training stress-shifted more than 95%. Since the fixed-effects model does not cater for speaker-based variation, this cannot be included in the regression, whereas a mixed-effects model does.

One other great advantage of Rbrul over GoldVarb relates to the so-called Type I and Type II errors. The former occurs when we believe that there is a significant effect of a factor, when in fact there is not. The latter is the opposite and refers to a situation in which there is significant effect on the population but we cannot capture it with our model (Field 2009: 55–56). Here Rbrul outperforms GoldVarb in both respects on simulated and real data (Johnson 2009: 365–376).

While using mixed-effects models has many advantages when applied to data as in my project, it also has some disadvantages. One that is particularly obvious is the absence of the goodness-of-fit R^2 value which “quantifies the proportion of the variance in the data that is captured and explained by the regression model”

(Baayen 2008: 88) in linear models or Pseudo-R^2 in logistic models. "There is no generally-accepted analogy of R-squared for mixed models, so currently one is not reported by Rbrul" (Johnson 2011).

6.3.3 Statistical modelling

For the vocalic data, Rbrul fits a linear mixed-effects model (LMM). This type of regression models the relationship between a continuous dependent variable *Y* (in this case normalised f_1 and f_2 values for (BOOT) and normalised f_1 and f_2 values in the onset and glide as well as the Euclidean distance for (OUT)) and two or more independent variables. An ordinary regression model fits a straight line through the observed data points that summarises the general trend and calculates the coefficients of each independent variable. These coefficients show the relative effect of each independent variable on the outcome of *Y*; i.e. by changing the value of *X* we can predict the value of *Y*. Thus, we can see the impact each independent variable has on the realisation of a specific vowel. In a mixed-effects model, an intercept – i.e. the point at which the line crosses the *Y* axis (cf. e.g. Baayen 2008: 85) – of the overall model is fitted to the data and then the variability of intercepts around that overall model is calculated for the random effects, in this case for each speaker.

For each dependent variable I fitted a backward stepwise (step-down in GoldVarb and Rbrul terminology) linear mixed-effects model. This means that in the initial model all independent variables are included (the so-called maximum model). In a series of runs Rbrul then calculates which of the predictors does not make a significant contribution (i.e. *p* has a greater value than is allowed by the Bonferroni correction) and one by one removes those which contribute least (i.e. in which *p* is greatest) to the current model. The final model then contains only those predictors and interactions which contribute significantly to the explanation of the variation in the dependent variable.

The initial model is rather complex and includes a large number of possible predictors. For the vowel variables the following factors were taken as independent variables, each factor having a number of levels within it:

- Random factor
    - Speaker
- Internal fixed factors

  - Preceding phonetic environment (for BOOT)
  - Following phonetic environment (for BOOT)
  - Position in the word (except for BOOT)
  - Lexical set according to Wells (for BOOT)
  - Stress (for POSTVOCALIC R)
- External fixed factors
  - Age group
  - Social class
  - Gender
  - Interactions of Age group*Gender, Age group*Social class and Gender*Social class
  - Rating of one's own speech
  - Father's birthplace
  - Mother's birthplace

As regards the internal factors, phonetic environment and position in the word have proven to be very powerful in previous research (see the discussions in 6.3) of the variables under concern in this study. I have included English lexical set as a predictor for BOOT, despite them usually being merged in Scots and Scottish, to see if dialect contact to speakers of non-Scottish varieties may have had influence on the lexical distribution of variants in Aberdeen.

I am aware of the possibility of the effects of further internal factors, in particular lexical effects (Wang 1969; Bybee 2002) (see also section 4.1.1) and for the Scottish context Stuart-Smith & Timmins (2006) and Clark & Trousdale (2009). It would have been possible to include more internal factors such as *word* as a random factor or *frequency* as a fixed factor in the statistical model, but I decided against this mainly for two reasons. Firstly, the focus of this research project is clearly on external factors, particularly dialect contact and a way of modelling speaker-based innovation and conservatism. Secondly, including *word* as a random factor – unlike for speaker – would have yielded very many single-occurrence tokens, i.e. the results could have been skewed by realisations that occurred only once in the whole corpus. One way out would have been considering only those words that occurred at least a specified amount of times in the corpus. That, however, would have seriously decreased the overall number of tokens available to be taken into account.

Therefore, I will carry out a separate analysis of a larger range of internal factors (Brato in prep.) and discuss these findings in a separate paper.

The external factors cover a range of 'classic' sociolinguistic features but also include variables that are more specific to the linguistic situation in Aberdeen. They will be explained in turn.

Style is known to influence a speaker's pronunciation quite strongly and is usually included in any sociolinguistic study. Two speech styles are considered here. Wordlist style is rather formal, whereas in interview style I hoped to achieve a more relaxed setting which would lead to a more natural style.

As has been described above (6.1.1), the speakers in this study were grouped according to age (8-10, 13-15 and adults), social class (middle-class vs. working-class) and gender. Furthermore, the two-way interactions[23] between each of these broad social categories were included.

In the sociolinguistic questionnaire, the teenage and adult participants were asked to rate their own speech on a five-point scale in which 1 indicated *broad Aberdonian* and 5 *SSE* with intermediate categories of *rather local*, *in-between* and *rather SSE*. For the younger group this was deemed too complex and I used a three-point scale with the values *I speak like most people around here*, *in-between* and *I speak like the newsreader on BBC Scotland*. For the analysis the five-point scale was reduced to three categories: (rather) local, in-between, (rather) SSE because only very few speakers classified themselves at the extreme ends. Had I kept the five-point division, this would have automatically led to by-speaker effects.

Finally, I included parents' birthplaces in the model since as pointed out in section 4.1.3, parents play an important part in the early stages of language acquisition and despite this influence decreasing over time may still be role model as regards certain pronunciations (e.g. Glasgow-born WC parents are very likely to have highly fronted BOOT vowels and the [h] variant in /θ/). At the same time, they may or may not be more open to (or discourage) certain features known from their home variety. Here an example could be the vocalisation of /l/ in coda position, which is more common in England. The parental background of my speakers is very varied. For the large majority (29 out of 44), both parents were born in the North-

[23] Performing analyses using three-way interactions (e.g. Age group*Social class*Gender) are as of now not possible in Rbrul.

East. Three speakers have one parent born in the Central Belt and the other in the North-East. For two speakers, one parent is from the Central Belt and the other from the rest of Scotland. Four speakers have one English and one Scottish parent. The parents of speaker TMM2 are both English. All speakers with English-born parents are from the younger and teenage middle-class groups.

The analysis of the consonant data follows a similar pattern, but requires a generalised (logistic) mixed-effects model (GLMM) since here the levels of the dependent variable are categorical, as outlined above. The random and external factors were kept the same as for the vowels, but internal factors are slightly different depending on the individual variants. They are described below.

6.3.4 Interpreting the Rbrul output

The output Rbrul produces for the GLMM consists of three elements. Firstly, it produces the tables for the fixed effects which are similar to the output GoldVarb creates. I have changed the default setting to show both log-odds and VARBRUL factor weights. The second element contains the data for the random effects. In this case it thus estimates a parameter representing the amount of inter-speaker variation. Put another way, this means that it shows how much the input probability varies from speaker to speaker. We can thus take into account that some speakers will favour or disfavour a linguistic variant "over and above (or 'under and below') what their gender, age, social class etc. would predict" (Johnson 2009: 365; 381 fn.18). In the Rbrul manual Johnson (2011) explains this in the following way:

> if we had a random effect for speaker, and [standard deviation] came out as 0.50, that would mean that after taking into account all the fixed factors in the model, speakers still showed individual variation on the order of 0.50 log-odds standard deviation.

This means that on top of the effect sizes for the fixed factors for 68% of the values for the individual speakers, we will find variation in the range of ± 0.5 log-odds units (1 standard deviation) and for 95% within ± 1 log-odds units (2 standard deviations; see Figure 6.2 for a normal distribution curve with selected values of standard deviations and corresponding percentages. We would thus conclude that between-speaker variation is quite considerable.

In order to be able to assess the actual effect of an individual, we can change Rbrul's default setting so that

> […] the model output will contain estimates of the individual effect for each speaker (or other random effect) in the observed data. These numbers resemble and are comparable with the fixed effect coefficients, although in a technical sense they are not parameters of the model in the same way. The reason the random effect estimates are hidden by default is that in standard mixed-model analysis, we are not interested in the exact values of these estimates, only in taking the variation of that group into account, which improves the rest of the model in various ways, most notably by enabling the accurate assessment of the significance of between-speaker factors: gender, age, etc. If you are primarily interested in the behavior of the particular individuals in your sample (rather than viewing them as a sample), then you will get better results by treating speaker as a fixed effect, but in that case, you would forgo the possibility of testing between-speaker effects. Keeping speaker as a random effect and inspecting the by-speaker estimates is perhaps a good compromise between these two extreme positions. (Johnson 2011)

It is the last sentence in this quotation that is particularly important for my study. While some of the changes I discuss progress along the lines of larger social categories, the raw data suggests that the role of the individual in the promotion of these changes must not be underestimated, so this setting was chosen.

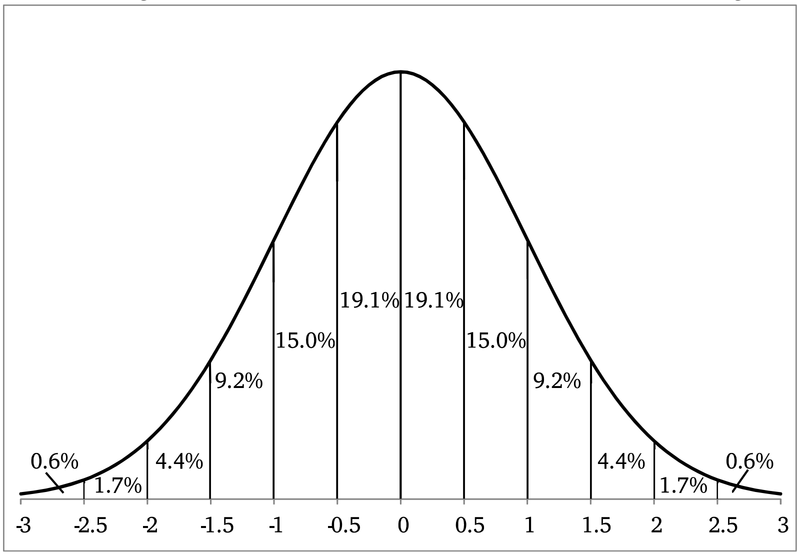

Figure 6.2: Normal distribution curve with standard deviations and percentages

6.4 Assessing innovation and conservatism

As I have discussed in section 4.2, different models have been put forward to explain linguistic innovations both on the group level and that of the individual. The approach taken here is based on the results from the statistical analyses of the individual variants of the linguistic variables under study. As outlined in section 6.3 above, using mixed-effects models provides results that can be interpreted on the group level. In addition, for most of the variables and variants, there is significant variation on the speaker level. I suggest that we use the by-speaker estimates to model an individual's innovativeness or conservativeness.

Stuart-Smith & Timmins (2010) suggest assessing speaker-based innovation on the basis of data collected through ethnographic work as well as self- and external assessment of a speaker's social identity. They argue that speakers can be assigned to one of the five adopter categories as proposed by Rogers (2003) and that these correlate with a speaker's use of particular socially meaningful linguistic variants. This model strongly relies on the researcher's assessment of an individual's character traits on the basis of some kind of predefined categories.

The very different design of my study does not allow for a meaningful application of the model they propose for different reasons. For a start, my study uses a variationist rather than ethnographic approach to data collection, so that the type of background information that they could use is not available to me. Furthermore, while they focus on a small and – at least on the macro level – highly homogeneous social group – all are working-class teenagers from the same school – my sample is considerably more varied, both as regards social class and age.

The model of speaker innovativeness I propose here is inspired by the work of Rogers (2003) and the application in a sociolinguistic context by Stuart-Smith & Timmins (2010), but is fundamentally different in the way that innovation and conservatism are measured and evaluated. Instead of assigning speakers to an adopter category on the basis of social factors and then trying to match these with linguistic performance, I suggest a data-driven and therefore potentially more objective approach, the usefulness of which I will evaluate using the Aberdeen data I collected.

The first – and crucial – step in measuring innovation and conservatism is the identification of variants of a linguistic variable that represent the two poles of the continuum. In the context of the present study I suggest that we call those variants innovative which, according to the previous comments, are not attested so far in the accent of the North-East and Aberdeen or have entered the system only very recently (such as the fronted allophone of /u/ Millar 2007: 118 mentions). The innovative variants can be further subdivided into those of Scottish or – more precisely – Glaswegian origin and those diffusing across the urban accents of Britain. Conservative thus refers to those variants which are potentially being replaced by the incoming variants. This includes longstanding traditional dialect features (such as /ʍ/→[f]), but can also refer to the standard variants for which so far there was no attestation of regional or social variation in Aberdeen as in (POSTVOCALIC R).

The classification, however, is not always as straightforward as it may sound. In the case of binary variants, such as (L): [ɫ] vs. [V][24] and given that we know that the latter is currently diffusing through urban British accents alongside other consonants features, categorisation is unproblematic. Speakers who prefer [ɫ] are rather conservative; those with large percentages for [V] usage are more innovative.

However, as has been pointed out in section 4.1.2, following dialect contact, it is not uncommon for more than two variants to remain and to be reallocated to fulfil new, mainly social, functions. In the Aberdeen data, this is found for at least two consonant variables. As regards (TH), we find the standard variant [θ], which we can easily assign to the conservative end but we also find both [f] and [h] in the data. Neither variant has been mentioned in previous work on the variety, so we must assign both to the innovative category. Yet, despite them both being stigmatised, it is impossible to evaluate them in the same way because they potentially signal two very different social meanings. Using [f] can be regarded as affiliating with London speech or at least with supraregionality. On the other hand, [h] is a well-known and long-standing feature of Glaswegian working-class speech (see chapter 3) and speakers may wish to use it in order to signal their association with Glasgow and its working-class values (for a more detailed discussion of this see section 7.6). For the variable (HW), we find that the standard variant [ʍ] and the incoming form [w] are most common and the traditional nonstandard [f] has greatly receded. Both [ʍ] and [f] can be said to be conservative because they are longstanding variants in the North-East. Yet again, they cannot be grouped together because of their very different social distribution. We will return to this problem in the findings sections for the individual variants concerned.

After deciding on which variants are innovative and conservative, the second step is to assign variation patterns to the respective categories. We could, for example, categorise the data on the basis of fixed percentiles of the usage of a particular variant and we might like to argue that speakers who use (L):[V] in, say, more than 70% of their tokens, are innovative and those who use it in less than 30% are conservative, with the other speakers falling in-between. This works relatively well if

[24] [V] here represents a vowel, usually in the region of [o~ɤ~ʊ], also see section 7.4.1; contexts in which Scots L-vocalisation could occur were excluded.

we only look at a single variant, but makes comparisons of innovativeness and conservativeness across several features rather difficult because changes may be more advanced in one variable than the other. Similarly, for metric data such as vowel formants, we could use a scale which allows the classification of innovative and conservative forms on the vertical and horizontal axis. This was, for example, suggested by Mesthrie (2010) for measuring sociolinguistic variation as regards the frontness of the GOOSE vowel in South African English (see section 7.1.2 for a discussion of this method and the application in the current study). While Mesthrie's scale works for high vowels, he has to concede (2010: 11–12) that because of the mathematics behind the Watt-Fabricius algorithm a different scale would be necessary for low vowels.

As discussed above (6.3.2), using mixed-model statistical analysis in sociolinguistic research allows for a more accurate assessment of speaker-based variation in comparison to other regression models. For those variants for which the by-speaker estimates are significant, we can use these to objectively assess an individual's innovativeness and conservativeness in comparison to what the predictions based on their social categories suggest. In other words, this means that it is not necessarily the speakers who use a particular variant most frequently that are considered the innovators, but rather those who behave most differently from their group. We can illustrate with the example of the [w] variant for the variable (HW) in interview style. There are two significant fixed effects: Phonological context and age. The first is, of course, internal, the latter is external. Additionally, there is individual speaker variation on the level of 1.13[25] log-odds standard deviation. That means that on top of the group values for the external factors, 68% of speakers (1 sd, approx. 30) still showed individual variation in the range of ± 1.13 log-odds units and 95% (2 sd, approx. 42) within ± 2.26 log-odds units. We can then look at the speakers' values and thus draw conclusions on who over- and underuses a variant based on their group behaviour. This works in a similar way for the metric Watt-Fabricius ratios and Euclidean distances calculated for the vowel data. An advantage of using stan-

[25] The actual standard deviation of the random factor can be different from the estimate that is produced depending on group size, but should be close to it, particularly if it is a large group (D. Johnson, p.c.). In this study of 44 speakers the difference is sometimes rather large. In the example given here, Rbrul suggests a standard deviation of 1.29 log-odds; the actual standard deviation is 1.13. Therefore in this study, the actual standard deviation will be used.

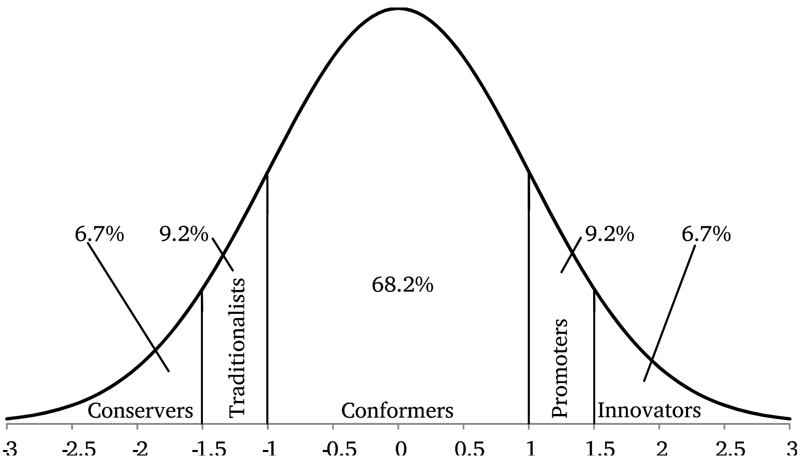

Figure 6.3: Classification of speakers on the innovation scale

dard deviations instead of fixed percentages or ratios is their flexibility and comparability across different variables.

I propose five groups based on standard deviations from the overall by-speaker estimate mean (Figure 6.3). Unlike Rogers Rogers (2003: 281) (see Figure 6.4, reproduced here from Figure 4.1) who groups innovators as those who use an innovation more than 2 standard deviations larger than the overall mean (equivalent to approx. 2.5% of the population), I suggest that because of the small sample sizes typical in sociolinguistic studies, we should enlarge this category since otherwise this would mean that often only a single speaker would fall into this category.

Therefore, in this study, I refer to 'innovators' as those speakers who use an innovative form more often than 1.5 standard deviations from the by-speaker estimate mean. Returning to the example given above, that means that speakers whose

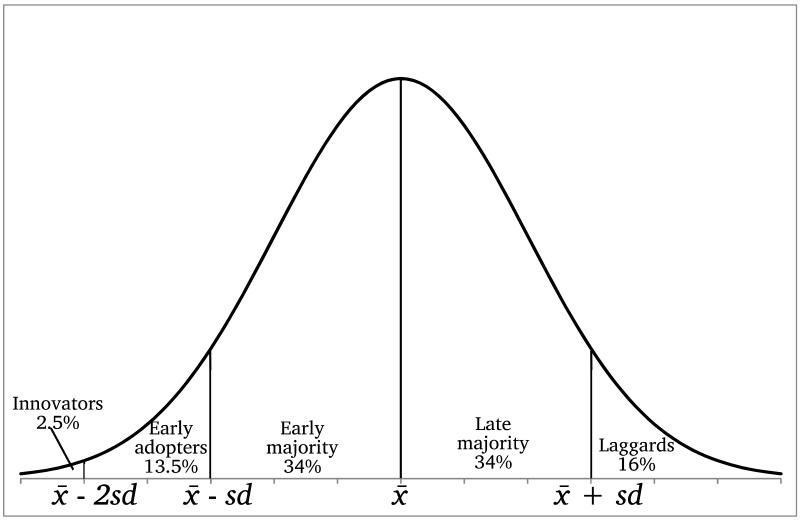

Figure 6.4: Adopter categorisation on the basis of innovativeness, redrawn from Rogers (2003: 281: Figure. 7-3)

individual log-odds for (HW:[w]) are greater than 1.157 (1.5*0.771) would be innovators. This works in the same way for individual unit changes in formant values. For example, for the BOOT vowel, innovation is related to fronting. So speakers with individual values higher than 1.5 standard deviations from the mean speaker values are considered particularly innovative. This comprises about 6.7% of the sample and equals approximately three speakers.[26] For the conservative variants we can use the same kind of model, but we need to change the algebraic sign since high log-odds or large unit values always indicate a greater likelihood of using a variant. Again, taking (HW) as an example, innovation is expressed here by high negative values for the [f] variant. The second group I call 'promoters'. It consists of about 9.2% of the speakers who overuse[27] an innovative (or underuse a conservative) variant in the range of 1-1.5 standard deviations. The largest group is that of the 'conformers'. They comprise speakers whose values fall into the range of ±1 standard deviations; they make up about 68.2% of all the participants. Speakers in this group are neither promoting nor discouraging innovations, but are 'floating along' with their respective groups. 'Traditionalists' are the counter image of the 'promoters', so these speakers underuse an innovative form on the range of 1-1.5 standard deviations. The final group is that of the 'conservers'. They are the most conservative speakers, avoiding innovative variants in favour of more traditional or standard variants. This group underuses the innovative variants larger than 1.5 standard deviations.

This type of classification will provide the means by which I will discuss speaker innovation and conservatism for each of the variables and their respective variants or features in the following chapter. The focus here will be on discovering patterns in the individual variables. For each variable and variant a speaker is classified as belonging to one of the five categories, which we can assign to a five-point scale:

- 1: conserver
- 2: traditionalist

[26] Depending on the actual distribution of values because of the small sample size there can be two or four speakers in this group.
[27] The terms 'overuse' and 'underuse' are used here in the sense of more or less likely than suggested by group affiliation.

- 3: conformer
- 4: promoter
- 5: innovator

7 Linguistic variables

In this chapter I will present and discuss the findings for the two vocalic – (BOOT) and (OUT) – and four consonant variables – (HW), (L), (POSTVOCALIC R) and (TH). All subsections are ordered in the same way. I will first outline the background to the variable under question, including the sociolinguistic situation in Scotland and, if appropriate, elsewhere. This is followed by a brief section covering the variable-specific methodology, which is not covered in the more general chapter above. The findings sections are presented separated by style and first contain a descriptive part followed by a discussion of the results of the mixed-effects models that were fitted to the individual variants. Each section is rounded off by a discussion of the findings in relation to previous studies and the theoretical frameworks.

An overview of the significant factors for each variable and its variant(s) or element(s) is given for the interview data in Table 7.1. It shows that by far internal factors are most important in determining variation patterns. Of the social factors, age is the single most powerful predictor, sometimes as part of its interactions with social class or gender. The way a speaker rates his or her speech on the Scots-SSE scale and the interaction of social class and gender do not have any significant impact at all. Father's birthplace is only significant in the explanation of variation in (POSTVOCALIC R). The birthplace of a speaker's mother only contributes significantly to the realisation of (TH). By-speaker effects are variably strong in all variables.

The patterns for the wordlist data (shown in Table 7.2) are slightly different to those of the interviews. The internal factors and age are still strong, but gender differences are attested more frequently in this style. As in the interviews, both a speaker rating of their own speech as well as the interaction of social class and gender are not significant. In addition to that, also father's birthplace does not contribute at all and mother's birthplace is restricted to a variant of (TH). Speaker effects are generally stronger.

Table 7.1: Overview of significance and by-speaker effects for all variables and their variants in interview style

Variable	Variant/ Element	Internal	Age	Class	Gender	Age*Class	Age*Gender	Class*Gender	Own speech	Father	Mother	Speaker effects
(BOOT)	F2/ S(F2)	***1 ***2	***									0.1 (0.09)
(OUT)	F1/ S(F1)	**3	***									0.1 (0.09)
(OUT)	F2/ S(F2)	***4 ***3										0.12 (0.12)
(OUT)	F1G/ S(F1G)		***									0.08 (0.07)
(OUT)	F2G/ S(F2G)	***4			*							0.14 (0.14)
(OUT)	ED	***4				*						0.04 (0.03)
(HW)	[ʍ]	***4	**	***								1.22 (1.02)
(HW)	[w]	***4	***									1.29 (1.13)
(L)	[l]	***4	***									0.73 (0.58)
(L)	[V]	***4	**									0.68 (0.5)
(r)	[R+]	***4 ***5				***				**		0.44 (0.3)
(r)	[RT]	***4	***									0.73 (0.54)
(r)	[RA]	***4 ***5				***				***		0.35 (0.22)
(r)	[Vr~V]	***4				**				***		0.33 (0.2)
(TH)	[θ]	***4									*	0.94 (0.79)
Notes	1: preceding context, 2: following context, 3: alternation, 4: phonological context, 5: stress											

Table 7.2: Overview of significance and by-speaker effects for all variables and their variants in wordlist style

Variable	Variant/ Element	Internal	Age	Class	Gender	Age*Class	Age*Gender	Class*Gender	Own speech	Father	Mother	Speaker effects
(BOOT)	F2/ S(F2)		***									0.12 (0.1)
(OUT)	F1/ S(F1)	***1	*									0.12 (0.11)
(OUT)	F2/ S(F2)	***2			*							0.1 (0.09)
(OUT)	F1G/ S(F1G)	*2										0.09 (0.08)
(OUT)	F2G/ S(F2G)	***1			**							0.16 (0.15)
(OUT)	ED	***1		***			**					0.09 (0.07)
(HW)	[ʍ]		***									0.92 (0.61)
(HW)	[w]		***									0.94 (0.62)
(L)	[l]		**									0.42 (0.24)
(L)	[V]		**									0.71 (0.6)
(r)	[R+]	***3				**						0.57 (0.39)
(r)	[RT]						**					0.52 (0.37)
(r)	[RA]	***3				**	***					0.44 (0.31)
(r)	[Vr~V]	***3	***									0.65 (0.45)
(TH)	[θ]	**1	***		**							1.12 (0.88)
(TH)	[f][28]				**						*	1.43 (1.15)
Notes		1: phonological context, 2: alternation, 3: stress										

[28] Since [f] is restricted to the speech of teenagers and children, adult speakers were excluded in the regressions.

7.1 (BOOT)

7.1.1 Background

Johnston's (1997b: 465–468) BOOT class in SSE and Scots roughly corresponds to the lexical sets foot and GOOSE as described by Wells (1982: 132-133, 147-149, 397) with the exception of those GOOSE words with vowels that follow the phoneme /j/, as e.g. in *cute, news or tune*. These are subsumed under the NEW and DEW classes, which are realised as a rounded central or front [ʉ~y] vowel and will not be addressed in this study. Before /v/, /ð/ and /z/, BOOT is merged with OUT (which is usually a monophthong in Scots) yielding a central or back rounded realisation [ʉ~u] (Johnston 1997b: 466). In Scots, the BOOT class is a descendant of Older Scots /øː/ and is generally realised as [ë~ɛ̈] in short environments and [eː] in long ones; in short environments it may merge with the BIT class and be realised as [e̞(ː)~ɨ(ː)~i(ː)]. SSE has /u/ in this class, "realised as whatever the local form of OUT is in low status varieties" (Johnston 1997b: 466). Lexical "bleeding" (Johnston 1997b: 466), i.e. the replacement with the SSE variant, is gradually progressing into many varieties of Scots. Social variation has been described by various scholars for the Central Belt varieties, with backer (and rounded) realisations typical of a middle class background and fronter (both rounded and unrounded) realisations in working class speakers (Speitel & Johnston 1983: 15–17 for Edinburgh and Macaulay 1977: 38–42, Macafee 1983a: 34 and Stuart-Smith 1999a: 207–208 for Glasgow. Stuart-Smith (2004: 53–54) gives a typical SSE realisation as [ʉ̠].

Scholars working on varieties in the North-East point out the great realisational variation ranging from the merger with MEET/BEAT in selected items to a range of high rounded variants in various positions, similar to the monophthongal realisation in OUT. Besides this, Johnston (1997b: 467) points out that the word *foot* "takes BIT [most commonly pronounced [ë]] realisations throughout the region". For Aberdeen City, Robinson & Crawford (2001: 79) attest the regular use of the SSE variant [ʉ] in their speakers. Hughes et al. (2005: 107) find a continuum in which /u/ can be retracted to "a quality in the region of cardinal vowel 8", but may also surface as a centralised or highly fronted [ʉ̟] or [y]. Millar (2007: 118–119) also finds fronting in this variable, particularly in WC speakers. This realisation, he argues, has 'jumped' to the area from the Central Belt.

In his description of the Doric variety of Huntly, located approximately 40 miles to the northwest of Aberdeen, Marshall (2004: 84) comments on two separate realisations according to Wells' lexical sets FOOT, which takes /ë/, and GOOSE, which takes /ʉ/.

Furthermore, McClure (1995: 370) presents formant measurements for an SSE speaker born and brought up in Turriff, a village in Aberdeenshire, approximately 35 miles to the northwest of the city. There is no information on the informant's age. The formant values for /u/ are given as 300 Hz for f_1, 900 Hz for f_2 and 2200 Hz for f_3, which indicates that this speaker does not have any sign of fronting.

In most of the other L1 varieties of English, the lexical sets FOOT and GOOSE are usually kept separate. Fronting of GOOSE, but not FOOT has recently been attested in a number of accents in England (including RP) (see e.g. Ferragne & Pellegrino 2010; Docherty 2010 for recent overviews) as well as the US (e.g. Fought 1999; Hall-Lew 2009) and South Africa (Mesthrie 2010). As opposed to the case of a number of consonant variables, however, there is no indication that SSE and Scots vowels have been influenced by an exogenous variety recently, so that an extensive discussion of variation patterns in these, most notably English English, or other varieties is not necessary.

7.1.2 Methodology

(BOOT) was not one of the variables anticipated to be part of the analysis in this study. While the more recent comments in Hughes et al. (2005) and Millar (2007) suggest that there is a change towards a more Central Belt-like variation pattern, this literature was not yet available at the time of the preparation of the study. I noticed the pattern during fieldwork and thus, decided to include this variable as well. There were only three BOOT words (foot, who, smooth) in the wordlist, resulting in 128 tokens in this style. In interview style a total of 1172 tokens were collected.

While the social characteristics of studies focusing on GOOSE-fronting in other varieties of English are not relevant in the context of the present study, we need to take into account the internal mechanisms that influence the distribution of the /u/

vowel. Let us first turn to phonetic environment. Following /j/, GOOSE is often quite extremely fronted. Therefore Labov et al. (2006: 150) analyse data in this environment in the *Atlas of North American English* as a separate category on the basis of historical reasons. Mesthrie (2010: 10) includes these tokens in his analysis, but refers to them as the 'J-words', which constitute a separate sub-category (also cf. Baayen et al. 1997, cited in Mesthrie 2010: 10 who note that 70% of fronted tokens follow either /j/ or an alveolar). In the Scottish context, as pointed out above, these tokens are subsumed under the NEW and DEW classes. Therefore, words in which /u/ is preceded by /j/ are not taken into account here either.

Fronting is also generally attested when /u/ is preceded by a coronal consonant (which of course subsumes the alveolars mentioned above) (Mesthrie 2010: 10). Furthermore, Mesthrie argues that preceding /l/ and /r/ should be analysed separately because of their influence on formant measurements. When the vowel is followed by /l/, it is usually much more retracted. As Labov et al. (2006: 150–151) argue, these should be placed in a separate category as well.

In line with these comments, the interview data was separated according to the following preceding phonetic environments:

- preceded by non-coronals, e.g. *cook, moved*
- preceded by coronals, e.g. *took, shoes*
- preceded by /l/, e.g. *look, lose*
- preceded by /r/, e.g. *room, through*

A second distinction was made in contexts in which the vowel precedes phonological /l/ and other contexts:

- preceding phonological /l/, e.g. *pull, cool*
- preceding other contexts or word-final, e.g. *good, through*

In order to address the possible realisational split in BOOT according to FOOT [ɪ~ë] and GOOSE [ʉ] that was mentioned for Scots, I included lexical set as a variable.

Separate linear mixed-effects models (LMM) were fitted for the interview and wordlist data to discover significant variation patterns in the realisation of the BOOT vowel on the front-back (F2/S(F2)) dimension. For the interview data the model included nine fixed factors (preceding context, following context, Wells' lexical set, age, gender, social class, rating of own speech, father's birthplace, mother's birthplace). In addition, it included the pairwise interactions of age, gender and social class. Speaker was kept as a random factor. Because of the small number of tokens, the two contextual factors were not included in the model for the wordlist data, but the other factors and interactions were held constant.

In the interpretation of the values for normalised f_2 data, I follow Mesthrie (2010: 12). In his study of the status of GOOSE in South African English, he also uses the Watt-Fabricius normalisation algorithm and proposes a scale of fronting for high vowels (also see Figure 7.1.1):

> The backness scale runs from just over 0.1 to just over 2.0. Using units of 0.2 as convenient grid points, we can start with a backest value of 0.2 and a frontest value of 2.0, with 10 intervals in between. Taking 1.0 as the centre point (derived from the [Watt-Fabricius] normalisation method), an interval on each side gives a range of 1.2 to 0.8 for the category of central vowel. An interval on each side of this gives us an intermediate space between central and front (1.4 to 1.2, which I call 'frontish') and central and back (0.8 to 0.6, or 'backish'). In the traditional vowel chart these would still be in the central range (for high vowels), and therefore correspond to a notion of front-central and back-central respectively. Truly front values are to the left of 1.4 (i.e. from 2.0 to 1.4) and truly back values are to the right of 0.6 (i.e. from 0.6 to 0.2). (Mesthrie 2010: 12)

Since this scale is not restricted to GOOSE and/or the South African context, but is more general, we can also use it to allocate the different patterns of the realisation of BOOT.

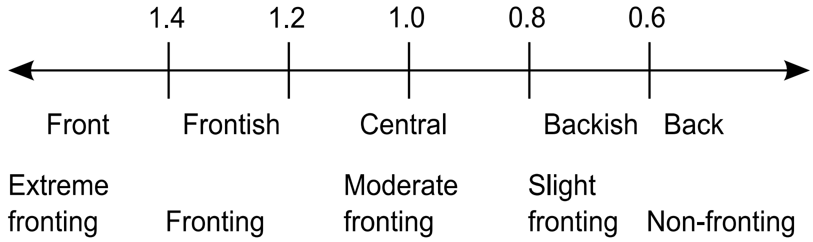

Figure 7.1.1: Scale of fronting of high vowels by Watt-Fabricius ratios (redrawn from Mesthrie 2010: 12)

7.1.3 Findings

Sociolinguistic variation patterns in (BOOT) are usually only attested for the front-back dimension (F2/S(F2)) and this study is no exception. There is some small variation in the height dimension that I will comment on where appropriate. The overall descriptive results separated by style are presented in Table 7.1.1 and visualised in Figure 7.1.2. There is only a relatively small difference between the mean values of the interview and wordlist styles, but we need to bear in mind that none

Table 7.1.1: Desciptive statistics for the distribution of (BOOT) in interview and wordlist style

	N	Mean F1/S(F1)	SD F1/S(F1)	Mean F2/S(F2)	SD F2/S(F2)
Interview	1172	0.82	0.12	1.25	0.27
Wordlist	128	0.78	0.13	1.19	0.26

of the wordlist tokens includes either a sequence of a coronal consonant + BOOT or BOOT + /l/. The vowel is generally realised as a relatively high and (in Mesthrie's terms) slightly frontish [ʉ̟], which approaches a quality typical of that of the Central Belt varieties. The comments in the most recent descriptions of this phoneme suggest that there is strong variation on the front-back dimension (Millar 2007; Hughes et al. 2005). This finding is clearly confirmed in the present study as can be seen by the relatively large standard deviation of 0.27 WF-ratios.

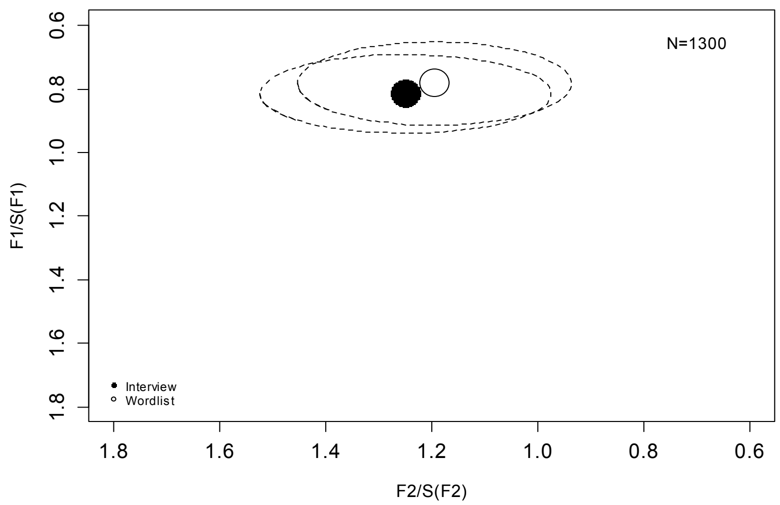

Figure 7.1.2: Mean values of (BOOT) and ± 1sd separated by style

7.1.3.1 Interview style

There is the full range of realisations from fully back [u] to fully fronted [y], but as Figure 7.1.3 shows the distribution of variants is very heterogeneous and shows a tendency towards fronter variants. Only eight tokens have a value below 0.6 WF-ratios, which Mesthrie (2010: 12) describes as the limit for a fully back realisation. Slight fronting (0.6 < 0.8 WF-ratios) is found in 83 tokens, of which 51 precede /l/. Realisations in the range of 0.8 < 1.0 WF-ratios occur 157 times. 213 tokens fall into the moderately fronted range. By far most the frequent are the fronted (308) and extremely fronted variants (400). The latter we can even subdivide fur-

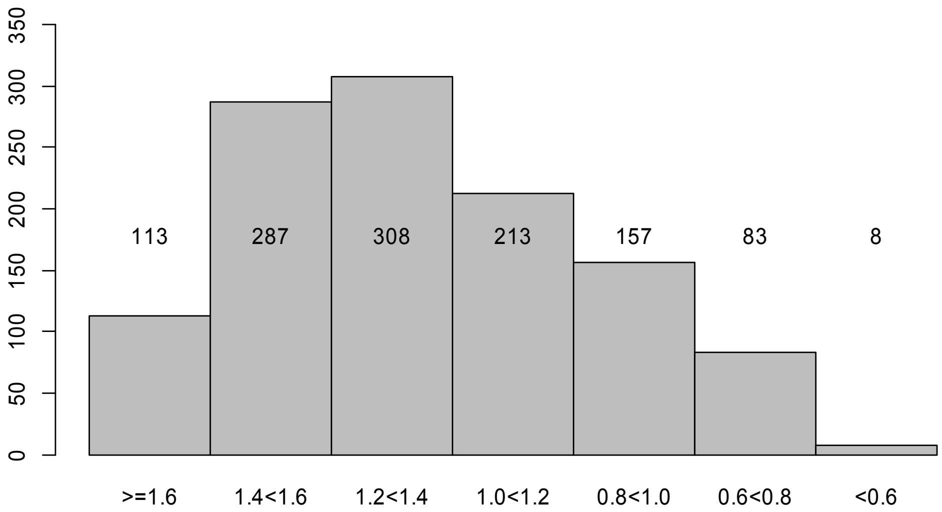

Figure 7.1.3: Barplot of frequencies of F2/S(F2) values critical for 'fronting units' in Interview style

Table 7.1.2: Descriptive statistics for the distribution of (BOOT) by preceding phonetic environment in interview style

Preceding context	N	Mean F1/S(F1)	SD F1/S(F1)	Mean F2/S(F2)	SD F2/S(F2)
coronal	301	0.77	0.11	1.41	0.21
L	97	0.81	0.13	1.15	0.25
non-coronal	638	0.84	0.13	1.18	0.28
R	136	0.83	0.12	1.27	0.23

ther into a range of 1.4 < 1.6 WF-ratios (287) and those with a value of 1.6 WF-ratios or larger (113).

In the discussion of variation patterns of (BOOT) in the F2/S(F2) dimension, we first need to turn to the internal factors, i.e. the phonological contexts as well as a possible FOOT/GOOSE split typical of speakers at the Scots end ([ë~ʉ]) as well as those following a more English English model ([ʊ~u]). Table 7.1.2 and Figure 7.1.4 show that there is a clear separation in that a preceding coronal consonant triggers a much fronter realisation at 1.41 WF-ratios. The impact of phonological /r/ is minimal compared to the overall mean. Non-coronal consonants and preceding /l/ have a slight retraction effect. The effect of following /l/ is immense. The vowel is retracted to 0.97 WF-ratios, which, however, still represents a central realisation in the region of [ʉ] (Table 7.1.3 and Figure 7.1.5). Following /u/, /l/ is generally vo-

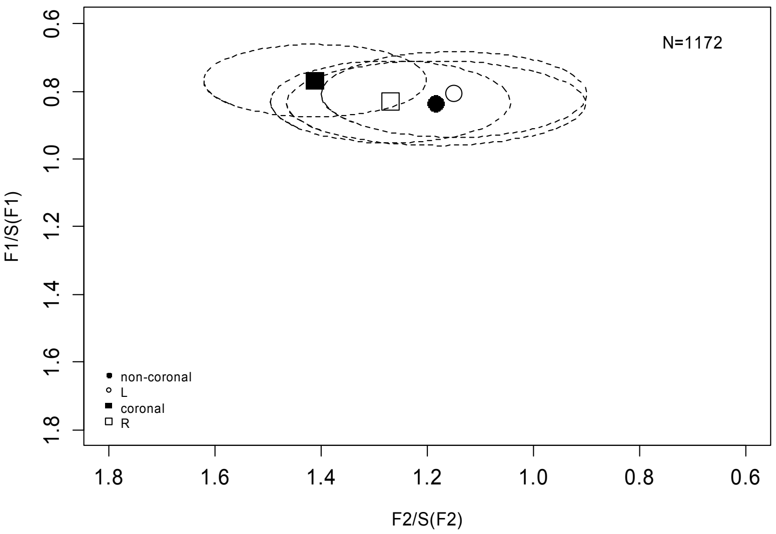

Figure 7.1.4: Mean values of (BOOT) and ±1sd for preceding context in interview style

calised in Scots, resulting in a high back vowel. This type of vocalisation is frequently found in my data as well. Apart from the coarticulatory effects present when /l/ is pronounced, this is a second and very strong factor for the more re-

Table 7.1.3: Descriptive statistics for the distribution of (BOOT) by following phonetic environment in interview style

Following context	N	Mean F1/S(F1)	SD F1/S(F1)	Mean F2/S(F2)	SD F2/S(F2)
L	226	0.86	0.11	0.97	0.21
other	946	0.80	0.12	1.32	0.25

tracted variant than for other contexts.

Table 7.1.4 shows that there are only very minor differences in the realisation of (BOOT) according to whether the vowel occurs in the FOOT or GOOSE subsets. This is true for both vowel height (0.84 WF-ratios (sd: 0.13) for the former and 0.8 WF-ratios (sd: 0.11) for the latter) and vowel frontness (1.26 WF-ratios (sd: 0.27) for FOOT and 1.24 WF-ratios (sd: 0.28) for GOOSE). This shows that there is neither a FOOT/GOOSE split comparable to other varieties of English – which could have been an outcome of dialect contact with the many non-Scottish speakers who have migrated to Aberdeen over the last decades and who have that distinction –, nor is there an indication of the systematic BOOT split in speakers at the Scots end of the sociolinguistic continuum described in 7.1.1 above and still present in Marshall's Huntly speakers.

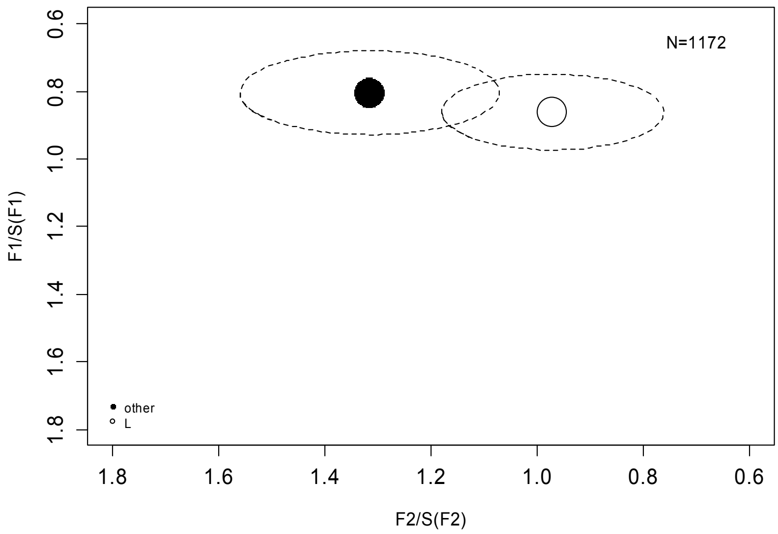

Figure 7.1.5: Mean values of (BOOT) and ±1sd for following context in interview style

Rather, Aberdonians have now very much settled on the SSE-like [ʉ] variant. Most speakers used a relatively rounded vowel, but unrounding occurred as a clear minority variant. While there is some unrounding (most notably in the word *football*, which in Scots has the stereotypical pronunciation [ˈfɪʔba]. In my sample the mean values are 0.87 on the F1/S(F1) axis (sd: 0.16) and 1.18 for F2/S(F2) (sd: 0.19). This is a slightly more open pronunciation than other BOOT words. The word *good*, which was not perceived as unrounded and is the most frequent single BOOT word, is on average realised at 1.43 WF-ratios (sd: 0.22) and thus as an extremely fronted [y]. This is further supported by the values presented in Table 7.1.5. MC

Table 7.1.4: Descriptive statistics for the distribution of (BOOT) by lexical set in interview style

Lexical set	N	Mean F1/S(F1)	SD F1/S(F1)	Mean F2/S(F2)	SD F2/S(F2)
FOOT	459	0.84	0.13	1.26	0.27
GOOSE	713	0.80	0.11	1.24	0.28

Table 7.1.5: Descriptive statistics for the distribution of (BOOT) in interview style separated by the interaction of social class and lexical set

Social class/Lexical set	N	Mean F1/S(F1)	SD F1/S(F1)	Mean F2/S(F2)	SD F2/S(F2)
middle-class					
FOOT	233	0.82	0.12	1.26	0.25
GOOSE	416	0.80	0.12	1.21	0.27
working-class					
FOOT	226	0.85	0.14	1.26	0.29
GOOSE	297	0.80	0.11	1.28	0.28

Table 7.1.6: Descriptive statistics for the distribution of (BOOT) by age in interview style

Age	N	Mean F1/S(F1)	SD F1/S(F1)	Mean F2/S(F2)	SD F2/S(F2)
adult	272	0.84	0.12	1.09	0.27
teen	387	0.81	0.12	1.34	0.26
young	513	0.80	0.13	1.26	0.25

speakers, who are clearly oriented towards the SSE end, produce slightly fronter vowels in the FOOT subset. For WC speakers on the other hand, the difference is negligible and in fact potential GOOSE words are slightly fronter. Furthermore, potential FOOT tokens are on average realised slightly more closely.

There is a clear and very marked separation between the three age groups (Table 7.1.6). Adults on average have the backest realisations at 1.09 WF-ratios (sd: 0.27). This corresponds to a central vowel [ʉ] typical of most other varieties of Scotland. This is considerably fronter than the realisation attested for the North-Eastern speaker in McClure (1995), but in line with the more recent comments on the urban variety. As can also be seen from the large sd, there is considerable intra-speaker variation, which will be discussed below. Teenagers have adopted a highly fronted [ʉ̟~y] realisation (mean: 1.34, sd: 0.26 WF-ratios) that strongly polarises them from the adult speakers. The young speakers are also clearly fronter than the adults at 1.26 WF-ratios (sd: 0.25). The differences on the F1/S(F1) level are negligible.

The effects of social class and gender are minimal. MC speakers have a slightly backer realisation than their WC counterparts, but there is no indication of a split similar to what Stuart-Smith (1999a: 207, Figure 11.1) reports for Glasgow, in which the f_2 value of [ʉ] vowel for the older WC male was approximately 600 Hz larger than that of the older MC male. As regards gender, the differences on the vowel frontness level are even smaller, but there is a tendency towards a minimally more open vowel in the males (mean F1/S(F1): 0.84; sd: 0.13) compared to the females (mean: 0.79; sd: 0.11).

The three-way interaction of age, social class and gender (Table 7.1.7 and Figure 7.1.6) not only confirms the findings for age, but also allows for a more fine-grained interpretation. There are three main clusters. The first cluster contains the most conservative speakers: the adult MC males, who are the only group with a

Table 7.1.7: Descriptive statistics for the distribution of (BOOT) by the interaction of age, social class and gender in interview style

Age:Social class:Gender	N	Mean F1/S(F1)	SD F1/S(F1)	Mean F2/S(F2)	SD F2/S(F2)
AMCF	82	0.80	0.09	1.13	0.26
AMCM	58	0.87	0.10	0.97	0.25
AWCF	70	0.84	0.09	1.05	0.25
AWCM	62	0.86	0.17	1.21	0.29
TMCF	93	0.78	0.11	1.35	0.24
TMCM	101	0.84	0.09	1.32	0.26
TWCF	102	0.79	0.11	1.38	0.29
TWCM	91	0.84	0.14	1.30	0.26
YMCF	185	0.76	0.12	1.28	0.22
YMCM	130	0.83	0.15	1.17	0.26
YWCF	98	0.81	0.10	1.29	0.21
YWCM	100	0.84	0.13	1.32	0.29

mean value below 1, and the adult WC females. Their pronunciation is a high central vowel and moderately fronted [ʉ].

Speakers in the second cluster rather use a frontish [ʉ̟]. Here we find the adult MC females as well the adult WC males, who produce the frontest realisations in

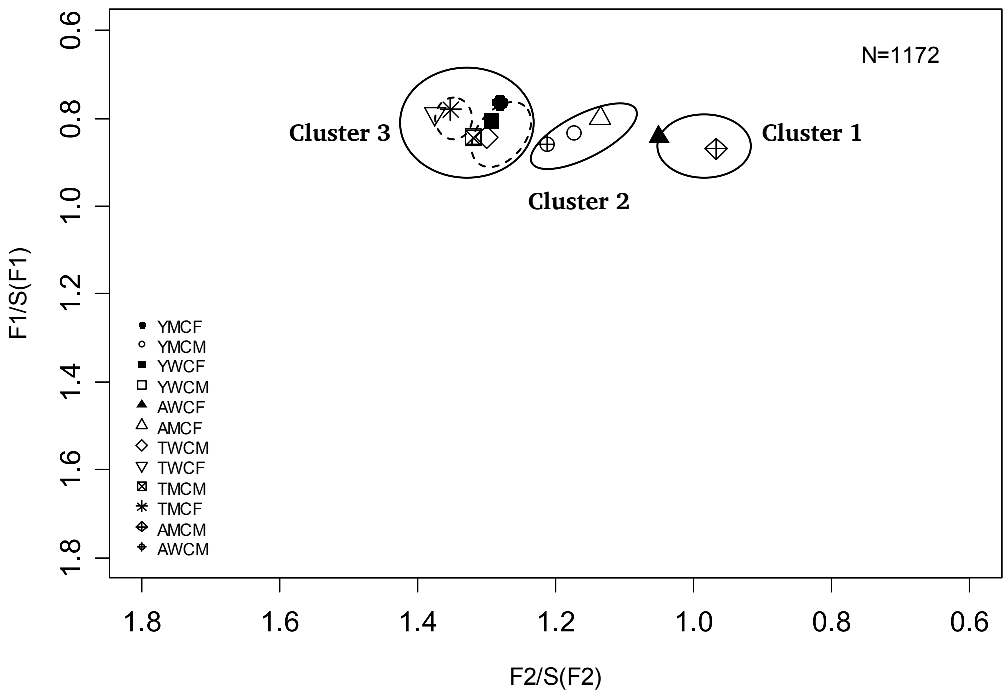

Figure 7.1.6: Mean values of (BOOT) separated by the interaction of age, social class and gender in interview style

the older age range. Why there is a ‘crossover’ pattern in the adult speakers, is not exactly clear, but looking at rating of own speech we note that two of the three adult females describe themselves as (rather) SSE speakers. Two of the MC adult males however, say they speak a more localised variety and the third describes himself as ‘in-between’. As for the WC adult males, one speaker (AWM2) has spent a considerable time in the Central Belt as an adult and may therefore have picked up a more central realisation. Also, we find that compared to the rest of their age group, the young MC males are oriented much more towards the backer realisation at a mean value of 1.17 WF-ratios (sd: 0.26).

The fronted and extremely fronted variants [ʉ̟~y] are found in the other speaker groups (cluster 3), irrespective of social class. However, we can identify two sub-clusters here. The change towards fronting is being led by the teenage females, with the other younger speakers and teenage males forming a second sub-cluster with slightly backer realisations.

Table 7.1.8 presents the distribution of variants separated by how speakers rate their own speech. It shows a separation between those who orient themselves towards the SSE end of the continuum (mean: 1.19 WF-ratios; sd: 0.28) and those who describe themselves as in-betweeners or local speakers and who use a fronter realisation. This is interesting since with the exception of two speakers (TMM3 and TMM4) all MC teens rate themselves as orienting towards the SSE end; however, they are still the groups with the overall most fronted realisations. I will look into this in more detail in the discussion of by-speaker variation below.

The results for parents’ birthplaces only reveal minimal differences in the distribution of variants. Speakers with an English-born father produce slightly backer realisations than those with parents born in the North-East or elsewhere in Scotland.

I will now discuss the findings of the LMM for F2/S(F2) in interview style. The fixed-factor effects are presented in Table 7.1.9, those of the individual speakers in

Table 7.1.8: Descriptive statistics for the distribution of (BOOT) by rating of own speech in interview style

Age	N	Mean F1/S(F1)	SD F1/S(F1)	Mean F2/S(F2)	SD F2/S(F2)
(rather) local	324	0.79	0.12	1.30	0.25
in-between	333	0.82	0.12	1.29	0.26
(rather) SSE	515	0.82	0.12	1.19	0.28

Table 7.1.9: LMM results for (BOOT): F2/S(F2) – Interview style – Fixed factors

Factor	Units	Tokens	Mean
Following context, $p < .001$			
other	0.17	946	1.32
L	-0.17	226	0.97
Preceding context, $p < .001$			
coronal	0.13	301	1.41
non-coronal	0.01	638	1.18
R	-0.01	136	1.27
L	-0.14	97	1.15
Age, $p < .001$			
teen	0.12	387	1.34
young	0.02	513	1.26
adult	-0.13	272	1.10

Speaker effects: 0.10 (0.09); deviance: -508.30, df: 9, intercept: 1.10, grand mean: 1.25

Table 7.1.10. The findings for the descriptive results are largely confirmed. There are three highly significant fixed factors: following context, preceding context and age. We first note that there is a clear retraction effect of following phonological /l/ that was also attested in the studies of GOOSE in the US and South Africa. Here, at -0.17 WF-ratios it accounts for almost one unit on Mesthrie's fronting scale. Preceding another consonant or word-finally on the other hand promotes fronting equally strongly.

As regards preceding context, we can see that the effect of a preceding non-coronal (+0.01) and /r/ (-0.01) is only minimal, but strong effects are found for coronal consonants, which promote a much fronter realisation (+0.13) at a predicted mean of 1.41 WF-ratios. On the other hand, a preceding /l/ (as was suggested by Mesthrie) does indeed influence the realisation of (BOOT) and leads to more retracted (-0.14) variant.

Of the social factors, we find that only age turns out to be significant. This was expected and confirms the pattern that was outlined above. There is a clear three-way divide and a strong polarisation of adults (-0.13) and teenagers (+0.12) with the young speakers taking an in-between position (+0.02). Despite the three-way interaction of age, social class and gender not being tested,[29] it is reasonable to assume that this is in fact due to the group of young MC boys. The other young speaker groups are considerably fronter.

[29] Rbrul only allows two-way interactions.

Overall, taking into account the fixed factors, we thus note that much of the variation is internally influenced, but that at the same time there has been a clear apparent-time change towards a fronter realisation of the BOOT vowel that is led by the teenagers, and especially the girls, but with the exception of the MC boys is equally strong in the young age group. What may have started in relatively young WC speakers (cf. Millar 2007: 118–119) is now well-established in the younger generations and is likely to be a direct influence of the large-scale in-migration of the 1970s and 1980s. More fronted BOOT realisations than those typical of the North-East were already well established in the Central Belt immigrants, no matter of their social background, although there is some social stratification in Glasgow with WC speakers producing even fronter variants.

This assumption is further supported by the individual's data. Figure 7.1.7 zooms in on the individual speakers' values, which cluster in four groups. Six of the twelve adults (including all adult MC males, who are the most homogeneous sub-group and two out of three WC women) and YMM1 have a central to slightly back-ish pronunciation. The second cluster is formed by three speakers (AMF1, AWM1

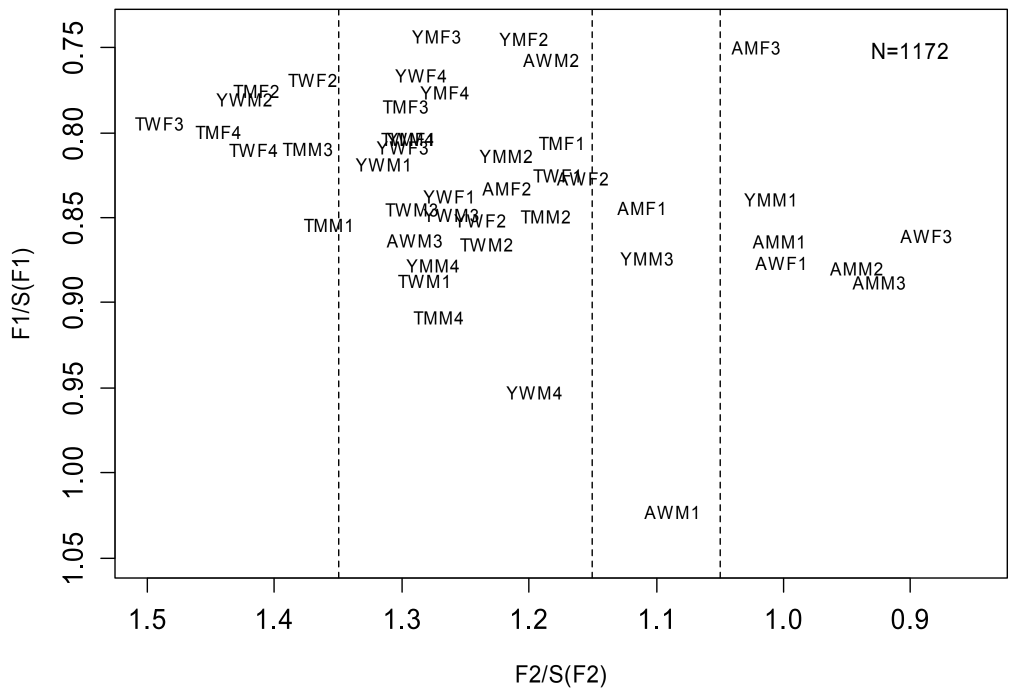

Figure 7.1.7: Mean values of (BOOT) separated by speaker in interview style. NB: The scales are different from the other plots to better distinguish individual values.

and YMM3) who have some moderate fronting at about 1.1 WF-ratios. We note that no teenager is in either of these clusters, which indicates that the shift towards fronter realisations is more advanced than in the other age groups. 26 speakers fall into the third cluster (which contains all values of approximately ±0.1 WF-ratios away from the mean). We note that this cluster contains all other young speakers with the exception of YWM2, who falls into the fourth cluster. This means that with the speakers already mentioned, this age group is the most homogeneous. However, what is also striking is the clear split between the male WC teenagers, who all cluster relatively close to one another in terms of vowel frontness between 1.25 and 1.31 WF-ratios, and the girls in this group, of whom three have extremely fronted variants with values above 1.4 WF-ratios.

Table 7.1.10: LMM results for (BOOT): F2/S(F2) – Interview style – Speaker effects

Speaker	Units	Tokens	Mean	Classification
YMM1	-0.18	34	1.03	Conservers
AWF3	-0.18	21	0.91	
AMM3	-0.16	24	0.95	
YMM3	-0.16	25	1.13	
TMF1	-0.13	21	1.19	
TWF1	-0.11	30	1.20	Traditionalists
AWF1	-0.11	21	1.02	
TMM2	-0.09	24	1.21	
TWM4	-0.09	24	1.32	Conformers
AMM2	-0.06	24	0.96	
TWM3	-0.06	20	1.31	
AMF3	-0.05	26	1.04	
TWM2	-0.05	16	1.25	
YWF1	-0.04	28	1.28	
YMF2	-0.04	45	1.22	
YMM2	-0.03	49	1.24	
AWM1	-0.02	18	1.11	
YWM4	-0.01	26	1.22	
YWF2	0.00	22	1.26	
TMF3	0.00	26	1.32	
TMM4	0.01	25	1.29	
YMM4	0.01	22	1.30	
AMM1	0.01	10	1.02	
TWM1	0.01	31	1.30	
YWF3	0.02	23	1.32	
TMM1	0.03	23	1.38	
TWF2	0.03	25	1.39	
YMF4	0.05	44	1.29	

YWM3	0.05	26	1.28	
AWM2	0.06	24	1.21	
YWM1	0.06	23	1.34	
YMF3	0.06	29	1.29	
YMF1	0.06	67	1.31	
YWF4	0.06	25	1.31	
TMM3	0.07	29	1.39	
TMF2	0.08	25	1.43	
TWF4	0.08	18	1.44	
AMF1	0.10	31	1.13	Promoters
TWF3	0.10	29	1.51	
AWF2	0.11	28	1.18	
YWM2	0.11	25	1.45	
AMF2	0.13	25	1.24	
TMF4	0.13	21	1.46	
AWM3	0.18	20	1.31	Innovator

The speaker effects of the LMM are presented in Table 7.1.10 and the corresponding innovation plot (Figure 7.1.8). The effects are overall relatively strong at a standard deviation of 0.10 (0.09) WF-ratios or about half an interval on Mesthrie's fronting scale. There are five speakers in the *conservers* group, four of whom have an MC background. YMM1 and YMM3 have already been identified as the outsiders in their age group and thus we would expect them to fall into this cluster. While it is not immediately clear as to why they might prefer relatively back realisations, we note that they are the only young speakers with neither parent born in the North-East. AWF3 is the oldest speaker in the sample at 65 and the only WC speaker in this group. She is overall rather conservative in her speech (as can be seen in how she performs in the other variables). Given that adult MC males are very conservative overall, it is not surprising to find AMM3 in this group. The final speaker here is TMF1, who is separated from her peers together with TWF1 – who already just falls into the *traditionalists* cluster – as having a frontish realisation, which, however, is still considerably further back than that of the other teenagers. The other two speakers in this cluster are AWF1 and TMM2. In the *conformers* group we find all other young speakers as well the majority of teenagers with the exception of the two teenage girls who have the highest overall fronting. What is interesting in these two is that it is not TWF3, the speaker who has a fully fronted [y] realisation at 1.51 WF-ratios, but TMF4 who scores highest.

The largest positive value at 0.18 WF-ratios is that of AWM3, whose realisation is in the region of [y̠] and who is the only *innovator*. Turning to the background

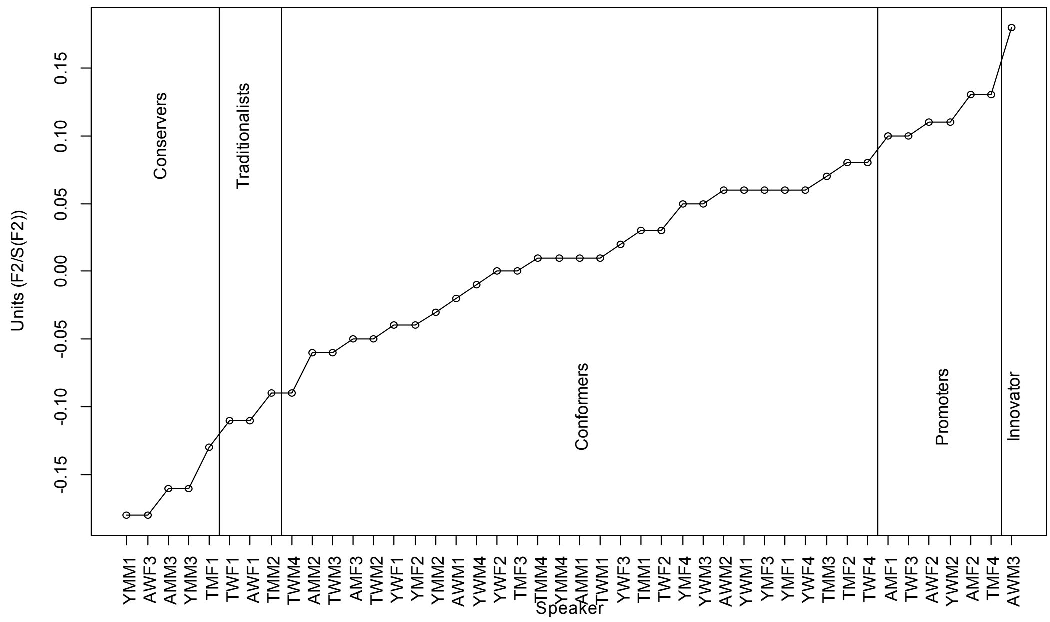

Figure 7.1.8: Innovation plot for (BOOT)-F2/S(F2) in interview style

data to find possible indicators as to why he uses such fronted tokens does not reveal any explanation. Just like all other adults with the exception of AMF2 he has relatives in the Central Belt and like all WC adults he has no relatives in England. Also, at 46 he belongs to the middle range of the adult speakers. So on the basis of the background information that was collected, unfortunately we cannot explain why he is fronting to such a degree, but only attest it.

7.1.3.2 Wordlist style

In wordlist style the overall mean value is slightly further back than in the interviews and thus may be closer to the original regional standard. As I have already pointed out above, there are only three different words, in none of which BOOT is preceded by a coronal (leading to fronter realisations) or preceded or followed by /l/ leading to a more retracted vowel. Only social factors were taken into account in this style. Regarding age, the distribution (Table 7.1.11) follows that of the interviews, but the values are more extreme. Teenagers use an almost extremely fronted vowel (mean: 1.36 WF-ratios, sd: 0.22), slightly fronter even than in the interviews (1.34 WF-ratios). This separates them from the adult speakers, whose mean value of 0.95 WF-ratios (sd: 0.20) is more than 2.5 intervals further back. Also, in comparison to the interviews (1.09), adults have the largest amount of

Table 7.1.11: Descriptive statistics for the distribution of (BOOT) by age in wordlist style

Age	N	Mean F1/S(F1)	SD F1/S(F1)	Mean F2/S(F2)	SD F2/S(F2)
adult	34	0.78	0.14	0.95	0.20
teen	46	0.80	0.15	1.36	0.22
young	48	0.77	0.10	1.21	0.19

Table 7.1.12: Descriptive statistics for the distribution of (BOOT) by social class in wordlist style

Social class	N	Mean F1/S(F1)	SD F1/S(F1)	Mean F2/S(F2)	SD F2/S(F2)
middle-class	66	0.75	0.10	1.16	0.25
working-class	62	0.81	0.15	1.23	0.27

style-shifting. The young speakers use a slightly backer vowel in the wordlists (mean1.21 WF-ratios; sd: 0.19) than the interviews (1.26) and again fall within the other two groups.

The effects of social class (Table 7.1.12) are slightly stronger than in the interviews and follow the pattern found elsewhere in Scotland in that MC speakers (mean: 1.16 WF-ratios; sd: 0.25) produce slightly backer vowels than their WC counterparts (mean: 1.23 WF-ratios; sd: 0.27).

A similar effect is found for gender (Table 7.1.13). Males are slightly more conservative with a mean value of 1.16 WF-ratios (sd: 0.27). Females on the other hand use more fronted variants (mean: 1.22 WF-ratios; sd: 0.25).

Even more markedly than in the interviews, we note that there is an effect of the interaction of age and social class (Table 7.1.14) that once more marks the young MC speakers as relatively conservative with a realisation in the region of 1.11 WF-ratios (sd: 0.18), which is 0.2 WF-ratios below that of the young WC speakers and even a little more in comparison to the teenagers.[30]

Table 7.1.15 shows that speakers who orient towards the SSE end produce considerably backer vowels (mean: 1.09 WF-ratios; sd: 0.26) than those who consider

Table 7.1.13: Descriptive statistics for the distribution of (BOOT) by gender in wordlist style

Social class	N	Mean F1/S(F1)	SD F1/S(F1)	Mean F2/S(F2)	SD F2/S(F2)
female	63	0.75	0.10	1.22	0.25
male	65	0.82	0.15	1.16	0.27

[30] Because of the small number of tokens in this style, I have not split up the data into three-way interaction.

Table 7.1.14: Descriptive statistics for the distribution of (BOOT) by the interaction of age and social class in wordlist style

Age:Social class	N	Mean F1/S(F1)	SD F1/S(F1)	Mean F2/S(F2)	SD F2/S(F2)
adult:middle-class	18	0.78	0.08	0.93	0.20
adult:working-class	16	0.79	0.19	0.97	0.19
teen:middle-class	24	0.76	0.08	1.37	0.14
teen:working-class	22	0.84	0.19	1.35	0.28
young:middle-class	24	0.73	0.12	1.11	0.18
young:working-class	24	0.80	0.07	1.31	0.16

Table 7.1.15: Descriptive statistics for the distribution of (BOOT) by rating of own speech in wordlist style

Age	N	Mean F1/S(F1)	SD F1/S(F1)	Mean F2/S(F2)	SD F2/S(F2)
(rather) local	35	0.80	0.17	1.26	0.21
in-between	35	0.78	0.09	1.31	0.24
(rather) SSE	58	0.78	0.13	1.09	0.26

themselves in-betweeners (mean: 1.31 WF-ratios; sd: 0.24) or (rather) local (mean: 1.26 WF-ratios; sd: 0.21). This result is expected, since the vast majority of MC speakers rated themselves as speaking (rather) SSE. The effects of parent's birthplaces are minimal and therefore not discussed in detail here.

The results of the LMM I calculated for the wordlist data are shown in Table 7.1.16. Only age comes out as a significant variable and confirms the results from the descriptive data that there is a strong and robust polarisation of adults and teens, which amounts to 0.42 WF-ratios or more than two intervals on Mesthrie's fronting scale. The young speakers lie in-between which is a result of the strong intra-group variation between WC and MC speakers. The by-speaker effects are comparable to those for the interview style at 0.12 (0.10) WF-ratios sd, thus amounting to about half an interval. Because of the small amount of tokens, a more fine-grained analysis is difficult.

Table 7.1.16: LMM results for (BOOT): F2/S(F2) – Wordlist style – Fixed factors

Factor	Units	Tokens	Mean
Age, $p < .001$			
teen	0.19	46	1.36
young	0.04	48	1.21
adult	-0.23	34	0.95

Speaker effects: 0.12 (0.10); deviance: -63.96, df: 5, intercept: 1.17, grand mean: 1.19

7.1.4 Summary and discussion

The BOOT vowel in Aberdeen shows considerable variation in the front-back dimension. Realisations range from a fully back [u] to an extremely fronted [y]. Unfronted and slightly fronted variants are now relatively rare and largely determined by internal factors. This suggests that over the last decades there has been both an apparent-time (with younger speakers generally preferring fronter variants) and a real-time change (in comparison to the values McClure 1995: 370 reports). This is further supported by the fact that even the oldest speaker in my sample (AWF3) has a slightly to moderately fronted realisation. Following Millar (2007: 118–119) I have argued that the current change is a direct influence of dialect contact and that it is being led by teenage speakers, and that within this group it is particularly the girls who adopt the frontest realisations.

Another effect that goes along with the change towards fronter variants is the convergence of the former separate subcategories of FOOT and GOOSE in speakers oriented towards the Scots end of the sociolinguistic continuum and that was still operative in Marshall's (2004) Huntly study. Both variants have been levelled towards a more SSE-like [ʉ]. Unrounded variants are relatively uncommon in the current data and are furthermore restricted to particular lexical items (such as *football*), but even the speakers who still have the split are inconsistent and use both variants, sometimes even in the same word.

At present the change is probably not yet complete. Leaving aside the strong influence of both preceding and following context – particularly that of preceding coronals, which favour considerable fronting, and of /l/, which in both positions leads to retraction – there is still considerable variation in the current sample. So, even after splitting up the data by phonological context, the means of most factor levels of the external variables considered in this study vary around their respective means by more than 0.2 WF-ratios standard deviations. This equals one fronting unit in Mesthrie's terms in either direction. Even within the individual speakers, there are only six for whom the standard deviation is below this value.

7.2 (OUT)

7.2.1 Background

The Scottish counterpart to Wells' (1982: 151–152) lexical set MOUTH is OUT. OUT is linguistically complex. It derives from the Older Scots /uː/ and in Scots can have a range of monophthongal variants from high back [u(ː)] to central [ʉ(ː)~ɵ(ː)] and front [y(ː)~ʏ(ː)~ø(ː)] realisations. Diphthongal variants are attested, but rare (Johnston 1997b: 474). In SSE, OUT is "realised as whatever the local Scots vowel in LOUP[31] is, and [is] immune from Aitken's Law" (Johnston 1997b: 474); thus it takes [ʌʉ̯] in Glasgow, but can have a range of variants in the North-East, depending on processes that affect the two individual elements of the diphthong, "according to whether (1) OUT-Fronting and (2) CUT-Centralisation are in evidence or not" (Johnston 1997b: 498). Thus a typical SSE realisation in Aberdeen could be in the region of [ʌu ~ ʌü] or even further back for both elements as is suggested by Hughes et al. (2005: 107). Younger speakers can have [əʉ] (Johnston 1997b: 498). Millar (2007: 48) points out that fronted realisations are very common in Northern Scots for the vast majority of speakers, with the exception of some older speakers in certain contexts.

(OUT) has been subject to sociolinguistic research in Glasgow (Macaulay 1977; Eremeeva & Stuart-Smith 2003; Macafee 1994), Edinburgh (Speitel & Johnston 1983), (Pollner 1985) and Fife (Clark 2008). All studies point out the alternating structure in the realisation of this vowel briefly described above. There is a clear correlation between social class and [ʉ], with working-class speakers producing far more monophthongal variants than middle-class speakers. At the same time, Stuart-Smith (2003: 120) points out that for all speakers (in the Glasgow samples) there is always an alternation and argues that alternation is an "obligatory part of speaking Urban Scots". That means that no speakers consistently use only the monophthongal variant. On the other hand, they do not use the SSE variant either, but a diphthong in the region of [əu], which is considered to be far away enough from the [ʌʉ̯] prevalent in that group. Furthermore, the alternation is lexically conditioned (Stuart-Smith 2003: 121–123), with only a handful of words responsible for

[31]The LOUP class comprises the descendants of Older Scots /ɔu/ and can be found in a fairly small amount of words including *coup*, *golf*, *colt*, *nowt* etc. Johnston (1997b: 497).

the vast majority of tokens. Following Speitel & Johnston (1983: 22); Macafee (1983a: 37); Macafee (1994: Figure 5.1); Stuart-Smith (2003: 121–123), by far the most common are *about/aboot, our/oor, round/roon, down/doon, out/oot, now/noo, house/hoose*, but all point to a relatively large number of other words which potentially can be realised as a monophthong.

7.2.2 Methodology

Overall, there are 1490 tokens of (OUT) in the data. 491 of these were collected in the wordlist. As discussed in section 6.2, two points were selected for formant measurements in this vowel, at 0.035 seconds from the onset and offset of the vowels. Since one important question in the discussion of the variation patterns in this vowel is that of monophthongisation, we must find a way to quantify the amount of gliding between these two points. Several methods have been put forward in order to achieve this goal.

Dubois & Horvath (2003: 270) calculated the difference on the basis of subtracting the f_2 values for the offset from those of the onset, whereby differences smaller than 250 Hz were categorised as monophthongs and those above as diphthongs. Fridland (2003: 286), in her study of PRICE-monophthongisation in Memphis devised a three-way distinction based on the difference between nucleus and glide, whereby distances below 100 Hz were classified as 'very short', those between 100 and 200 Hz as 'short' and those between 300 and 500 Hz as 'full' glides, but does not mention if these values refer to f_1, f_2, or both. I here follow Fabricius (2007a); Fabricius (2007b), who explains variation patterns in the TRAP and STRUT sets in RP and Eberhardt (2009) in her study of (aw)-monophthongisation (the American English equivalent to Wells' 1982 MOUTH lexical set) in Pittsburgh using Euclidean distance (ED) measurements of the trajectory between onset and offset to quantify the degree of monophthongisation of (OUT).

Fabricius (2007a: 303–304) describes the advantages of using ED as follows:

> The methodology is to be seen as a supplement to the standard sociophonetic method, as it quantifies the juxtaposition of two vowel points, a central concern for understanding changes in vowel configurations over time. It unites the two coordinates represented by F1 and F2 into a single polar representation, which captures the two-dimensionality of the (F1, F2) space in a single quantified relative position.

Formula 7.1 (Di Paolo et al. 2010: 101) is used to calculate the ED:

Formula 7.1: $ED = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

whereby x_1 represents the WF normalised f_2 in the onset, x_2 represents f_2 in the glide, y_1 represents f_1 in the onset and y_2 represents f_1 in the glide. As outlined above, the onset was measured 0.035 seconds into the vowel and the glide 0.035 seconds from the end of the vowel. The larger the ED value is, measured in WF ratios, the more diphthongal the realisation is and vice versa. In the style of Fridland (2003: 286) I suggest that we treat the degree of monophthongisation using a three-way categorical classification into short ($ED \leq 0.15$ WF-ratios), medium ($0.15 < ED \leq 0.5$ WF-ratios) and long ($ED \geq 0.5$ WF-ratios) trajectories. Short trajectories here are a good indicator of a (nearly) full monophthongal realisation with a range of variants ([y~ʉ~u~ə~ɐ~ɛ], whereas long trajectories are most likely a full diphthong in the region of [aʉ~ɑʉ~ʌʉ] and medium ones represent shorter diphthongs, usually with a [ə] onset and an offset that does not quite approach the height of the full diphthong. Figure 7.2.1 provides an illustration of the three types of realisations on the basis of spectrograms and a vowel plot.

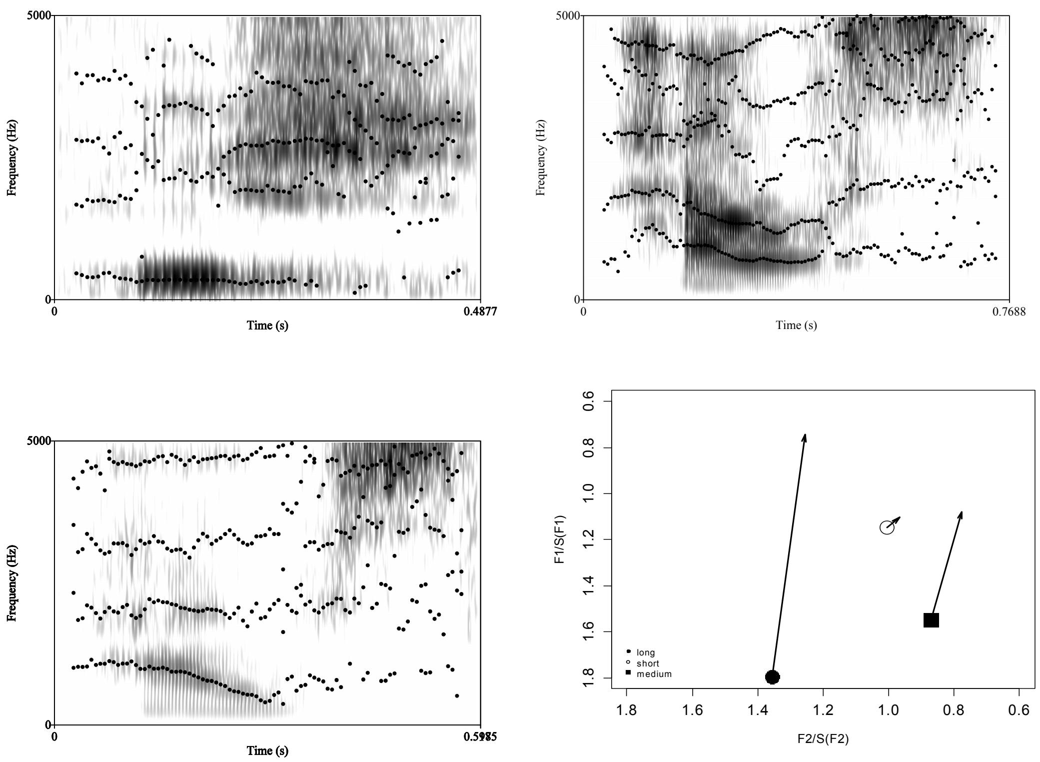

Figure 7.2.1: Spectrograms of short [ʉ̞] (top left), medium [əʉ̞] (top right) and long [aʉ] (bottom left) ED values for the word house in the wordlist data of three male speakers (TWM4, YMM1 and YWM4) and vowel plot (bottom right)

The interview data was separated originally into seven phonetic contexts:

1. word-initial following a pause, e.g. #out, #outside, labelled *word-initial pp*
2. word-initial following a consonant, e.g. creep out, from outside, labelled *word-initial pc*
3. word-initial following a vowel, e.g. die out, actually outside, labelled *word-initial pv*
4. word-internal, e.g. amount, down, labelled *word-internal*
5. word-final preceding a pause, e.g. now#, somehow#, labelled *word-final pp*
6. word-initial preceding a consonant, e.g. how they, now going, labelled *word-final pc*
7. word-final preceding a vowel, e.g. somehow every, now even, labelled *word-initial pc.*

For the statistical analysis the word-initial contexts had to be conflated because the post-pausal and post-vocalic contexts did not have enough tokens. All word-initial tokens contain the word *out* and its derivations. For the same reason, the three word-final contexts were grouped together. Also, with the exception of three tokens, the only words in this context are *how* and *now*. There are two tokens of *somehow* and one token of *row*. What all these words with the exception of *row* have in common is that they are frequently alternated.

The wordlist data was separated into three contexts:

1. word-initial, e.g. *out*
2. word-internal, e.g. *house*
3. word-final, e.g. *cow*

Separate LMMs were fitted for the interview and wordlist data for the normalised f_1 and f_2 values in the onset and glide. In order to assess the contributing factors towards ED length, I fitted four different models. The first (LMM) model treats ED as a continuous variable, the other three are GLMMs with the three categories of ED length as dependent variables. I will here report the results for the continuous values. For both styles the model included nine fixed factors (Phonological context, Alternation attested), age, gender, social class, rating of one's own speech, father's birthplace, mother's birthplace). In addition, it included the pairwise interactions of age, gender and social class. Speaker was kept as a random factor. The classification into what determines an innovative or conservative realisation is not quite as straightforward as for most of the other variables because the differences are relatively subtle and by-speaker effects are generally strong. As will be laid out in greater detail in the sections below, we can identify some trends, which will be classified as innovative. They are:

1. A comparatively open onset (high F1/S(F1))
2. A comparatively front(ish) onset (high F2/S(F2))
3. A relatively close-mid to central glide (high F1G/S(F1G))
4. A relatively front glide (high F2F/S(F2G))
5. A medium to long ED

7.2.3 Findings

Table 7.2.1 shows the descriptive statistics for the first two formants in the onset and glide as well ED separated by style. We straightaway note the strong stylistic variation. In the interview data, the onset is considerably raised and slightly fronter than in the wordlists. A similar pattern is also found in the glide, in which F1/S(F1) is much more open in the interviews and the second formant is higher, indicating fronting. Also, the ED in the wordlists is about double the amount of that in the interviews, so in the former the diphthong is much longer. This impression is clearly confirmed by Figure 7.2.2, a graphical representation of the location of the OUT vowel in reference to the CAT and BOOT vowels with the addition of ±1 sd ellipses for the realisations of OUT. Following this, in the interviews the onset is overall relatively central and [ə]-like and the medium-length trajectory of 0.25 WF-ratios suggests that the glide is in the region of [ʉ̞]. However, the standard devia-

Table 7.2.1: Descriptive statistics for the distribution of (OUT) in interview and wordlist style

Style	N	Mean F1/ S(F1)	SD F1/ S(F1)	Mean F2/ S(F2)	SD F2/ S(F2)	Mean F1G/ S(F1G)	SD F1G/ S(F1G)
Interview	999	1.25	0.23	1.17	0.19	1.07	0.21
Wordlist	428	1.43	0.21	1.11	0.18	0.96	0.16

Style	Mean F2G/ S(F2G)	SD F2G/ S(F2G)	Mean ED	SD ED
Interview	1.16	0.23	0.25	0.18
Wordlist	1.06	0.26	0.52	0.23

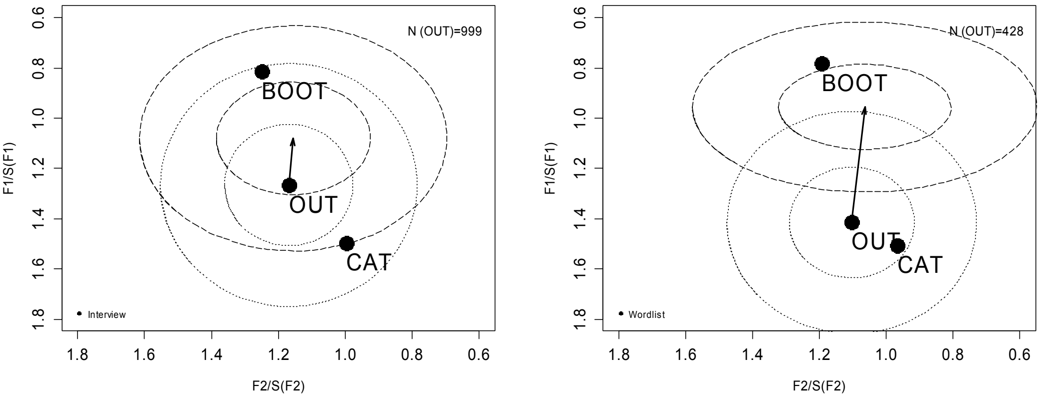

Figure 7.2.2: Mean values of (OUT) in relation to (BOOT) and (CAT) and ±1sd for onset and glide for (OUT) in interview style (left) and wordlist style (right)

tions for all formant values are about 0.2 WF-ratios, indicating that overall the spread of realisations is quite large. This is even truer if we look at the standard deviation for ED, which at 0.18 is extremely large indicating massive variation on the monophthong-diphthong dimension. I will discuss this in greater detail below.

In the wordlists, we note that all parameters differ substantially from those of the interview data. (OUT) has a much more open onset that approaches the (CAT) realisations in that style. Also, the offset is higher and backer. There is no overlap of the ±1 sd ellipses, suggesting that overall the realisation is much more diphthongal, which is confirmed by the long ED of 0.51 WF-ratios. Overall the vowel is thus realised as a full diphthong in the region of [ʌʉ], so relatively close to the SSE pronunciation given by (Johnston 1997b: 498). However, the standard deviations are also very large, so that just as for the interviews the variation is quite strong and there is no clear pattern in the data.

7.2.3.1 Interview style

Overall, there is a wide range of realisations in this style influenced by internal and external factors alike. The results for the external factors indicate that there is some change – or in fact several changes – in progress. However, the differences are relatively subtle at present on most levels. Again, I will first discuss the data on the basis of descriptive statistics before turning to the results of the different mixed-effects models.

One of the strongest predictors of a monophthongal or diphthongal realisation of (OUT) in the studies mentioned in 7.2.1 is alternation, which involves a relatively

Table 7.2.2: Descriptive statistics for the distribution of (OUT) on the basis of whether alternation in the word is attested in previous studies in interview style

Alternation attested	N	Mean F1/ S(F1)	SD F1/ S(F1)	Mean F2/ S(F2)	SD F2/ S(F2)	Mean F1G/ S(F1G)	SD F1G/ S(F1G)
no	142	1.32	0.21	1.10	0.20	1.08	0.21
yes	857	1.24	0.23	1.18	0.19	1.07	0.21

Alternation attested	Mean F2G/ S(F2G)	SD F2G/ S(F2G)	Mean ED	SD ED
no	1.10	0.25	0.29	0.19
yes	1.17	0.22	0.25	0.18

small set of (high frequency) words. Table 7.2.2 shows the results based on this factor. By far the most tokens (857) fall into the category in which alternation has been attested elsewhere. These words have slightly closer and fronter onset, but there is only a minimal difference in the height of the glide, which, however, is also slightly fronter. What is striking is that there does not seem to be any real effect of ED. Even in the tokens which show alternation, the mean ED is 0.25 WF-ratios with an sd of 0.18, which are exactly the values that were attested overall for the interview data, with the values of the other tokens being only a little higher at 0.29 (sd: 0.18). This would indicate that unlike in Glasgow, the pattern of alternating vowels is not quite as strong. This even holds when we break it down further, and we might be tempted to assume that social class has some influence. This, however, is not the case. The difference between WC speakers (mean: 0.23; sd: 0.18) and MC speakers (mean: 0.26, sd: 0.18) in the words in which alternation is attested is negligible.

Table 7.2.3: Distribution of ED length of (OUT) for words that occur at least five times in the interview data (in %)

Word	N	long	medium	short
Total	999	10.4	56.0	33.6
out	177	8.5	57.6	33.9
down	138	6.5	55.8	37.7
about	134	6.0	44.8	49.3
now	105	19.0	53.3	27.6
house	71	21.1	40.8	38.0
how	52	21.2	57.7	21.2
around	41	2.4	56.1	41.5
town	33	15.2	60.6	24.2
outside	28	10.7	60.7	28.6
houses	24	8.3	79.2	12.5

round	23	0.0	69.6	30.4
found	9	0.0	55.6	44.4
trousers	9	11.1	55.6	33.3
downstairs	8	0.0	25.0	75.0
allowed	8	0.0	75.0	25.0
amount	7	0.0	85.7	14.3
council	6	0.0	83.3	16.7
pound	6	0.0	16.7	83.3
sound	6	0.0	100.0	0.0
pronounce	5	20.0	40.0	40.0
loud	5	100.0	0.0	0.0
mountain	5	0.0	100.0	0.0
pounds	5	40.0	40.0	20.0

Furthermore, as Table 7.2.3 shows, overall only about a third of the tokens had ED values smaller or equalling 0.15 WF-ratios, the threshold for the classification of tokens as monophthongal. By far most common are medium-length realisations with diphthongs in the [ʌu] region attested in just about a tenth of all tokens. Also, this table and the accompanying Figure 7.2.3 shows that only two words (*pound* and *downstairs*) have a substantial amount of monophthongal realisations, but the overall frequency and the fact that in the case of the former four out of six tokens are from the same speaker (four out of eight for the latter) rather suggest a by-

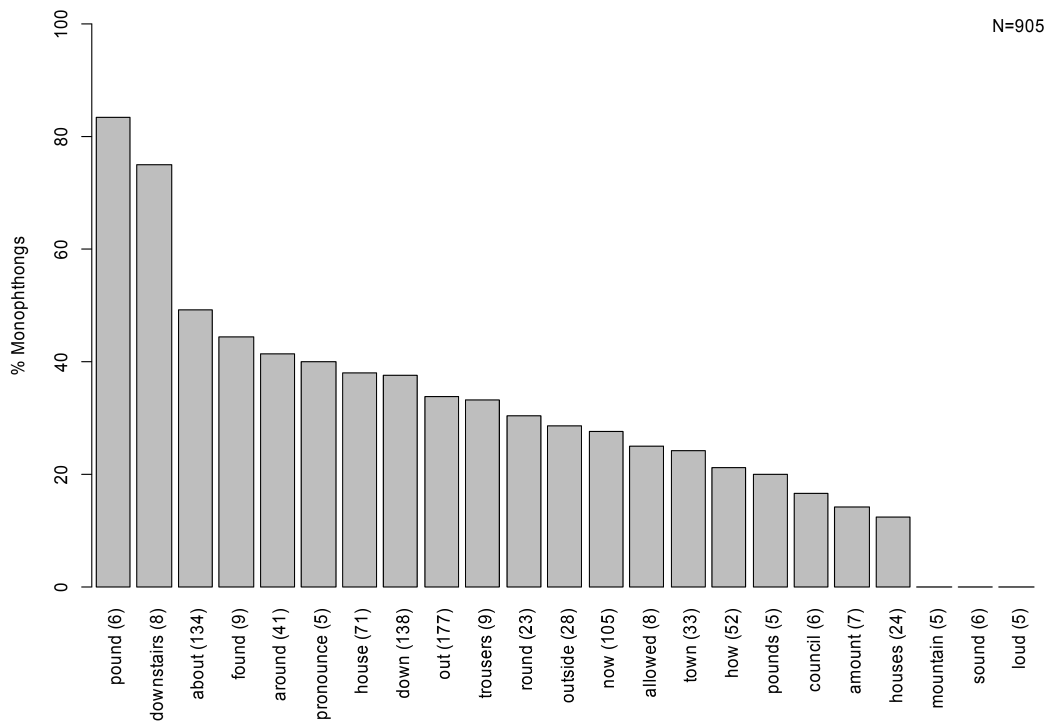

Figure 7.2.3: Lexical distribution of percentage of monophthongal realisations of (OUT) in the words which occurred at least five times in the interview data

Table 7.2.4: Distribution of ED length of (OUT) for words that occur at least five times in the interview data (only WC speakers) (in %)

Word	N	long	medium	short
Overall:	442	10.0	51.1	38.9
about	80	8.8	36.3	55.0
down	69	5.8	55.1	39.1
out	58	6.9	53.4	39.7
now	48	20.8	47.9	31.3
house	40	17.5	40.0	42.5
how	21	14.3	57.1	28.6
town	16	0.0	68.8	31.3
houses	12	8.3	75.0	16.7
outside	11	0.0	54.5	45.5
round	9	0.0	66.7	33.3
around	8	0.0	50.0	50.0
trousers	6	16.7	50.0	33.3
pound	5	0.0	20.0	80.0
allowed	5	0.0	60.0	40.0

speaker rather than by-word effect. This also holds if we consider social class effects. While overall WC speakers are more likely to produce a short vowel (38.9% compared to 29.4% in the MC speakers), this does not change the lexical distribution much (Table 7.2.4.) Only in one high-frequency word (*about*) is the monophthongal realisation now a majority variant. This would suggest that, in contrast with Glasgow, where 84% of the realisations were [u] in this word (Stuart-Smith 2003: 122, Figure 6.4), the general trend in Aberdeen is rather towards medium-length [əu] diphthongs as put forward by Johnston (1997b).

The other internal factor (phonological context, see Table 7.2.5) shows that the longest trajectories are found in word-final position and word-initially following a vowel. In the other contexts, the diphthong is somewhat shorter, but the difference overall relatively small. This goes hand in hand with a more open realisation in the onset. In the glide, the height factor is relatively stable, but we note that in the few tokens in which OUT occurs word-initially after a pause, the realisation is slightly closer. As regards vowel frontness, the values for both F2/S(F2) and F2G/S(F2G) are higher word-initially following a pause or consonant than in the other contexts. This is in stark contrast to those tokens which occur word-finally, for which backer realisations – which in absolute terms are still central – are more common.

Table 7.2.5: Descriptive statistics for the distribution of (OUT) by phonological context in interview style

Context	N	Mean F1/ S(F1)	SD F1/ S(F1)	Mean F2/ S(F2)	SD F2/ S(F2)	Mean F1G/ S(F1G)	SD F1G/ S(F1G)
word-initial pp	14	1.20	0.23	1.26	0.16	1.01	0.23
word-initial pc	160	1.26	0.22	1.23	0.18	1.07	0.17
word-initial pv	39	1.28	0.19	1.11	0.21	1.06	0.16
word-internal	**628**	**1.24**	**0.23**	**1.17**	**0.19**	**1.07**	**0.22**
word-final pp	59	1.24	0.25	1.09	0.19	1.09	0.27
word-final pc	67	1.30	0.24	1.13	0.21	1.08	0.20
word-final pv	32	1.37	0.22	1.07	0.19	1.09	0.23
Context	**Mean F2G/ S(F2G)**	**SD F2G/ S(F2G)**	**Mean ED**	**SD ED**			
word-initial pp	1.30	0.19	0.22	0.12			
word-initial pc	1.22	0.23	0.24	0.17			
word-initial pv	1.15	0.21	0.28	0.16			
word-internal	1.18	0.22	0.24	0.18			
word-final pp	1.01	0.23	0.33	0.22			
word-final pc	1.09	0.24	0.29	0.20			
word-final pv	0.95	0.20	0.32	0.24			

The impact of the social factors is difficult to grasp one-dimensionally, i.e. by only looking at e.g. age, gender or rating of speech alone. We get the clearest picture by looking at the three-way interaction of age, social class and gender, which reveals some clear differences and points towards the likely direction of the current changes. Table 7.2.6 presents the data in tabular format, while Figure 7.2.4 zooms in on the speaker groups' formant and ED values. Zooming in has the advantage of identifying relatively subtle differences in the pronunciation patterns between the speaker groups, but at the same time we need to stress that the mean values are still all relatively close together, particularly as regards the onset.

We can identify five clusters of speakers sharing certain characteristics of speech:

- Cluster 1: AMCF and AWCF
- Cluster 2: TMCF and YMCF
- Cluster 3: TMCM, TWCF and YWCF

- Cluster 4: YMCM and YWCM
- Cluster 5: AMCM, AWCM and TWCM

While each cluster can stand in its own right, they share certain features with other clusters. I will first briefly outline the clusters' characteristics on their own before turning to a discussion about features they share with other clusters and how this relates to innovation and conservatism.

Cluster 1 comprises the adult females. They have a comparatively high (about 1.15 WF-ratios) and front onset (over 1.2 WF-ratios) with the MC speakers being slightly fronter. The second cluster is similar to cluster 1 as regards F2/S(F2), but both onset and glide are much more open (1.3 and 1.35 WF-ratios). The trajectories

Table 7.2.6: Descriptive statistics for the distribution of (OUT) by the interaction of age, social class and gender in interview style

Age: Social class: Gender	N	Mean F1/ S(F1)	SD F1/ S(F1)	Mean F2/ S(F2)	SD F2/ S(F2)	Mean F1G/ S(F1G)	SD F1G/ S(F1G)
AMCF	72	1.16	0.25	1.26	0.16	0.94	0.21
AMCM	66	1.13	0.16	1.09	0.22	0.96	0.14
AWCF	77	1.12	0.19	1.21	0.12	0.97	0.17
AWCM	75	1.07	0.19	1.11	0.26	0.94	0.14
TMCF	103	1.30	0.18	1.26	0.10	1.07	0.16
TMCM	94	1.33	0.14	1.16	0.13	1.13	0.17
TWCF	71	1.28	0.21	1.17	0.19	1.09	0.17
TWCM	81	1.06	0.21	1.13	0.30	1.00	0.20
YMCF	124	1.35	0.18	1.21	0.13	1.15	0.21
YMCM	98	1.39	0.21	1.11	0.16	1.25	0.25
YWCF	70	1.37	0.22	1.17	0.19	1.09	0.18
YWCM	68	1.34	0.26	1.11	0.21	1.09	0.25

Age: Social class: Gender	Mean F2G/ S(F2G)	SD F2G/ S(F2G)	Mean ED	SD ED
AMCF	1.27	0.20	0.26	0.16
AMCM	1.06	0.26	0.24	0.14
AWCF	1.21	0.17	0.20	0.13
AWCM	1.11	0.25	0.21	0.16
TMCF	1.32	0.13	0.27	0.23
TMCM	1.15	0.21	0.27	0.16
TWCF	1.14	0.25	0.24	0.17
TWCM	1.11	0.30	0.15	0.10
YMCF	1.22	0.15	0.29	0.19
YMCM	1.06	0.21	0.25	0.17
YWCF	1.10	0.24	0.34	0.23
YWCM	1.09	0.22	0.30	0.23

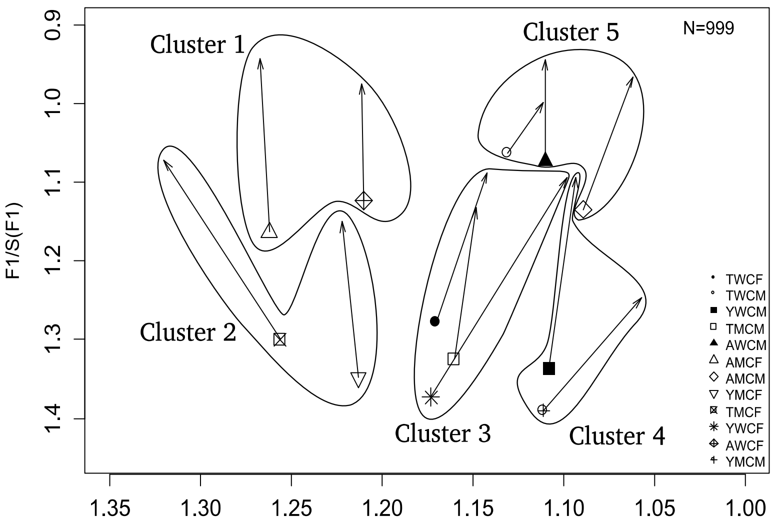

Figure 7.2.4: Mean values of (OUT) and mean length of ED separated by the interaction of age, social class and gender in interview style. NB: The scales are different from the other plots to better distinguish individual values.

are of a medium length (0.27 and 0.29), but we note the very front F2G/S(F2G) in the teenagers.

Cluster 3 comprises the other females and the TMCM. They share the open onset and the direction of the trajectory, which shows that the glide is backer than the onset. In cluster 4 we find the two groups of young boys. The MC boys have a very open (1.39 WF-ratios) and relatively back (1.11 WF-ratios) onset, which polarises them from the other speaker groups. These values would suggest a realisation of the onset close to what has been described for the SSE variant [ʌ]. They share the very back realisation in the glide with their adult counterparts, but on the F1G/S(F1G) dimension they are strongly polarised again with a value of 1.25 WF-ratios, which is by far the most open realisation. So instead of moving up towards a (relatively high) back position, the values tend to suggest an [o∼ɔ]-like offset. The YWCM have a somewhat higher onset than the MC boys and overall produce longer diphthongs, with an ED value of 0.3 WF-ratios compared to only 0.25 WF-ratios in the other boys. Incidentally, the glide values are very much akin to those of the YWCF. The final cluster comprises the adult males and the TWCM. The only group which approaches a monophthongal realisation relatively consistently is the TWCM with a value of 0.15 WF-ratios. This strongly polarises them from all other groups, even the YWCM, whose value of 0.3 WF-ratios is twice as large.

There is a strong differentiation between the clusters as regards vowel height on both onset and glide. Clusters 1 and 5, comprising all adults and the TWCM, are characterised by their comparatively high onsets as well as glides. The F1/S(F1) values all lie in the region of 1.06 to 1.16 WF-ratios, which is considerably closer than those of the speakers in clusters 2, 3 and 4, which comprise all young and teenage speakers apart from the teenage WC boys. Their onsets are much more open, ranging from 1.28 WF-ratios in the TWCF to just under 1.4 WF-ratios in the YMCM. I suggest that we treat the more open onsets as innovative and the closer ones as conservative because of the strong and robust classification of all young speakers and the majority of teenagers in the former and all adults in the latter.

This is also true for the height values of the glides. Speakers in clusters 1 and 5 have F1G/S(F1G) values of 1 WF-ratios or below, those in the other clusters have much more open glides. The values of about 1.1 WF-ratios for F1G/S(F1G) of speakers in clusters 2, 3 and 4 is close those of the onset formants in the other clusters. So again, it seems that a more open realisation suggests innovation and the closer pronunciation indicates conservatism.

A third distinction can be made as regards vowel frontness in the onset (F2/S(F2)). Here we find a three-way distinction between the speakers of clusters 1 and 2, whose F2/S(F2) values are larger than 1.2 WF-ratios, the speakers of cluster 3 (1.16 and 1.17 WF-ratios) and clusters 4 and 5 (1.13 WF-ratios and below). These differences are very subtle but hint at a gender-based variation pattern with females preferring fronter and males backer variants. However, because of the small differences it is much more difficult to assess which variant is innovative or conservative. Johnston (1997b: 498) suggests a more central onset for younger speakers and Hughes et al. (2005: 107) argue for backer elements overall. I would therefore suggest that again fronter elements are more innovative.

A final major division is to be found in the direction of the trajectory and the position of the glides on the front-back dimension. In clusters 1 and 2, not only are the F2G/S(F2G) values overall fronter than in the other clusters, but also the glide is fronter than the onset. In clusters 3, 4 and 5 on the other hand, the trajectory moves from a relatively central or backish onset towards a backer position. Based on the previous comments outlined in 7.2.1, fronter glides are increasingly common in Aberdeen, so that we can identify this variant as being innovative.

Table 7.2.7: LMM results for (OUT): F1/S(F1) – Interview style – Fixed factors

Factor	Units	Tokens	Mean
Age, p < .001			
young	0.11	360	1.36
teen	0.00	349	1.25
adult	-0.11	290	1.12
Alternation, p < .01			
no	0.03	142	1.32
yes	-0.03	857	1.24

Speaker effects: 0.10 (0.09); deviance: -436.6, df: 6, intercept: 1.26, grand mean: 1.25

As regards the length of the trajectory (ED), in none of the clusters is there a clear-cut picture. The data suggests a general trend towards longer trajectories, but this is not followed by the WC adults (ED about 0.2 WF-ratios) and the TWCM, for whom the very short ED of only 0.15 WF-ratios is a unique characteristic. The other social factors (parents' birthplaces and rating of one's own speech) are irrelevant for this variable and show no clear pattern.

I will now turn to the results of the statistical analysis for the individual elements of the (OUT) vowel. From the discussion of the descriptive results I have deduced that as regards F1/S(F1) a more open realisation represents a more innovative form, whereas closer vowels are indicative of a more conservative pronunciation.

Table 7.2.7 shows the results of the LMM for vowel height in the onset. There are two significant fixed factors: age and whether alternation is attested or not. In addition to this, there is by-speaker variation on the level of 0.1 (0.09) WF-ratios. There is a strong separation of adult speakers from the young speakers, with the teenagers falling in-between. Adults have comparatively high onsets of about 1.12 WF-ratios (-0.11), whereas the children on average produce onsets in the region of 1.36 WF-ratios (0.11) and teenagers have an F1/S(F1) of 1.25 WF-ratios. This clearly confirms the assumption that onsets are becoming more open in general. Whether the fairly large apparent-time variation between teenagers and young speakers is due to an actual change promoted by the children or 'just' variation in the sample is difficult to assess at present, particularly when we take into account the large standard deviations of 0.2 WF-ratios and above in all age groups.

As to alternation, we note that while there is very significant variation at the level of $p < 0.1$, the actual realisational difference is relatively small, but follows the expected pattern. Tokens in which alternation is attested have slightly higher onsets (0.03 WF-ratios) compared to those which do not alternate (-0.03 WF-ratios).

The by-speaker effects are quite strong and confirm the large variation that was attested in the descriptive sections (see Table 7.2.8 and the corresponding innovation plot, Figure 7.2.5). Based on the absolute values, the model suggests four groups of speakers, but the innovation plot suggests that it may be more reasonable to leave out the traditionalists, since TWM4's value of -0.132 is only just below the cut-off point for the conservers' group (0.133) and that AWF2 (-0.1) is just above that of the conformers' group. This would mean that there is only a three-way division into conservers, conformers and innovators.

Table 7.2.8: LMM results for (OUT): F1/S(F1) – Interview style – Speaker effects

Speaker	Units	Tokens	Mean	Classification
TWM1	-0.25	24	0.95	Conservers
YWM1	-0.18	14	1.12	
TWM2	-0.15	18	1.07	
YMM4	-0.14	8	1.14	
TWM4	-0.13	19	1.08	Traditionalists
AWF2	-0.10	32	1.02	
YWF2	-0.09	14	1.24	Conformers
AWM1	-0.08	31	1.05	
AMF3	-0.08	24	1.03	
AWM2	-0.07	25	1.05	
TWF2	-0.05	17	1.17	
TWM3	-0.05	20	1.18	
YMF4	-0.05	36	1.29	
AMM2	-0.05	25	1.07	
TWF4	-0.03	15	1.20	
AMF1	-0.02	23	1.10	
TMF2	-0.01	25	1.23	
YWF4	0.00	17	1.35	
YMF2	0.01	29	1.37	
AWM3	0.02	19	1.15	
YMM1	0.02	28	1.36	
YMF1	0.02	31	1.37	
TMM4	0.02	22	1.26	
TWF1	0.02	17	1.27	
YWM3	0.03	17	1.38	
TMF1	0.03	26	1.28	
YWM4	0.03	20	1.39	

YMF3	0.03	28	1.38	
TMF3	0.04	26	1.29	
AMM3	0.04	24	1.17	
AMM1	0.04	17	1.18	
TMM2	0.04	24	1.29	
YWM2	0.04	17	1.41	
AWF1	0.05	22	1.18	
YMM3	0.06	24	1.41	
YWF3	0.06	13	1.41	
TMM1	0.08	25	1.33	
AWF3	0.08	23	1.22	
YWF1	0.08	26	1.44	
YMM2	0.09	38	1.45	
TMF4	0.14	26	1.40	Innovators
TMM3	0.15	23	1.42	
TWF3	0.15	22	1.42	
AMF2	0.18	25	1.34	

As regards the – rearranged – conservers' group, we note that this cluster is formed of only male speakers from the two younger speaker groups and that three of the four WC teenage boys fall into this group. This clearly confirms the clustering outlined above in which these speakers were grouped with the adult males as having particularly high (and backish) onsets. But even within the conservers, there is a strong separation of TWM1 from the other speakers because of his very low

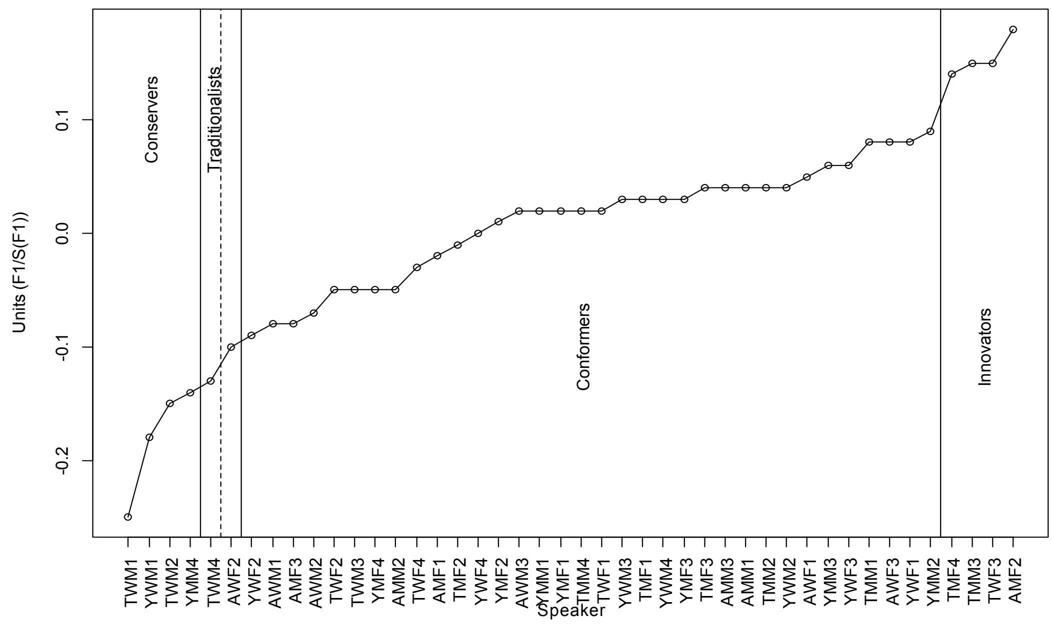

Figure 7.2.5: Innovation plot for (OUT)-F1/S(F1) in interview style (the dashed line indicates the regrouping of speakers)

F1/S(F1) mean value of only 0.95 WF-ratios. TWM1's regular contact to speakers from the rural hinterland as part of his football career – assuming that speakers from these areas generally tend to be more at the Scots (monophthongal) end in Aitken's (1984a) terms –may explain this pattern. As for the other (WC) speakers in this cluster, the high onset seems to confirm the more general preference for central onsets in WC speakers.

At the innovators' end we find four speakers from very different backgrounds – three MC speakers and a teenage WC girl. Given the already large F1/S(F1) mean value in the children, it is no surprise that almost all (the only exception is YMM4) fall into the conformers' section. The only adult in this group (AMF2) is in fact relatively strongly set apart from the other speakers in this cluster, but looking at her value of 1.34 WF-ratios compared to an average of only about 1.1 WF-ratios this is not surprising. She clearly is an SSE speaker who works in a large company and is responsible for in-house training of staff from all over the UK, so that we would expect the more standard-like [aʉ] variant in this speaker.

The results for F2/S(F2) are presented in Table 7.2.9. There are no significant fixed social predictors, but this may be due to the fact that only two-way interactions were fitted instead of the three-way interaction that was discussed in the descriptive sections above. Thus, we find a relatively large value for by-speaker variation on the level of 0.12 sd WF-ratios. Highly significant variation as regards context and whether alternation is attested or not is found as well. However, these variations are minimal. Word-initial (0.03) and word-internal (0.01) contexts lead to an almost imperceptible fronting, whereas word-final tokens have a slightly backer (0.04) F2/S(F2) value. Similarly, tokens in which alternation is attested are realised a little fronter (0.02).

Table 7.2.9: LMM results for (OUT): F2/S(F2) – Interview style – Fixed factors

Factor	Units	Tokens	Mean
Context, $p < .001$			
word-initial	0.03	213	1.21
word-internal	0.01	628	1.18
word-final	-0.04	158	1.10
Alternation, $p < .001$			
yes	0.02	857	1.18
no	-0.02	142	1.10

Speaker effects: 0.12 (0.12); deviance: -877.88, df: 6, intercept: 1.15, grand mean: 1.17

Table 7.2.10: LMM results for (OUT): F2/S(F2) – Interview style – Speaker effects

Speaker	Units	Tokens	Mean	Classification
AWM1	-0.24	31	0.91	Conservers
AMM3	-0.22	24	0.92	
TWM3	-0.21	20	0.95	
YMM1	-0.19	28	0.98	
YMM3	-0.15	24	1.01	Traditionalists
TWF1	-0.14	17	1.02	
YWM4	-0.13	20	1.03	
YWF2	-0.13	14	1.03	
TWM4	-0.13	19	1.03	
TMM2	-0.11	24	1.04	
YWM1	-0.07	14	1.08	Conformers
YMF2	-0.07	29	1.08	
AMM2	-0.04	25	1.13	
TMM1	-0.04	25	1.13	
YWF1	-0.04	26	1.12	
TWF3	-0.04	22	1.12	
YWF3	-0.03	13	1.14	
AWF3	-0.03	23	1.16	
AWF1	-0.01	22	1.16	
YWM2	-0.01	17	1.14	
TWF4	-0.01	15	1.17	
AMF2	0.01	25	1.17	
YWM3	0.01	17	1.19	
TWM2	0.01	18	1.17	
YMF1	0.02	31	1.20	
TMF1	0.04	26	1.21	
AMF3	0.04	24	1.22	
AWM2	0.05	25	1.22	
TMM4	0.05	22	1.24	
TMF4	0.06	26	1.24	
YMM2	0.07	38	1.24	
AMM1	0.08	17	1.27	
YMF3	0.08	28	1.26	
TMM3	0.08	23	1.25	
YMM4	0.09	8	1.27	
TMF2	0.10	25	1.29	
YMF4	0.11	36	1.30	
AWF2	0.11	32	1.29	
AWM3	0.11	19	1.28	
TMF3	0.11	26	1.29	
TWM1	0.15	24	1.33	Promoter
TWF2	0.19	17	1.39	Innovators
YWF4	0.22	17	1.41	
AMF1	0.23	23	1.42	

The results of the by-speaker data for F2/S(F2) (Table 7.2.10 and Figure 7.2.6) must be interpreted against the background of the importance of height. I have argued above for a gender-based pattern, whereby females produce fronter realisations than males, but depending on the speakers' F1/S(F1) values, the resulting vowel is of course very different. Thus, F2/S(F2) values are more difficult to compare to each other because there is more space at the top of the MOUTH (low F1/S(F1)) than at the bottom (high F1/S(F1)). This means that speakers with open onsets move towards an [a]-like realisation, whereas, most notably in the case of TWM1 – the only speaker with a mean F1/S(F1) of below 1 who has an individual value of 0.15 WF-ratios and is the only promoter – fronting results in an [ʉ]-like onset.

The data suggests that the conformers' group is relatively homogenous, but the distribution of the other groups suggests that currently a gender-based variation pattern might be evolving. The conservers' and traditionalist groups are predominantly made up of male speakers, whereas all the innovators are female. Apart from this, no clear pattern is found.

We will turn to the discussion of the results for F1G/S(F1G), i.e. vowel height in the glide. The descriptive findings suggested a clear age-based variation with

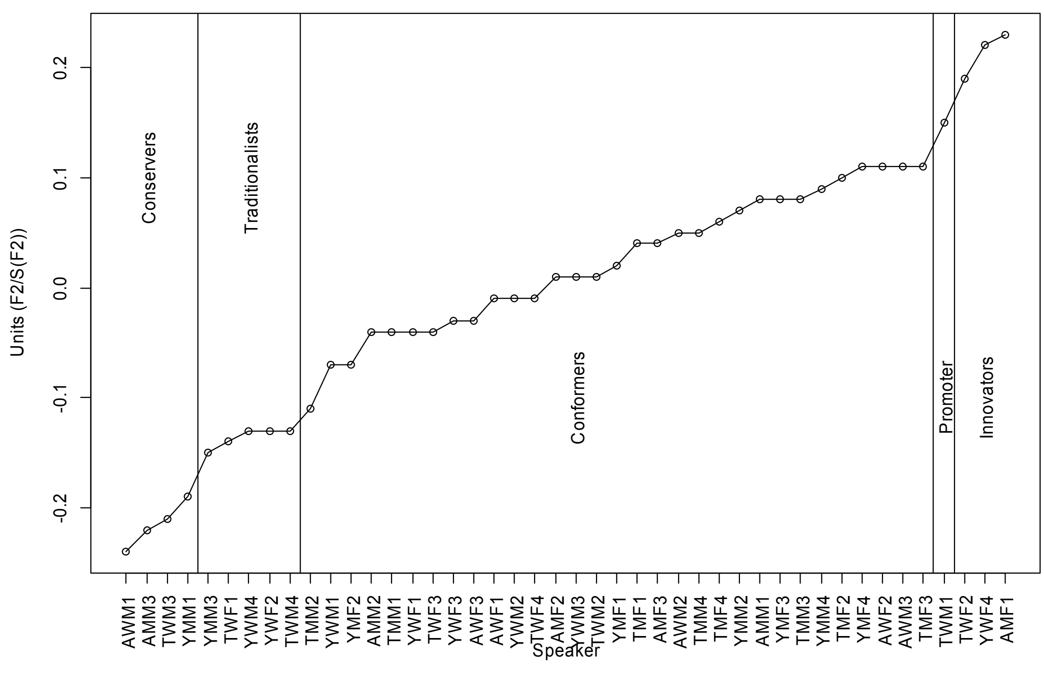

Figure 7.2.6: Innovation plot for (OUT)-F2/S(F2) in interview style

Table 7.2.11: LMM results for (OUT): F1G/S(F1G) – Interview style – Fixed factors

Factor	Units	Tokens	Mean
Age group, p < .001			
young	0.08	360	1.16
teen	0.02	349	1.07
adult	-0.10	290	0.96

Speaker effects: 0.08 (0.07); deviance: -514.34, df: 5, intercept: 1.06, grand mean: 1.07

adults preferring closer realisations and the teenagers and young speakers tending to use more central variants. As can be seen in Table 7.2.11, these differences are highly significant. Adults produce the closest variants (-0.10 WF-ratios) and are strongly polarised from the children (0.08 WF-ratios), whose mean value of 1.16 WF-ratios is 0.2 WF-ratios larger and suggests a glide – depending on rounding and vowel frontness – in the region of [ə~ɵ] or even slightly more open. Again, the teenagers fall in between these two groups, but there is an indication that lower variants are becoming more common overall. The by-speaker effects of 0.08 (0.07) WF-ratios sd as well the range of values is relatively small for this element, so that discussing any possible trends as regards innovation or conservatism in individuals is not helpful.

Much more interesting are the findings for vowel frontness in the glide, where there is large-scale variation indicating a change in progress. Table 7.2.12 sums up the results for the fixed effects. There is a highly significant difference according to context, with tokens which occurred word-initially (0.06 WF-ratios) or word-internally (0.04 WF-ratios) taking slightly fronter realisations than those at the end of a word, for which we can attest a somewhat backer realisation. In addition, gender has a significant effect. In fact, this is the only variant in the interview data of this study to show significant differences between males and females. The female

Table 7.2.12: LMM results for (OUT): F2G/S(F2G) – Interview style – Fixed factors

Factor	Units	Tokens	Mean
Context, p < .001			
word-initial	0.06	213	1.21
word-internal	0.04	628	1.18
word-final	-0.09	158	1.03
Gender, p < .05			
female	0.05	517	1.22
male	-0.05	482	1.10

Speaker effects: 0.14 (0.14); deviance: -635.74, df: 6, intercept: 1.14, grand mean: 1.16

speakers are overall promoting changes towards a fronter glide (0.05 WF-ratios), whereas the males are overall somewhat backer at a predicted mean value of 1.1 WF-ratios.

The by-speaker effects (see Table 7.2.13 and Figure 7.2.7) are quite large in this feature at 0.14 WF-ratios standard deviations and range from -0.25 in the conservers to 0.23 in the only innovator (AMF1), but even within the conformers' group the spread is much larger. We can see this as another indicator of the change still being in progress at present. With only gender coming out as a significant social factor, we would expect more females to fall into the more conservative categories, which, however, is not the case. Rather, we find that the conservers' and traditionalists' groups consist only of speakers who were identified as belonging to clusters 3 to 5 in the descriptive sections above, i.e. we find speakers here whose three-way group interactions suggested a relatively back glide value anyway. At the other end, the distribution is not quite as straightforward and speakers from both genders are promoting the change towards fronting.

Table 7.2.13: LMM results for (OUT): F2G/S(F2G) – Interview style – Speaker effects

Speaker	Units	Tokens	Mean	Classification
YMM1	-0.25	28	0.86	Conservers
TWF1	-0.22	17	0.96	
YWF2	-0.22	14	0.96	
YMM3	-0.19	24	0.91	Traditionalists
TWM3	-0.18	20	0.92	
AMM3	-0.17	24	0.89	
YWF1	-0.17	26	1.01	
TMM2	-0.15	24	0.92	
YWF3	-0.15	13	1.03	
AWM1	-0.14	31	0.98	
TWF3	-0.13	22	1.06	Conformers
AWF3	-0.12	23	1.10	
YWM4	-0.10	20	1.00	
YMF1	-0.08	31	1.14	
AWF1	-0.07	22	1.13	
TWM4	-0.06	19	1.02	
TWF4	-0.06	15	1.14	
AMF3	-0.05	24	1.15	
YMF2	-0.05	29	1.15	
YWM1	-0.04	14	1.04	
AMM2	-0.03	25	1.08	
YWM2	0.00	17	1.10	
AMF2	0.02	25	1.21	

TMF1	0.05	26	1.26	
TMM1	0.06	25	1.18	
TWM2	0.07	18	1.17	
YMF4	0.07	36	1.30	
YMF3	0.08	28	1.29	
TMF4	0.09	26	1.32	
AWM2	0.09	25	1.21	
AWM3	0.09	19	1.20	
YWM3	0.11	17	1.24	
TMF3	0.11	26	1.32	
TMM4	0.12	22	1.25	
YMM2	0.13	38	1.25	
AWF2	0.14	32	1.35	Promoters
AMM1	0.15	17	1.28	
TMF2	0.15	25	1.38	
TMM3	0.16	23	1.25	
YMM4	0.16	8	1.28	
TWM1	0.18	24	1.30	
YWF4	0.19	17	1.41	
TWF2	0.20	17	1.44	
AMF1	0.23	23	1.45	Innovator

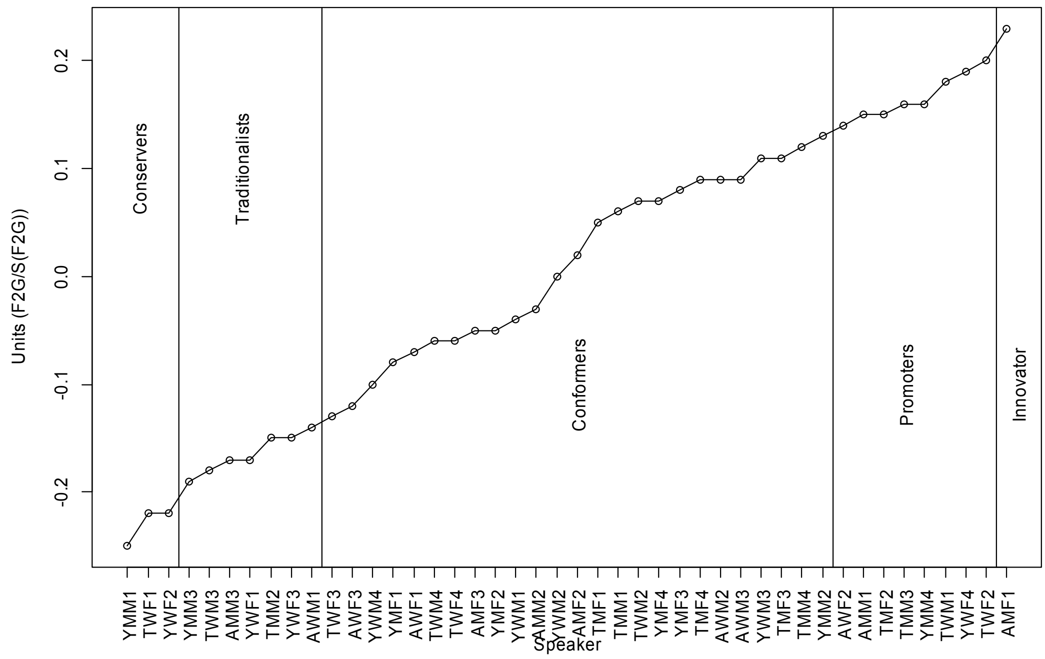

Figure 7.2.7: Innovation plot for (OUT)-F2G/S(F2G) in interview style

For ED, the differences are very small overall (see Table 7.2.14). The intercept of 0.26 WF ratios confirms the assumption that there is a general tendency towards relatively short diphthongal realisations. The exact status of these realisations is

Table 7.2.14: LMM results for (OUT): ED – Interview style – Fixed factors

Factor	Units	Tokens	Mean
Context, $p < .001$			
word-final	0.04	158	0.31
word-initial	-0.02	213	0.25
word-internal	-0.02	628	0.24
Age: Social class, $p < .05$			
young:working-class	0.03	138	0.32
teen:middle-class	0.03	197	0.27
adult:middle-class	0.01	138	0.25
adult:working-class	-0.01	152	0.20
teen:working-class	-0.03	152	0.19
young:middle-class	-0.03	222	0.28

Speaker effects: 0.04 (0.03); deviance: -650.13, df: 10, intercept: 0.26, grand mean: 0.25

subject to the different factors outlined in the sections above. Two fixed factors contribute significantly here. There is a highly significant effect of context, with tokens occurring at the end of a word triggering longer (0.04) and the other two contexts leading to slightly shorter trajectories. The interaction of age and social class is significant as well, but once more the predicted results are somewhat counterintuitive. We find that the WC (0.03) and MC children (-0.03) are polarised most strongly, despite the differences being relatively small. It seems that here, the age effect contributes more strongly than the social class effect, which is why despite differing descriptive results we get this distribution. The teenage and adult middle class have slightly longer trajectories than their WC counterparts, who overall tend towards the Scots end using shorter variants, approaching monophthongs.

7.2.3.2 Wordlist style

As can be seen Figure 7.2.2, in wordlist style the realisation of (OUT) is quite different from the interviews, overall with a much more open onset and longer trajectory. This, of course, can also be attested for the individual factors. Figure 7.2.8 and Figure 7.2.9 show the distribution for the internal factors. There is only a very minor difference according to whether alternation is attested or not (left). A similar effect is found for context. All onsets are relatively open and there is no overlap in the ± 1 sd ellipses for onset and glide. However, whereas word-initially and word-internally the trend is towards relatively central glides, these are somewhat further back in the word-final tokens.

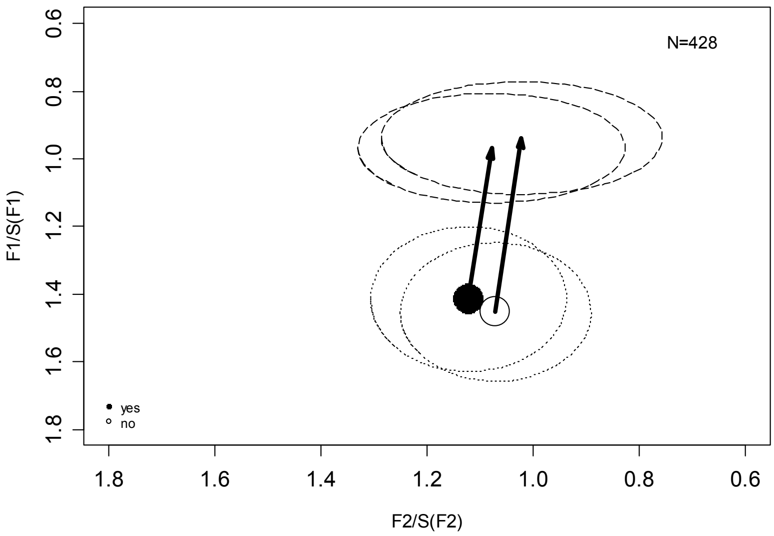

Figure 7.2.8: Mean values of (OUT) dependent on whether alternation is attested in wordlist style

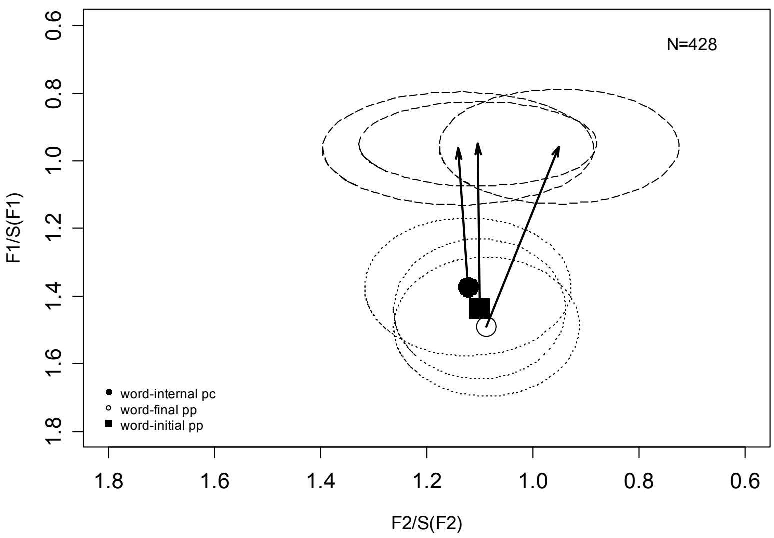

Figure 7.2.9: Mean values of (OUT) separated by phonological context in wordlist style

The social factors are best captured by looking at the three-way interaction of age, social class and gender (Figure 7.2.10). It reveals a similar pattern to that of the interview data. We can first separate the speaker groups on the basis of vowel height in the onset. Generally, vowels are relatively more open in all speaker groups compared to the interviews. However, where this effect is quite strong for the majority of speakers, adult and teenage WC males are clearly separated by their comparatively central onsets as well short trajectories in the region of 0.3 WF ra-

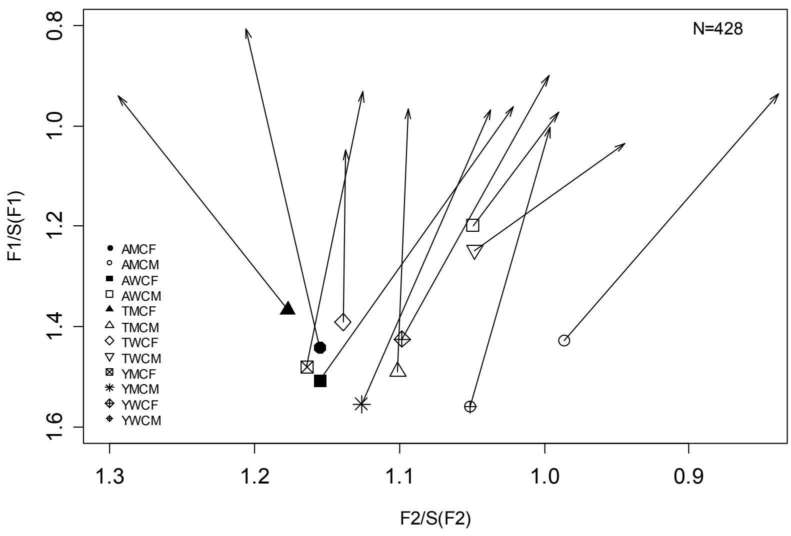

Figure 7.2.10: Mean values of (OUT) separated by the interaction of age, social class and gender in wordlist style (NB: different scale)

tios. A second division can be made on the basis of vowel frontness in the onset. Here, the three groups of WC males and the MC adult males are separated by their relative backness. As in the interviews, the trend towards both fronter elements in the onset and glide is being led by the adult and teenage MC females. The results for height in the glide show that in the adult groups, only the MC females display any difference from their interview data, in which their mean value was 0.94 WF ratios (sd: 0.21). In the wordlists, this has changed quite strongly to only 0.81 WF ratios. This goes along with a drastic increase in the length of the trajectory, which at 0.7 is almost triple the amount of that in the interviews and the longest overall. We may interpret this as a clear consciousness of the expected realisation in more formal situations for SSE speakers. The other social factors do not reveal any additional patterns, so that they are not reported here in any greater detail.

We will now turn to the results of the regressions. Table 7.2.15 shows the results for the fixed factors for F1/S(F1). The intercept of 1.43 WF ratios confirms the findings from the descriptive section in that the onset is more open in the wordlist data, and therefore more standard-like. There are two significant factors, of which context is the more powerful. Word-finally, where the vowel receives the largest amount of stress, the realisation is even more open (0.06 WF ratios). There is no effect for word-initial position, and in the least prominent position (word-internally) the realisation is somewhat higher. Of the social factors, only age is sig-

Table 7.2.15: LMM results for (OUT): F1/S(F1) – Wordlist style – Fixed factors

Factor	Units	Tokens	Mean
Context, $p < .001$			
word-final	0.06	170	1.49
word-initial	0.00	44	1.44
word-internal	-0.06	214	1.37
Age, $p < .05$			
young	0.08	154	1.51
adult	-0.03	118	1.39
teen	-0.05	156	1.37

Speaker effects: 0.12 (0.11); deviance: -287.39, df: 7, intercept: 1.43, grand mean: 1.43

nificant at the $p < .05$ level. Here, we once more note the strong separation of the young speakers from the adults and teens as regards openness, which may indicate a more general change in progress towards more open realisations.

The by-speaker effects of 0.12 (0.11) WF ratios sd are also relatively strong, which is quite a typical finding when the fixed-effects results are comparatively small. They are presented in Table 7.2.16 and Figure 7.2.11. There is a very strong polarisation of AWM2 from all other speakers owing to his very high onset of only 0.97 WF ratios, but also of TWM3, both of whom come out as conservers. Here, this means that they tend towards the Scots realisation much more than all other speakers. To a much lesser extent this is also true for the traditionalists, who, with the exception of YMM4, are all WC speakers and are predominantly male. We can see this as an indication of the overall conservativeness in the adult and teenage WC males, for whom there is less style-shifting between the interviews and wordlists, their vowels tending to result in a [ə~ɐ] onset, whereas for the majority of the other speakers the onset is more open but with varying degrees of frontness.

Table 7.2.16: LMM results for (OUT): F1/S(F1) – Wordlist style – Speaker effects

Speaker	Units	Tokens	Mean	Classification
AWM2	-0.36	10	0.97	Conservers
TWM3	-0.20	10	1.14	
YWF3	-0.15	9	1.32	Traditionalists
YWF4	-0.12	9	1.35	
YWM1	-0.12	9	1.35	
AWM3	-0.12	10	1.26	
TWM2	-0.12	9	1.23	
YMM4	-0.12	10	1.37	
YMF3	-0.11	10	1.38	Conformers
TWM4	-0.10	10	1.25	

TWF4	-0.06	10	1.31	
TMF2	-0.05	10	1.33	
YWF2	-0.04	9	1.45	
AMF1	-0.04	9	1.34	
TMF1	-0.03	10	1.34	
TWF2	-0.03	10	1.35	
AWM1	-0.02	10	1.37	
TMF3	-0.01	9	1.37	
TWM1	-0.01	10	1.37	
AMM3	0.00	10	1.39	
YMF4	0.00	10	1.50	
YMF2	0.00	10	1.51	
YMM3	0.01	10	1.52	
TMM4	0.01	10	1.39	
YMF1	0.02	10	1.53	
AMM1	0.03	10	1.43	
AWF3	0.04	10	1.44	
TWF1	0.04	10	1.43	
AMF3	0.04	9	1.44	
TMF4	0.05	11	1.42	
YWF1	0.05	10	1.56	
AMM2	0.06	10	1.46	
YMM1	0.07	10	1.59	
AWF2	0.08	10	1.49	
TMM3	0.09	10	1.48	
YWM4	0.10	8	1.63	
TMM2	0.10	10	1.50	
YWM3	0.10	10	1.62	
YWM2	0.10	10	1.62	
AMF2	0.11	10	1.53	Promoters
TWF3	0.12	7	1.53	
AWF1	0.17	10	1.59	
TMM1	0.18	10	1.59	Innovators
YMM2	0.21	10	1.75	

At the other end of the innovation scale, we note that there is only one young speaker in the group of the promoters and innovators. This is an indication of the relative homogeneity of the group promoting the change towards a more open onset. (Note also that there are no young conservers.) Still, the most innovative speaker in this sample is YMM2, who produces an extremely open vowel, even in comparison to his age peers. Again, we find AMF2 and AWF1 – two of the younger adult speakers – to be the leaders of the change towards the supralocal and in this case more standard form.

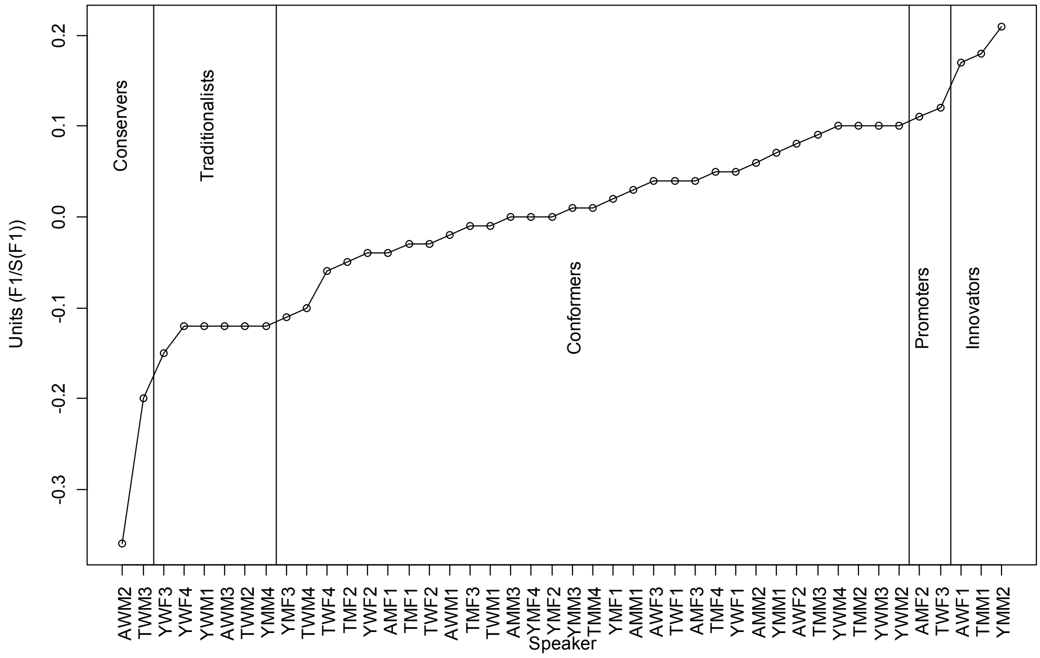

Figure 7.2.11: Innovation plot for (OUT)-F1/S(F1) in wordlist style

The fixed-effects results for vowel frontness in the onset (F2/S(F2)) are shown in Table 7.2.17. Again, while two factors contribute significantly (Alternation at the $p<.001$ level and Gender at the $p<.05$ level), the actual effects are comparatively small. The intercept of 1.1 WF ratios shows that the realisation is relatively central to slightly frontish. If alternation in Scots is attested, the realisation moves towards the front by 0.03 WF ratios, but since no alternation effect was found for F1/S(F1) and ED values are generally large, it is unlikely to have to do with monophthongisation. Similarly, when alternation is not attested, the onset is slightly backer. Also, this is one of the few variables in which there is a gender effect. This effect is in line, though, with the findings above in that male speakers tend to opt for backer variants (-0.04 WF ratios), whereas the females have fronter realisations. The by-

Table 7.2.17: LMM results for (OUT): F2/S(F2) – Wordlist style – Fixed factors

Factor	Units	Tokens	Mean
Alternation, $p<.001$			
yes	0.03	299	1.121
no	-0.03	129	1.07
Gender, $p<.05$			
female	0.04	212	1.15
male	-0.04	216	1.06

Speaker effects: 0.1 (0.09); deviance: -344.77, df: 5, intercept: 1.10, grand mean: 1.11

Table 7.2.18: LMM results for (OUT): F1G/S(F1G) – Wordlist style – Fixed factors

Factor	Units	Tokens	Mean
Alternation, p < .05			
yes	0.02	299	0.97
no	-0.02	129	0.94

Speaker effects: 0.09 (0.08); deviance: -414.54, df: 4, intercept: 0.95, grand mean: 0.96

speaker effects are somewhat smaller than for vowel height at 0.1 (0.09) WF ratios, but do not reveal any noticeable trends that would go beyond the individual and are therefore not reported in any greater detail here.

Vowel height in the glide is overall very homogeneous and varies only little around the intercept of 0.95 WF ratios (see Table 7.2.18). The only significant fixed effect is alternation at the $p < .05$ level, but at ± 0.02 WF ratios, depending on whether alternation is attested or not, the actual differences are too small to be meaningful.

Table 7.2.19: LMM results for (OUT): F1G/S(F1G) – Wordlist style – Speaker effects

Speaker	Units	Tokens	Mean	Classification
AMF3	-0.23	9	0.66	Conservers
YMF4	-0.14	10	0.79	
AWM2	-0.10	10	0.84	Traditionalists
AMF2	-0.09	10	0.85	
YWF3	-0.08	9	0.86	
YWM1	-0.08	9	0.87	Conformers
YWF4	-0.07	9	0.88	
AMM1	-0.06	10	0.88	
YWM3	-0.06	10	0.89	
AMF1	-0.05	9	0.90	
TMM3	-0.05	10	0.90	
TMF1	-0.04	10	0.90	
YMM2	-0.04	10	0.91	
YMM4	-0.04	10	0.91	
AWF2	-0.04	10	0.91	
YMM3	-0.04	10	0.91	
TMF4	-0.03	11	0.92	
YWF2	-0.03	9	0.92	
AWF1	-0.03	10	0.92	
YMF3	-0.03	10	0.93	
TMF2	-0.02	10	0.93	
YWF1	-0.01	10	0.94	
TWF3	0.00	7	0.95	
TMM1	0.00	10	0.96	
AMM3	0.00	10	0.96	

TMM4	0.00	10	0.96	
AMM2	0.01	10	0.97	
TWM4	0.01	10	0.97	
TWF4	0.03	10	0.99	
YMF2	0.03	10	0.99	
TWM3	0.03	10	0.99	
AWM3	0.04	10	1.01	
TMF3	0.05	9	1.02	
YMF1	0.05	10	1.02	
TMM2	0.08	10	1.05	
AWF3	0.08	10	1.05	
YWM4	0.08	8	1.06	
AWM1	0.09	10	1.07	Promoters
TWM1	0.10	10	1.08	
TWM2	0.11	9	1.10	
TWF2	0.12	10	1.10	
TWF1	0.13	10	1.12	Innovators
YMM1	0.16	10	1.15	
YWM2	0.19	10	1.20	

Also, it looks as if the individual speaker effects (presented in Table 7.2.19 and Figure 7.2.12) are fairly small at 0.09 (0.08) WF ratios, especially since no other significant social variation was attested. The spread between the most conservative speaker (AMF3), who produces a very high vowel (-0.23, mean: 0.66 WF ratios)

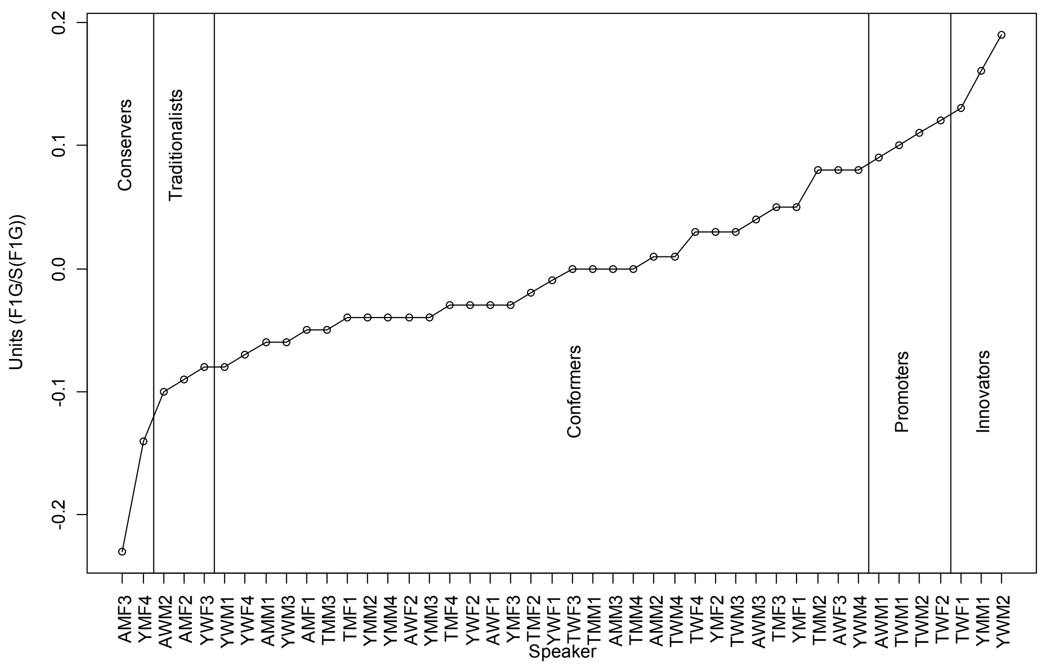

Figure 7.2.12: Innovation plot for (OUT)-F1G/S(F1G) in wordlist style

Table 7.2.20: LMM results for (OUT): F2G/S(F2G) – Wordlist style – Fixed factors

Factor	Units	Tokens	Mean
Context, p < .001			
word-internal	0.08	214	1.14
word-initial	0.04	44	1.10
word-final	-0.11	170	0.95
Gender, p < .01			
female	0.07	212	1.13
male	-0.07	216	0.99

Speaker effects: 0.16 (0.15); deviance: -214.38, df: 6, intercept: 1.06, grand mean: 1.06

and the most innovative speaker (0.19, mean: 1.2 WF ratios) is quite large. However, much of the variation (comprising the traditionalists', conformers' and promoters' groups of speakers) is in the region of only 0.22 WF ratios. Still, we can find some hints at very broad patterns or underlying factors. Higher offsets, in the region of [ʉ~u], are more characteristic of female speakers with only AWM2 falling in with the traditionalists. This speaker is different from the other speakers in the more conservative groups by having a relatively high onset (he is in the conservers' group for F1/S(F1)). This means that he tends to use a much shorter diphthong, more typical of WC Glaswegian [əʉ]. Speakers at the promoters' and innovators' end of the innovation scale are WC class (with the exception of YMM1) and tend to be male and from the two younger age groups.

The results for F2G/S(F2G) are characterised by somewhat stronger variation than the other elements of (OUT). Table 7.2.20 shows the fixed-effects results. The intercept of 1.06 WF ratios confirms our descriptive finding that overall the realisation is fairly central on the front-back dimension and there is highly significant variation by context and very significant variation by gender. We note that there is some fronting (0.08 WF ratios) in word-internal tokens and to a lesser extent in those in word-initial position. In word-final position, in which the second element of the vowel carries most stress, the realisation is still central, but much more retracted than in the other two contexts (0.11 WF ratios). In addition to that, the gender effect suggests that the more innovative fronter variants are more likely to occur in the female speakers (0.07) than in the males (-0.07).

By-speaker effects (shown in Table 7.2.21 and Figure 7.2.13) are very strong in this feature at 0.16 (0.15) WF ratios sd and a range of values from 0.69 to 1.33 WF ratios. While only gender is significant on its own, the results for the individual speakers also suggest a social class pattern. Overall, MC speakers (mean: 1.12 WF ratios) are somewhat more frontish than their WC counterparts (mean: 1.09 WF ratios) and this also shows here since most speakers in the conservers' and traditionalists' groups are from a lower social background than those at the more innovative end. The strong gender pattern also shows in the classification of individual speakers on the innovation scale. While e.g. AWM1 and YWF1 are both most conservative (-0.27 WF ratios), the difference in their mean values of 0.69 WF ratios in the former and 0.84 WF ratios in the latter is quite close to the predicted gender difference.

Table 7.2.21: LMM results for (OUT): F2G/S(F2G) – Wordlist style – Speaker effects

Speaker	Units	Tokens	Mean	Classification
AWM1	-0.27	10	0.69	Conservers
YWF1	-0.27	10	0.84	
AMM3	-0.24	10	0.72	
YWF2	-0.23	9	0.88	
TWF1	-0.19	10	0.92	Traditionalists
AWF3	-0.16	10	0.95	
YMM1	-0.16	10	0.81	
TMM2	-0.14	10	0.82	Conformers
YMM3	-0.13	10	0.85	
AWF1	-0.12	10	0.99	
YWF3	-0.12	9	1.01	
YMF1	-0.09	10	1.04	
TWM1	-0.09	10	0.90	
AMM1	-0.08	10	0.90	
AMM2	-0.08	10	0.90	
YWM4	-0.07	8	0.89	
TWM2	-0.06	9	0.94	
YWM2	-0.06	10	0.93	
YWM1	-0.05	9	0.95	
TWF3	-0.04	7	1.08	
TWM4	-0.03	10	0.96	
TWF4	-0.02	10	1.10	
AMF3	-0.02	9	1.12	
AWF2	-0.01	10	1.12	
YMF4	-0.01	10	1.12	
TWM3	0.00	10	0.99	
AMF2	0.03	10	1.17	
YMF3	0.04	10	1.17	
YMF2	0.05	10	1.18	
AWM2	0.10	10	1.10	
TMM4	0.10	10	1.10	

YWF4	0.12	9	1.28	
TMF4	0.12	11	1.27	
TMF3	0.15	9	1.29	
YMM2	0.15	10	1.16	
TMF1	0.16	10	1.31	
TMM1	0.16	10	1.17	
AWM3	0.17	10	1.18	Promoters
AMF1	0.17	9	1.33	
TMF2	0.18	10	1.31	
YWM3	0.18	10	1.20	
TMM3	0.26	10	1.28	
TWF2	0.27	10	1.43	Innovators
YMM4	0.31	10	1.33	

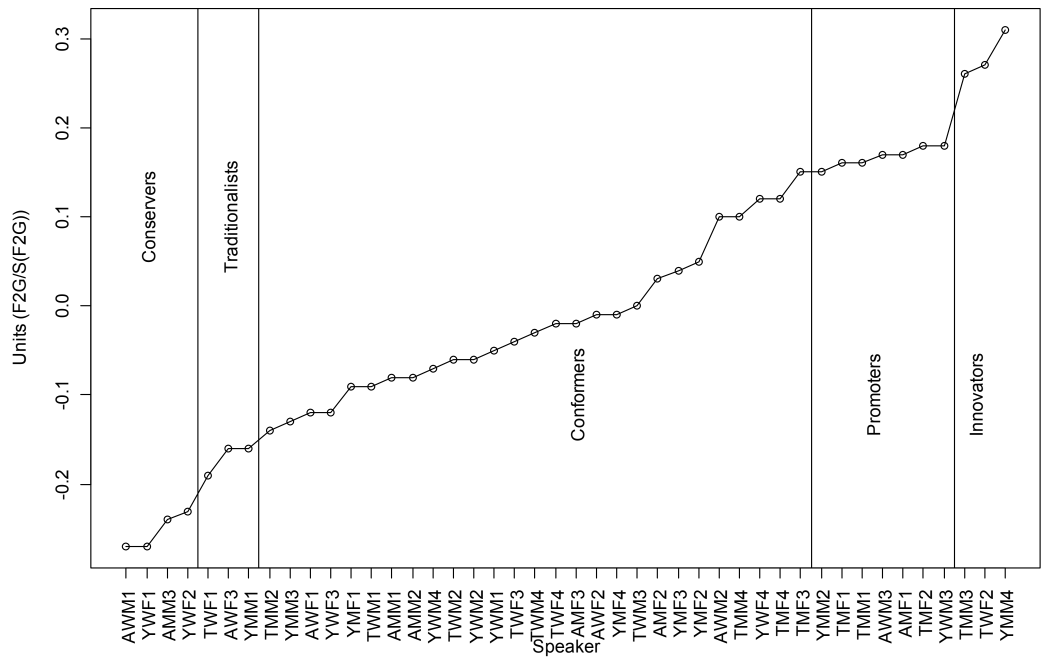

Figure 7.2.13: Innovation plot for (OUT)-F2G/S(F2G) in wordlist style

The group of promoters is overall very homogenous as well, with values ranging between 0.15 and 0.18 WF ratios and contains speakers from all age and social groups, whereby again the mean values for the females are considerably higher. Three speakers fall into the innovators' group and are strongly polarised from the other groups. Based on mean values, TWF2 is the most innovative at 1.43 WF ratios, which means that she does not style-shift since her interview data showed a mean F2G/S(F2G). Also, her values are 0.1 WF ratios larger than those for the next most frontish speaker. Overall, however, the innovation is led by the MC speakers from the younger age groups, six of whom form part of the promoters' and innovators' group.

The final feature of the (OUT) variable is the length of the trajectory between onset and glide. As Table 7.2.22 shows, the fixed-effects results are rather complex and would best be captured by the three-way interaction of age, social class and gender as I have discussed above on the basis of Figure 7.2.10. With that in mind, we can still find some revealing patterns. The intercept of 0.53 WF ratios shows that in contrast to the interview data, ED is much longer overall and that the realisation is fully diphthongal. Word-finally it is somewhat longer (0.07 WF ratios), again likely to be due to the greater stress in this position. No effect is found word-initially, and word-initially, ED is shorter. For the social factors there is a highly significant difference by social class, which follows the expected pattern in that MC speakers have considerably longer trajectories than those with a WC background. The interaction of age and gender is very significant and suggests that the strongest polarisation is between the two adult groups, with the females' ED values being much longer than those of the adult males. However, because Rbrul does not fit three-way interactions, this result is misleading. While it is true that adult WC males have very short trajectories (0.31 WF ratios), those of their MC counterparts are considerably longer (0.55 WF ratios) and are approaching the values found in the adult females, and thus the SSE realisation.

Table 7.2.22: LMM results for (OUT):ED – Wordlist style – Fixed factors

Factor	Units	Tokens	Mean
Context, $p < .001$			
word-final	0.07	170	0.60
word-initial	0.00	44	0.53
word-internal	-0.07	214	0.46
Social class, $p < .001$			
middle-class	0.06	218	0.58
working-class	-0.06	210	0.46
Age:Gender, $p < .01$			
adult:female	0.08	58	0.65
young:male	0.06	77	0.62
teen:male	0.03	79	0.43
teen:female	-0.03	77	0.43
young:female	-0.06	77	0.57
adult:male	-0.08	60	0.43

Speaker effects: 0.09 (0.07); deviance: -226.28, df: 11, intercept: 0.53, grand mean: 0.52

In the young speakers, we find a similar pattern, but this time the boys produce the longer variants, irrespective of social class. The smallest difference is found in the teenage groups (±0.03 WF ratios), but once more the two-way interaction cannot capture the actual variation patterns very well. Despite the same mean values (0.43 WF ratios), there is first of all a social class split, with WC speakers producing shorter trajectories, but within the boys, the MC speakers are much more in line with the majority of speakers (mean: 0.57 WF ratios) than the WC boys, who produce the shortest diphthongs at only 0.28 WF ratios).

The effects of the by-speaker values are comparatively small at 0.09 (0.07) WF ratios sd. Furthermore, because of the already strong variation patterns in the fixed factors, there are no further patterns to be distinguished here; therefore, none is reported in greater detail.

7.2.4 Summary and discussion

The (OUT) vowel in Aberdeen shows considerable variation in all dimensions. Realisations range from the (near-)monophthongal Scots variants [ʉ~u] (sometimes slightly lowered and centralised), which still accounts for about a third of all tokens in the interviews, to diphthongs of various degrees depending on both internal and social factors. The most common variants are those diphthongs which have a relatively central onset [ə~ɐ] and a medium-length trajectory resulting in offsets in the region of [ʉ~u], though sometimes somewhat lower. The SSE variants, characterised by a more open onset [a~ɑ~ʌ] and long trajectory to [ʉ~u] are becoming less common and are a clear minority in the interviews, but still very common in the wordlists. This means that overall, a typical realisation of (OUT) in Aberdeen is [əʉ], which is both more central and higher than is suggested by Hughes et al. (2005: 107) and is an intermediate variant between the two extreme poles. In contrast with Glasgow, in which this variant was more typically found in WC speakers in previous studies (summarised and discussed in Stuart-Smith 2003: 120–121), in Aberdeen it is the majority variant with values ranging between 54 and 62 per cent in all speaker groups apart from the WC teenagers. Short variants are relatively common in the WC adults and very strong in the WC teenagers, but not the WC children, whose mean value is 26 percentage points below that of the teenagers. Of course, we would expect this kind of social pattern in which WC speakers tend to opt for the monophthong, but it seems that this variant is no longer being passed down to the younger speakers to such a degree as possibly before (similarly to the [f] variant of /ʍ/, see section 7.3). Instead, it seems that the younger speakers are opting for an in-between variant. Whether this variant was part of the original input, e.g. as one of those variants that was very common in the WC Glasgow immigrants (Macaulay 1977: 168–170), that has survived until today or is a more recent development is not clear. More generally the trend in Aberdeen suggests once more that supraregional forms are gaining greater acceptance and widespread use at the cost of more localised and traditional variants.

7.3 (HW)

7.3.1 Background

As has been outlined in chapter 3, in both SSE and Scots, the typical realisation of (HW), that is of words that have a <wh> spelling, is [ʍ]. However, this description is not as uniform as it may first seem. There is some disagreement as to the exact phonetic status of this sound (cf. Schützler 2010: 12–13 for a recent discussion). I here adopt his view (p. 13) that it "can be interpreted as the combination of a voiced and a voiceless component, or at least as a partially devoiced approximant, thus: [xw] < [HW] < [w̥]."

For SSE, previous comments make clear that for the vast majority of speakers, there is no merger of /ʍ/ and /w/ (e.g. Giegerich 1992: 36; Jones 2002: 27). This is also generally true for most speakers of Scots (e.g. McMahon 2002: 94; Johnston 2007: 112). In Northern and Mid-Northern Scots, there is the shibboleth [f] realisation, which traditionally was used in every context. So not only did the *wh*-pronouns take this feature, but the rule was extended to all other *wh*-contexts as well so that even words like *white* or *whisky* took [f] (Grant 1931: xxxiv–xxxv). This feature is commonly attested in all previous comments and studies of North-Eastern Scots at least as far back as 1866 (cf. McClure 2002: 22–48 for a more thorough discussion of these).

The first comment on a systematic merger of /ʍ/ and /w/ is by Macafee (1983a: 32), who attests occasional [w] realisations in younger Glaswegians that do not appear to be influenced by RP. More recently, a study of eight boys and eight girls aged 13-14 from a working-class area of the city suggests a more diverse picture (Lawson & Stuart-Smith 2003). Both auditorily and acoustically the authors attest a third, intermediate variant in the speech of these children that they classify as neither of the two above mentioned variants. This intermediate variant is most frequently found in the wordlist data. They also find a clear class-based variation pattern, with MC speakers preferring the standard form and the WC children using [w] more frequently, which the authors interpret as the WC children leading the change towards the non-Scottish form. In a follow-up study of adolescents and adults (Stuart-Smith et al. 2007: 239–240), previous findings were confirmed and extended. Adult MC speakers used [ʍ] almost consistently. A more diverse picture was found in their WC counterparts, where women are still rather conservative but males showed equal amounts of [ʍ] and [w]. In the teenage MC groups, the standard variant accounted for about 60% in the boys and over 75% in the girls, but [w] was making strong inroads. In the younger WC speakers, [ʍ] accounted for less than 30% of all the tokens in the interviews and the non-local variant was by far the most common.

/ʍ/-loss is also mentioned as being a feature of the speech of Edinburgh working-class speakers by Johnston (1997b: 507). Chirrey (1999: 227) notes that while some Edinburgh speakers maintain the distinction, others are unpredictable in their usage of either variant and will use [ʍ] on one occasion and [w] on another, even in the same word. Also, she finds that "speakers as old as 73 [...] use [w] and [ʍ] inconsistently". More recently (Schützler 2010: 12-16;18), a study of 27 Edinburgh speakers (pupils and teachers of a public school and students and staff of Edinburgh University) aged 17-62 reveals a general tendency of a merger in the younger speakers. Still, he finds that only four speakers seem to have merged to [w] completely. An important finding is that speakers with direct dialect contact to Anglo-English and the university setting are strong predictors for the loss of [ʍ].

In her study of Livingston, a new town in the Central Belt, Robinson (2005: 184–188) reports that adult speaker had no sign of a merger, with a more varied picture in the younger speaker groups. In the 15-year-olds, of the four boys only one used [w] consistently and another had one token. No merger was attested in the teenage girls. In the youngest age group (11 years old), she found that two out of eight boys and one out of six girls favoured [w]. No significant differences were found between wordlist and interview style, but she notes that the number of tokens on the wordlist may have been too small to make meaningful interpretations.

Summing up, the data from the Central Belt suggests a change towards a non-Scottish pronunciation that is most strongly driven by age factors. Whereas younger speakers are gradually adopting [w], the older generations retain the Scottish form. However, the motivations and pathways behind the changes are probably different. Whereas, for the WC speakers, there is only little evidence that dialect contact has caused the loss of [ʍ] (it is by far most attested in the least mobile group), Schützler's Edinburgh data supports the view that contact with speakers from south of the border can lead to an adoption of [w]. Furthermore, we note that as predicted by the urban-hierarchical model of diffusion (4.1.1), speakers in the larger cities of Glasgow and Edinburgh adopted the change considerably earlier than those of Livingston.

Turning to the situation further north, we first note that in their brief discussion of features of Dundonian Robinson & Crawford (2001: 61–76), there is no comment on the realisation of /ʍ/, which leads me to conclude that the city's accent is not yet affected by [w]. As already outlined above, the stereotypical realisation of /ʍ/ in the North-East is [f], although the status of this realisation seems to be changing rather drastically and rapidly, however, again seemingly following a relatively clear pattern of diffusion. Two studies carried out in different places in Aberdeenshire by Marshall (2004) and Smith (2005) as well as comments by Millar (2007) can shed some light on current changes in the variety. Let us first have a look at the situation in the countryside. Millar (2007: 61–62) notes

> an ongoing process of this sound /f/ being replaced by SSE /ʍ/ in all but interrogative and relative pronominal contexts. [..] /ʍ/ pronunciations are natural in the speech of younger inhabitants of even the heartland of Mid-Northern A; there is some evidence that this was not the case until very recently, however. Speakers of traditional rural North-East dialects above the age of seventy will, when speaking Standard English, often use a pronunciation [xʍ] for <wh>.

This observation is supported by Marshall's (2004) study in Huntly, a village of approximately 5,000 about 40 miles from Aberdeen. He reports the results for the realisation of /ʍ/ in initial position of wh-question words. Whereas speakers above the age of 25 are almost consistent in their use of [f] (126-128), there is a steep drop in the use of the local variant in the teenagers and children, which he interprets as an apparent-time change towards the supralocal form. Furthermore, he notes a gender effect, in that with the exception of the teenage group it is the females who lead in adopting the standard variant. This finding is concurrent with other studies of language change.

A rather different picture emerges from Smith's (2005: 120–121) findings from Buckie, a coastal town 80 miles to the north-west of Aberdeen of just over 8,000 inhabitants. She studied 39 speakers aged between 22 and 80+ and found "virtually no evidence of encroaching Anglicisation" (121). [32] We must, however, be careful to infer from this that Buckie is more conservative than Huntly. The youngest speaker group in Smith's data can best be compared to the 25-40 year-olds in Marshall's study and we note that the level of [f] is in fact roughly the same at about 90%. It is only the speakers younger than this, i.e. those that were born well after the discovery of oil and the first immigration wave, who adopt the supralocal form. Thus, due to the lack of data from Buckie we must be careful with any interpretations. Whether the spread of [ʍ] into Huntly is a result of diffusion or Aberdeen that has just not yet reached Buckie or if the change is due to age-grading cannot be ascertained. Let us again turn to Millar (2007: 119), who notes the following:

> In my own experience, I have rarely heard /f/ for <wh> with anything other than interrogative pronouns in the speech of anyone under the age of sixty, even in rural districts. Indeed, the stereotypical greeting Fit like?, 'how are you?', is one often heard even in the speech of recent incomers (as is the stereotypical response, Jist tyaavin awaa, 'just getting by').

As regards the pattern of realisation in Aberdeen itself, comments are sparse. Hughes et al. (2005: 106) only note the stereotypical [f] realisation, without providing any further details as to the frequency and/or distribution of its use. Variable use of the local variant is noted by Robinson & Crawford (2001: 78), but there is no indication that the accent is influenced by anything other than the supralocal form, typical of SSE speakers. An interesting observation comes again from Millar (2007: 16):

> On the other hand, I regularly hear local young people here in Aberdeen speaking dense local dialect who will say *fit* /fɪt/ for 'what', but /ʍɔtɛvər/ (perhaps even /wɔtɛvər/) for 'whatever', particularly as a marker of disdain, apathy or lack of interest, a usage which appears to have largely been borrowed directly from American popular culture.

[32] Unfortunately, there is no indication of the number of tokens that were taken into account.

This would suggest that the [f] realisation is slowly becoming restricted to individual lexical items and at the same time possibly also to very narrowly defined speaker groups.

7.3.2 Methodology

Overall, there are 1264 (HW) tokens, of which 971 were collected in the interviews and the remaining 293 in wordlist style. Five main categories were identified in the analysis:

1. a range of variants such as [xw], [HW] and [ʍ], labelled [HW] in the tables and diagrams.[33] The [xw] variant was virtually restricted to wordlist style and only occurred 17 times and is considered to be a very careful pronunciation of the target [ʍ].
2. [w]: a voiced labial-velar approximant, labelled [w]
3. [f]: a voiceless labiodental fricative, labelled [f]
4. [ʍ/f]: an intermediate category for tokens that could not be identified clearly as [ʍ] or [f], labelled [HW/f]
5. [ʍ/w]: an intermediate category for tokens that could not be identified clearly as [ʍ] or [w], labelled [HW/w]

Four tokens were labelled [M] – miscellaneous. They include one token each of [t^w], [x], [χw] and [∅].

Since /ʍ/ can only occur in syllable onsets, the data was split up into five phonological contexts:

1. word-initial following a consonant, e.g. *feel what*, labelled *word-initial pc*
2. word-initial following a pause and word-initially in the wordlist data, e.g. *#what*, labelled *word-initial pp*
3. word-initial following a vowel, e.g. *see what*, labelled *word-initial pv*
4. word-internal following a consonant, e.g. *somewhere* labelled *word-internal-pc*
5. word-internal following a vowel, e.g. *anywhere*, labelled *word-internal-pv*.

[33] R does not support phonetic fonts, so that we need to use this form of representation.

Originally, the word-internal classes were kept separate, but because of the few tokens in each class (17 and 21 respectively), they were collapsed for the statistical analysis into the category *word-internal*.

General linear mixed-effects models (GLMM) were fitted separately for interview and wordlist style for the [ʍ] and [w] variants as the dependent variable. Furthermore, for the interview data for [f] I tried to fit a reduced model compared to those for the other two variants, but because of the low amount of tokens (68), Rbrul crashed. Therefore, the data for [f] can only be interpreted using descriptive statistics. Speaker was entered as a random factor and the following items as fixed factors: Context (only in interview style), Age, Social class, Gender, Age*Social class, Age*Gender, Social class*Gender, Father's birthplace, Mother's birthplace and rating of one's speech.

7.3.3 Findings

The overall descriptive statistics separated by style are presented in Table 7.3.1. We straightaway notice two things: the near-absence of [f] and the prominence of [w]. The pattern for the [f] variant follows that of other studies in that it is virtually absent in the wordlist data, but the very low figure of only 7% or 68 tokens in the interviews is quite remarkable and indicates rapid loss and replacement by [w], which accounts for over half the tokens in the interview and 44% in the wordlist data. This view is further supported by the relatively small amount of [ʍ] realisations, which account for less than 30% in the interviews and just under 40% in the wordlists. These patterns will become even clearer when we look at the external factors influencing the choice of variant and there will be a more thorough discussion of these changes below. The presence of auditorily intermediate variants for [ʍ/f], but more predominantly for [ʍ/w], which accounts for almost 10% of the tokens in the wordlists, is an indicator that similarly to the processes found in Glasgow (Lawson & Stuart-Smith 2003) and outlined above, there is not necessarily a direct replacement of one variant by the other, but rather an indication that changes proceed more gradually.

Table 7.3.1: Descriptive statistics for all tokens of (HW) separated by style (in %)

Style	N	[HW]	[w]	[f]	[HW/f]	[HW/w]	[M]
interview	971	28.4	54.5	7.0	3.7	6.3	0.1
wordlist	293	39.6	44.0	1.0	4.8	9.6	1.0

7.3.3.1 Interview style

As could be seen from Table 7.3.1, in the interview data there is a clear indication of change not only away from the local variant [f], but also of the supralocal SSE standard variant losing ground. In this section I will look at the factors contributing to the variation patterns I found and discuss these findings in relation to other studies. Before we turn to the results of the GLMM, let us first look at the descriptive statistics for the individual factors.

The distribution of variants by phonological context is presented in Table 7.3.2, which shows a clear separation of the individual variants. We find that the SSE variant is most likely to occur in word-initial position following a pause, i.e. in the context in which it receives the highest attention by the speaker and in which it is least influenced by coarticulatory factors. Nevertheless, [w] is slightly favoured here and very strongly favoured in all other positions, most notably word-internally, where it accounts for over 76% of all tokens. The use of the traditional

Table 7.3.2: Descriptive statistics for (HW) by phonological context (in %) in interview style

Position	N	[HW]	[w]	[f]	[HW/f]	[HW/w]	[M]
word-initial pp	191	39.8	40.8	7.3	2.6	9.4	0.0
word-initial pc	546	26.4	54.6	8.4	3.8	6.8	0.0
word-initial pv	196	25.0	63.3	4.1	5.1	2.6	0.0
word-internal	38	18.4	76.3	0.0	0.0	2.6	2.6

[f] – and by extension also that of the intermediate form [ʍ/f] – is restricted to the word-initial context in my data and in fact to a handful of words. Of the 68 [f] tokens, 30 occur in the word *when*, 19 in *what* (with another four tokens of *what's* and two tokens of *whatever*) and twelve tokens of *where*. Also, *what* and *when* account for 30 of the 36 intermediate [ʍ/f] realisations.

The results for age, presented in Table 7.3.3, show an even more drastic pattern that suggests a rapid apparent-time change towards the [w] variant, which accounts for 22.9% in the adult speakers, but for over two-thirds of all tokens in the teenagers and children. Despite the figure for the adults being very low in comparison, this result is still very striking since none of the previous studies or comments on the North-East indicate that [w] is anything but a very marginal, almost accidental variant. The current data suggests that this non-local variant has been adopted much at the expense of [f], it would seem, which occurs in just 13% of the adults' tokens. This is particularly striking when we compare these results to those

Table 7.3.3: Descriptive statistics for (HW) by age (in %) in interview style

Age	N	[HW]	[w]	[f]	[HW/f]	[HW/w]	[M]
adult	297	47.8	22.9	13.1	8.8	7.1	0.3
teen	348	17.5	69.3	6.6	2.0	4.6	0.0
young	326	22.4	67.5	1.8	0.9	7.4	0.0

of (Marshall 2004) and (Smith 2005) discussed above. Whereas in the rural communities adults still almost unanimously use the local dialect variant, it seems that it has been almost erased from the speech of their urban counterparts. However, a word of caution is in order here. This variant is so clearly and strongly marked as a Doric feature that speakers may have avoided using it when speaking to me as an outsider to their community, indicating that I have not overcome the observer's paradox. This problem was also encountered and commented on by Wölck (1965), who found not only structural, but also stylistic constraints on the realisation of <wh> as [f]. My informal observations in the street or on the bus suggest that the local form is still used frequently, at least by older speakers and in a restricted set of words.

However, at the same time it would seem that [f]-loss is advancing rapidly in the younger age groups. The data for the teenagers and children can be compared relatively well to Marshall's, who reports his findings for the 8-12 and 14-17 age ranges (2004: 126–128). Whereas he finds a gradual decrease in the use of the labiodental variant, the younger the speakers are, it is really only the youngest girls who can be said to have lost the contrast and moved towards the SSE variant, which, however, still accounts for almost 20%. In my data, the youngest age group avoids [f] almost completely (occurrence only 1.8%) and also in the teenage group the values (6.6%) are less than a fifth of those of their Huntly counterparts.

Turning to social class (Table 7.3.4), we note that there is no difference in the use of [w], which is the majority variant in both groups (at approx. 54%). It is the difference in the use of [ʍ] and [f] that presents us with an interesting pattern, contradicting previous comments that the speech in Aberdeen is not (or is at least much less) stratified by social class. The standard variant accounts for just over a

Table 7.3.4: Descriptive statistics for (HW) by social class (in %) in interview style

Social class	N	[HW]	[w]	[f]	[HW/f]	[HW/w]	[M]
middle-class	515	36.5	54.2	0.6	2.7	5.8	0.2
working-class	456	19.3	54.8	14.3	4.8	6.8	0.0

Table 7.3.5: Descriptive statistics for (HW) by gender (in %) in interview style

Gender	N	[HW]	[w]	[f]	[HW/f]	[HW/w]	[M]
female	499	33.1	54.9	2.6	3.2	6.2	0.0
male	472	23.5	54.0	11.7	4.2	6.4	0.2

third of tokens in the MC speakers and is found in 19.3% of the tokens in the WC speakers. For the latter, this value would be expected since even the oldest speakers in Huntly and Buckie have some [ʍ] variants and, as I have pointed out above, [f] is no longer found in all possible contexts. We would expect this group to use [f] rather than [w], but this happens in only 14.3% of cases. On the other hand, in the MC speakers, [f] is almost completely avoided. Even after taking into account the problem of me being an outsider, this value must be interpreted as a clear sign of [f]-loss.

Table 7.3.6: Descriptive statistics for (HW) by the interaction of age andsocial class (in %) in interview style

Age:Social class	N	[HW]	[w]	[f]	[HW/f]	[HW/w]	[M]
adult:middle-class	142	59.2	20.4	2.1	7.7	9.9	0.7
adult: working-class	155	37.4	25.2	23.2	9.7	4.5	0.0
teen:middle-class	191	26.2	69.6	0.0	1.0	3.1	0.0
teen:working-class	157	7.0	68.8	14.6	3.2	6.4	0.0
young: middle-class	182	29.7	64.3	0.0	0.5	5.5	0.0
young: working-class	144	13.2	71.5	4.2	1.4	9.7	0.0

The results for gender (Table 7.3.5) resemble those of the other social variables and indicate that [f] is used more than four times as often by males than females. As would be expected, females tend to opt for the standard variant rather than the local, but they are only slightly in the lead in the change towards [w].

Taking into account the interactions of the three social factors (cf. Table 7.3.6,

Table 7.3.7: Descriptive statistics for (HW) by the interaction of age and gender (in %) in interview style

Age:Gender	N	[HW]	[w]	[f]	[HW/f]	[HW/w]	[M]
adult:female	155	52.9	23.9	5.8	8.4	9.0	0.0
adult:male	142	42.3	21.8	21.1	9.2	4.9	0.7
teen:female	182	16.5	78.0	0.5	1.6	3.3	0.0
teen:male	166	18.7	59.6	13.3	2.4	6.0	0.0
young:female	162	32.7	58.6	1.9	0.0	6.8	0.0
young:male	164	12.2	76.2	1.8	1.8	7.9	0.0

Table 7.3.8: Descriptive statistics for (HW) by the interaction of social class and gender (in %) in interview style

Social class:Gender	N	[HW]	[w]	[f]	[HW/f]	[HW/w]	[M]
middle-class: female	258	43.4	48.8	0.0	2.3	5.4	0.0
middle-class:male	257	29.6	59.5	1.2	3.1	6.2	0.4
working-class: female	241	22.0	61.4	5.4	4.1	7.1	0.0
working-class:male	215	16.3	47.4	24.2	5.6	6.5	0.0

Table 7.3.7 and Table 7.3.8; also see Figure 7.3.1) even clearer patterns emerge. For a start, only MC adults use [ʍ] in more than 50% of their speech. Their WC counterparts are the strongest [f] users at 23.2%, although we note that the gender distribution (not shown here) is very unequal. In the males, the local variant accounts for 36%, in the females only one in nine tokens is [f].

An even starker marginalisation of the Doric variant can be seen in the WC teenagers. Of the 23 tokens, only one single one belongs to a female speaker. What becomes very clear from my data is that not only do older MC speakers avoid this variant when speaking to me, but also it is no longer passed down to their children.

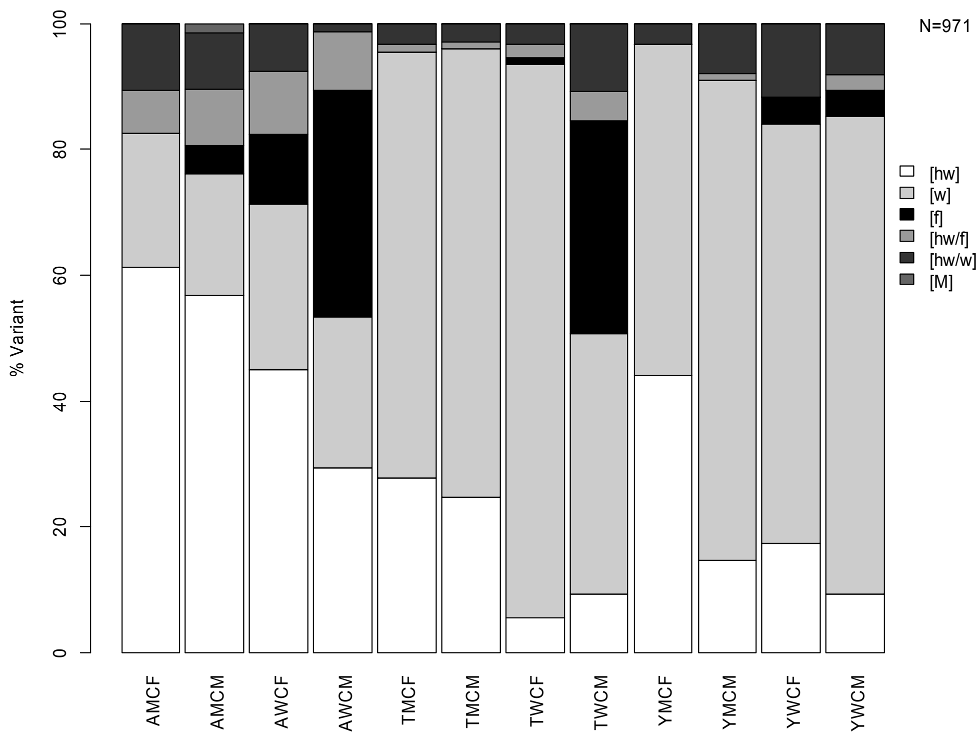

Figure 7.3.1: Distribution of variants of (HW) for the interaction of age, social class and gender in interview style

Table 7.3.9: Descriptive statistics for (HW) by father's birthplace (in %) in interview style

Father's birthplace	N	[HW]	[w]	[f]	[HW/f]	[HW/w]	[ʍ]
North-East	760	29.9	50.1	8.6	4.7	6.6	0.1
Rest of Scotland	142	12.0	81.7	2.1	0.0	4.2	0.0
England	69	46.4	46.4	0.0	0.0	7.2	0.0

It is completely absent in the two younger MC age groups, but while [ʍ] is more frequent in these groups than in the respective WC speakers, the difference in the use of [w] is only marginal and therefore suggests a more general trend towards this variant. This change is led by the teenage WC girls, who have shifted towards the incoming variant almost completely at 88%.

Turning to parents' birthplaces (Table 7.3.9, Table 7.3.10), we also note some interesting patterns. It seems that a prerequisite for using [f] is that both parents were born in the North-East, since only one speaker (TWM2) with one parent from elsewhere in Scotland uses this variant at all. Furthermore, it is striking that speak-

Table 7.3.10: Descriptive statistics for (HW) by mother's birthplace (in %) in interview style

Mother's birthplace	N	[HW]	[w]	[f]	[HW/f]	[HW/w]	[ʍ]
North-East	807	30.6	50.3	8.4	4.2	6.3	0.1
Rest of Scotland	118	15.3	76.3	0.0	1.7	6.8	0.0
England	46	23.9	71.7	0.0	0.0	4.3	0.0

ers whose fathers were born elsewhere in Scotland produce by far the highest ratio of [w] tokens and are generally of an MC background.

The final factor (rating of one's own speech, Table 7.3.11) reveals that speakers who rate themselves as (rather) SSE have the highest values for [ʍ], but simultaneously also for [f]. However, given that none of the adults self-identified as (rather) local, it becomes clear that this is effectively just due to age-based variation.

I will now turn to the results of the statistical analysis. Table 7.3.12 summarises the results of the GLMM for the variant [ʍ]. There are three significant fixed factors (context, social class and age). We first note that [ʍ] is strongly disfavoured

Table 7.3.11: Descriptive statistics for (HW) by rating of own speech (in %) in interview style

Rating of own speech	N	[HW]	[w]	[f]	[HW/f]	[HW/w]	[ʍ]
(rather) local	197	21.3	65.0	6.1	1.0	6.6	0.0
in-between	290	9.3	76.2	5.9	2.1	6.6	0.0
(rather) SSE	484	42.8	37.2	8.1	5.8	6.0	0.2

Table 7.3.12: GLMM results for (HW):[ʍ] in interview style

Fixed factors	Log-odds	N	Proportion	Centred factor weight
Context, *p* < .001				
word-initial pp	0.75	191	0.4	0.68
word-initial pv	0.07	196	0.25	0.52
word-initial pc	-0.12	546	0.26	0.47
word-internal	-0.69	38	0.18	0.33
Social class, *p* < .001				
middle-class	0.77	515	0.37	0.68
working-class	-0.77	456	0.19	0.32
Age, *p* < .01				
adult	1.18	297	0.48	0.76
young	-0.45	326	0.22	0.39
teen	-0.72	348	0.18	0.33

Speaker effects: 1.22 (1.02); deviance: 897.51, df: 8, intercept: -1.4, grand mean: 0.28, centred input probability: 0.2

in the current sample with an intercept of -1.401 log-odds units (which is equivalent to a centred input probability of only 0.198 in GoldVarb terms). Context contributes most significantly and we can confirm the descriptive finding that the word-initial post-pausal position favours [ʍ], whereas word-internally it is clearly disfavoured. The effects of the other two word-initial positions are minimal. Also, the finding that there is apparent-time change is clearly confirmed by the polarisation of adults at one end (+1.117) and young (-0.453) and teenage speakers (-0.723) at the other. The final significant factor is social class. Being a middle-class speaker clearly favours the use of the supralocal standard form. However, we cannot infer that this group therefore disfavours the incoming variant, but rather this can be explained by avoidance of [f].

By-speaker variation is visualised in Figure 7.3.2 and makes a very strong contribution to the regression model at 1.215 (1.022)[34] log-odds standard deviation, which indicates that despite the robust results for the fixed social factors there is still considerable variation at the level of the individual. Since the data suggests not only that [f] is being replaced quickly in the younger age groups, but also that, unlike in Huntly, the change is rather towards [w] than [ʍ], I have classified

[34] As has been discussed in section 4.2, the accuracy of the estimate Rbrul produces (here: 1.215) is heavily dependent on the sample size and can vary so that in the calculation of log-odds values that determine the innovator groups I use the actual sd (here: 1.022).

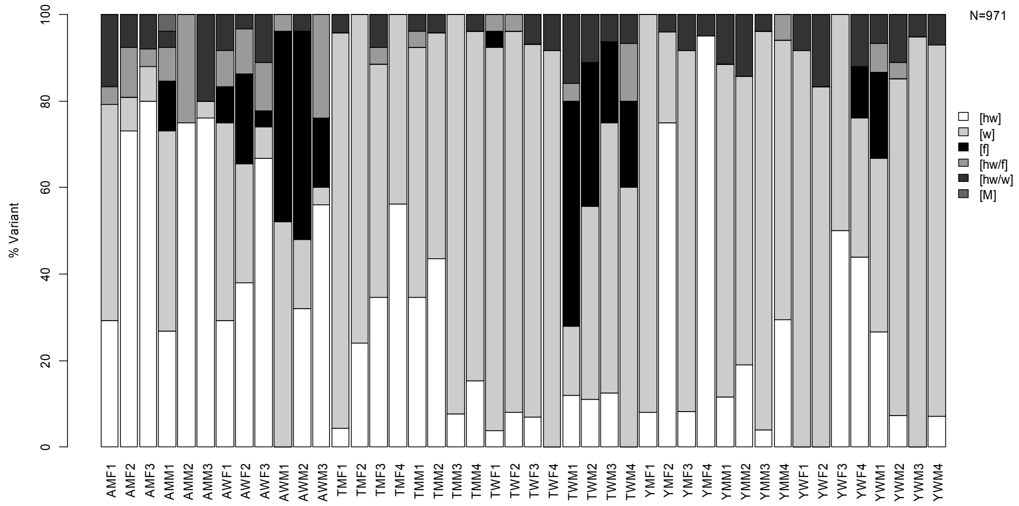

Figure 7.3.2: Distribution of variants of (HW) by speaker in interview style

speakers who have high positive log-odds for the SSE variant as conservative and those who avoid it, i.e. speakers with high negative log-odds, as ‘innovators’. This works well for the vast majority of speakers, most of whom in turn have high positive log-odds for [w]. However, there is one WC teenage boy (TWM1) who still seems to prefer [f] rather than the new variant to dissociate from the MC standard. For AWM1, we note that he does not have [ʍ] at all, but at the same has about equal values for [f] and [w]. These special cases will be discussed in greater detail below.

The results are summarised in Table 7.3.13 and the corresponding innovation plot (Figure 7.3.3). Given the strong age effect, it is not surprising that the three speakers in the category of conservers are all young speakers. Particularly, YMF4 is very conservative with only one out of 20 tokens not realised as [ʍ]. While YWF4 has only relatively few standard realisations at 44%, this still sets her apart from her age and social class peers who almost categorically avoid this form.

Table 7.3.13: GLMM results for (HW):[ʍ] – individual by-speaker variation in interview style

Speaker	Log-odds	N	Proportion	Centred factor weight	Category
YMF4	2.864	20	0.95	0.943	
YWF4	2.005	25	0.44	0.874	Conserver
YMF2	1.868	24	0.75	0.858	
AWF3	1.422	27	0.667	0.795	
TMF4	1.271	16	0.562	0.769	
YWM1	1.243	15	0.267	0.764	Traditionalists
TMM2	1.027	23	0.435	0.723	

AWM3	1.01	25	0.56	0.72	
YWF3	0.879	2	0.5	0.693	
TMM1	0.647	26	0.346	0.641	
AMF3	0.632	25	0.8	0.638	
TWM1	0.613	25	0.12	0.633	
AMM3	0.557	25	0.76	0.62	
TWM3	0.542	16	0.125	0.617	
TMF3	0.489	26	0.346	0.604	
AMF2	0.373	26	0.731	0.576	
AWF2	0.34	29	0.379	0.568	
AMM2	0.311	16	0.75	0.561	
AWM2	0.221	25	0.32	0.539	
TWF2	0.197	25	0.08	0.533	
TWM2	0.193	9	0.111	0.532	
TMF2	0.169	25	0.24	0.526	
YMM4	0.168	17	0.294	0.526	Conformers
TWF3	0.14	29	0.069	0.518	
YWM4	0.028	14	0.071	0.49	
AWF1	-0.028	24	0.292	0.477	
YWM2	-0.054	27	0.074	0.47	
TMM4	-0.254	26	0.154	0.421	
YMM2	-0.33	21	0.19	0.402	
TWF1	-0.332	26	0.038	0.402	
TWF4	-0.599	12	0	0.34	
TWM4	-0.619	15	0	0.335	
YMM1	-0.845	26	0.115	0.287	
YMF3	-0.871	12	0.083	0.282	
TMM3	-0.918	26	0.077	0.272	
YWM3	-0.948	19	0	0.266	
YWF2	-1.004	18	0	0.255	
YWF1	-1.006	24	0	0.255	
TMF1	-1.072	23	0.043	0.243	
YMF1	-1.181	37	0.081	0.223	
AMF1	-1.32	24	0.292	0.2	Promoters
AMM1	-1.445	26	0.269	0.181	
YMM3	-1.474	25	0.04	0.176	
AWM1	-1.992	25	0	0.113	Innovator

The ‘traditionalists’ group contains four speakers, of whom AWF3 is the most interesting. She is the oldest speaker in the sample and working-class so that we would have expected her to have a relatively high amount of [f], but she has only one single token. The reason for the high use of [ʍ] is that [w] – of which she has only 2 tokens – is not an option in her case since it has been added to the variant inventory only relatively recently. The two MC teenagers (TMF4 and TMM2) in this group have about equal amounts of [ʍ] and [w] and are polarised from two other speakers in their range, most notably TMF1, who has shifted towards [w] almost categorically and to a lesser extent TMM3.

In the ‘conformers’ group we mainly find the other teenagers and children who overall have only relatively small amounts of [ʍ], but given that the change is away from this variant and the already very strong age- and class-based effects even those who avoid the standard variant completely fall within this group.

The ‘promoters’ group contains not only the aforementioned TMF1, but also two younger MC speakers, who have shifted towards [w] near-categorically. Again, it is the adult speakers who are most interesting in this respect. We find that there are two MC adults, AMF1 and AMM1, who are clearly set apart from the rest since they use [ʍ] in less than 30% of their tokens. While the background data available indicates no obvious reason, it is perhaps worth noting that they are a married couple.

The only ‘innovator’ is AWM1, a 38 year-old WC male who does not have a single token of [ʍ] , is one of the most interesting speakers in the sample and is possibly prototypical for the changes that have affected his and younger generations of WC speakers. He was born to North-Eastern parents and acquired the dialect during the time of the first immigration wave. We can assume that the parental

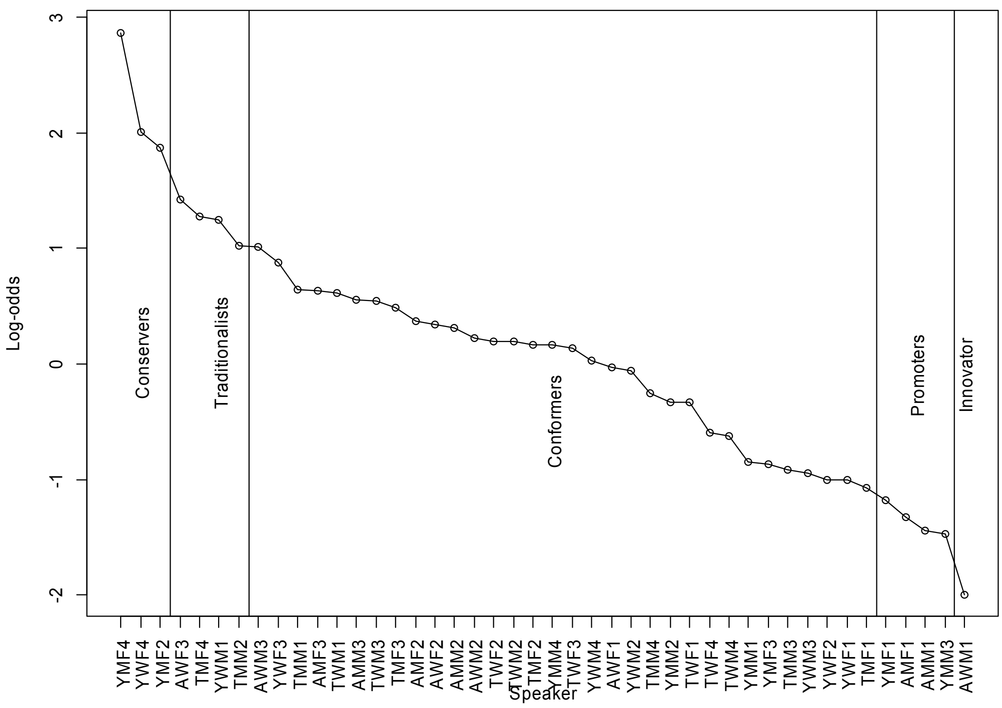

Figure 7.3.3: Innovation plot for (HW)-[ʍ] in interview style

Table 7.3.14: GLMM results for (HW):[w] – fixed factors in interview style

Factor	Log-odds	N	Proportion	Centred factor weight
Context, $p < .001$				
word-internal	1.09	38	0.76	0.75
word-initial pv	0.16	196	0.63	0.54
word-initial pc	-0.23	546	0.55	0.44
word-initial pp	-1.02	191	0.41	0.27
Age, $p < .001$				
teen	0.87	348	0.69	0.70
young	0.87	326	0.68	0.70
adult	-1.73	297	0.23	0.15

Speaker effects: 1.29 (1.13); Deviance: 973.95, df: 7, intercept: 0.33, Grand mean: 0.55, Centred input probability: 0.58

input he received was clearly local, which would explain his very high usage of [f], which he has in 44% of his tokens and the avoidance of the standard form. At the same time he is the only WC adult male to use [w] in any large amount (52%). Besides having relatives in the Central Belt, it seems likely that he has been in contact with speakers who used the [w] variant (amongst some other non-local features, such as the fronted /u/ allophone) and thus adopted this instead of [ʍ] as the [f]-avoiding strategy.

I will now turn to a discussion of the statistical analysis of the [w] variant. The results for the fixed effects of the GLMM are presented in Table 7.3.14. The intercept of 0.325 indicates that the incoming is overall slightly favoured. There are two significant fixed factors, phonological context and age; furthermore, there is strong by-speaker variation on the level of 1.291 (1.130) log-odds sd. Overall, for context, the results indicate that this variant is strongly preferred in word-internal position. While we should not overestimate this finding because of the small number of tokens in this position, one explanatory factor for the even higher amount of [w] in this context could be that it does not compete with [f] (and intermediate [ʍ/f] forms) here, which only occur word-initially. Only when /ʍ/ occurs word-initially following a pause is [w] strongly disfavoured. Possible reasons for this have already been outlined above. Again, the effects of the other two word-initial contexts are minimal.

For age, we find an even stronger polarisation between the adults at one end and teenagers and children at the other with a difference of over 2.6 log-odds units, which clearly underlines the rapidity of the change towards the new form. Overall, adults strongly disfavour [w] (-1.734), but as has already been pointed out and as we shall see below, speakers like AWM1 and others are rather strong [w] users. There is no difference between teenagers and children for this variant, who both clearly prefer it over any other variant.

Social class, which came out significant for the SSE variant, is now no longer in the final regression model, but given that the difference between the two speaker groups is minimal at only 0.6 percentage points, this is not surprising, but of course raises the question as to the possibly different paths via which this variant may have entered the Aberdeen system. This will be discussed below.

Table 7.3.15: GLMM results for (HW):[w] – individual by-speaker variation in interview style

Speaker	Log-odds	N	Proportion	Centred factor weight	Category
YMF4	-3.274	20	0	0.037	Conservers
TWM1	-2.274	25	0.16	0.094	
YMF2	-1.96	24	0.208	0.124	
YWF4	-1.398	25	0.32	0.199	Traditionalists
AMM2	-1.301	16	0	0.215	
AWM3	-1.188	25	0.04	0.235	
YWM1	-1.158	15	0.4	0.241	
AMM3	-1.063	25	0.04	0.258	Conformers
TMF4	-0.931	16	0.438	0.284	
TMM2	-0.88	23	0.522	0.295	
AMF3	-0.658	25	0.08	0.343	
TWM2	-0.657	9	0.444	0.343	
TWM4	-0.639	15	0.6	0.347	
TMF3	-0.621	26	0.538	0.352	
AWF3	-0.602	27	0.074	0.356	
TMM1	-0.598	26	0.577	0.357	
AMF2	-0.588	26	0.077	0.359	
YMM4	-0.345	17	0.647	0.417	
TWM3	-0.338	16	0.625	0.418	
YWF3	-0.251	2	0.5	0.44	
YMM2	-0.142	21	0.667	0.467	
AWM2	-0.034	25	0.16	0.494	
TMF2	0.129	25	0.76	0.534	
YMM1	0.31	26	0.769	0.579	
TMM4	0.317	26	0.808	0.581	
YWM2	0.376	27	0.778	0.595	
YMF3	0.583	12	0.833	0.644	
AWF2	0.622	29	0.276	0.653	
YWM4	0.626	14	0.857	0.654	

TWF3	0.683	29	0.862	0.666	
YWF2	0.79	18	0.833	0.69	
TWF2	0.959	25	0.88	0.725	
TMF1	0.968	23	0.913	0.726	
TWF4	0.98	12	0.917	0.729	
TWF1	1.015	26	0.885	0.736	
YWF1	1.186	24	0.917	0.768	
YMM3	1.209	25	0.92	0.772	
TMM3	1.224	26	0.923	0.774	
YMF1	1.345	37	0.919	0.795	
AMM1	1.381	26	0.462	0.801	Promoters
AWF1	1.394	24	0.458	0.803	
AMF1	1.397	24	0.5	0.803	
YWM3	1.453	19	0.947	0.812	
AWM1	1.58	25	0.52	0.83	

Again, we need to consider by-speaker variation (see Table 7.3.15 and Figure 7.3.4). Here, speakers who have high negative values are being considered conservative, those with high positive values as innovative. We first note that as would be expected the two young MC girls (YMF4 and YMF2) who had very high values of [ʍ] and were thus in the conservers group for this variant, also show up as conservers here. A rather different case is the third conserver, TWM1, to whom I have already pointed above. He uses the incoming variant in only 16% (or 4 of 25) of his

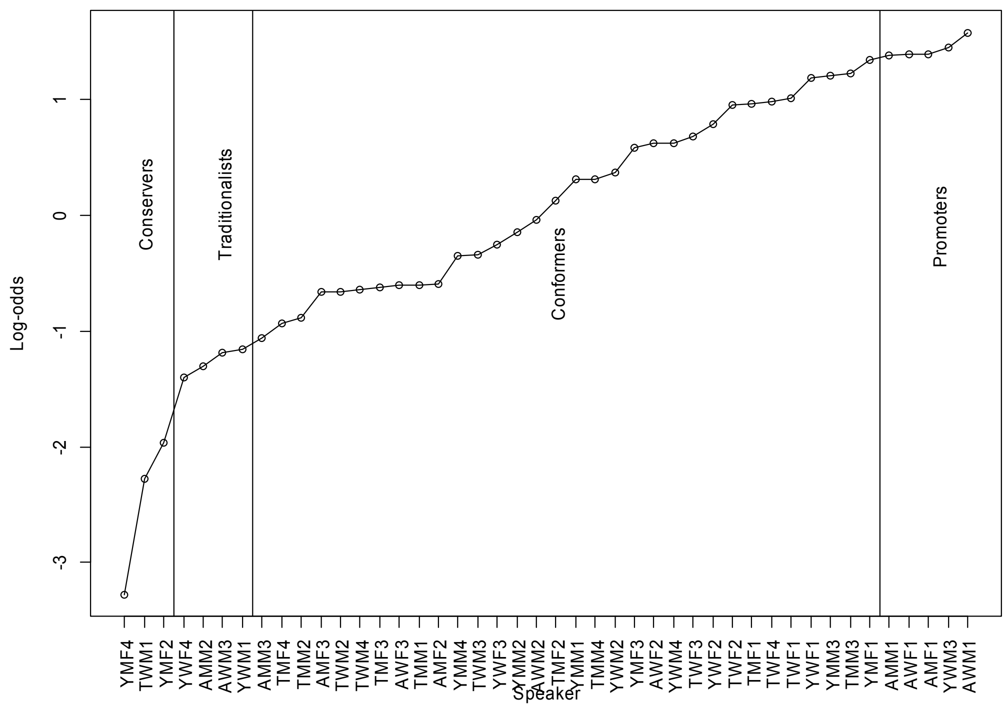

Figure 7.3.4: Innovation plot for (HW)-[w] in interview style

tokens, but has the highest value of all speakers for [f] at 52%. One possible explanation for the high use of [f] and consequently the low use of [w] lies in the speaker's background. He identifies himself and is identified by others as a so-called 'ned', a putative backronym of 'non-educated delinquent'. It is a pejorative term for Scottish working-class youths who tend to misbehave and also have a very specific way of speaking (cf. Lawson 2009, 2011 for a very thorough discussion of linguistic features of neds in the Glaswegian context). While he shares this with TWM2, and to a lesser extent with the other WC teenage boys, who all have considerably more [w] than he does, what sets him apart from his peers is the fact that at the time of the interview he was part of a football team in Keith, Moray, and played regularly in the Highland Football League, which, contrary to its name, mainly consists of teams from Aberdeenshire. Moray belongs to the Mid-Northern Scots B area in which [f] still has high currency (Millar 2007: 3); furthermore the data discussed for Huntly and Buckie indicate that the more rural varieties still very much conserve the traditional variant. Given that TWM1 has very regular contact to speakers for whom [f] is the norm, this seems a likely explanation for his avoidance of the incoming variant.

The two young WC speakers in the 'traditionalists' category are interesting too, because they are the only young speakers who have [f] and are therefore lagging behind in their adoption of the incoming variant. From the background data I collected, nothing sets them apart from their peers, so that other reasons are likely to be responsible for this behaviour. As to the two adult speakers in this group, AMM2, who has no [w], is an SSE speaker for whom other variants than the standard are unlikely to occur except for informal situations. AWM3 is also prefers the standard variant when speaking to me, but when he lapses into a more colloquial style, he adopts the local variant.

In the 'conformers' group, there is only little worthy of note, so that we can draw our attention to the large group of nine 'promoters'. There are no 'innovators'. Unsurprisingly, we find that three out of four adults who were part of the 'promoters' and 'innovators' groups for [ʍ] are found in this group for [w]. All have in common that they have adopted the new variant in about 50% of their tokens. Again we find the married couple (AMF1 and AMM1) to behave very similarly to one another. I have already commented on AWM1 above and it is likely that AWF1 behaves in a very similar way to this speaker. Incidentally, she was also 38 years old at the time of the interview and comes from a very comparable background, both socially as well as locally within Aberdeen. Although age was the only significant external factor for [w], TMM3 falls within this group because he patterns rather with the WC teenage girls than with his other peers. The patterns for the four young speakers are unclear, but we note that they are leading the change towards the incoming variant in their respective immediate peer groups.

7.3.3.2 Wordlist style

As has already been pointed to in 7.3.3 and as would be expected as we climb the formality ladder, overall the SSE variant occurs more frequently in the wordlist style. At the same time, this data type is characterised by the near-absence of the strongly marked local dialect form [f], of which there are a mere three tokens.

Since all the words in the list occurred in word-initial position, only external factors are taken into account here. Again, we look at the descriptive statistics for a range of factors first before turning to the analytical data.

Table 7.3.16: Descriptive statistics for (HW) by age (in %) in wordlist style

Age	N	[HW]	[w]	[f]	[HW/f]	[HW/w]	[M]
adult	76	82.9	3.9	1.3	2.6	9.2	0.0
teen	111	27.0	61.3	1.8	1.8	6.3	1.8
young	106	21.7	54.7	0.0	9.4	13.2	0.9

The age effect that was attested for the interview data is even stronger in the more formal style as can be seen in Table 7.3.16. Whereas there is only a relatively small difference in the use of the standard and the incoming variant in the younger speakers, adults now avoid [w] almost completely so that there are only three tokens overall and seven speakers in this group use [ʍ] exclusively.

Social class and gender differences are minimal and are not presented in table or graphical form here. There is a slight preference of female and MC speakers for the standard variant.

The data for the interaction of age and social class (Table 7.3.17) reveals a clear polarisation of MC adults (89.5% [ʍ]) and young WC speakers, for whom the SSE variant accounts for only 17%. As regards the use of [w], we furthermore note that speakers from the two younger WC groups are more innovative than their MC

Table 7.3.17: Descriptive statistics for (HW) by the interaction of age and social class (in %) in wordlist style

Age:Social class	N	[HW]	[w]	[f]	[HW/f]	[HW/w]	[M]
adult:middle-class	38	89.5	2.6	0.0	0.0	7.9	0.0
adult: working-class	38	76.3	5.3	2.6	5.3	10.5	0.0
teen:middle-class	56	30.4	55.4	0.0	3.6	10.7	0.0
teen:working-class	55	23.6	67.3	3.6	0.0	1.8	3.6
young: middle-class	53	26.4	45.3	0.0	13.2	13.2	1.9
young: working-class	53	17.0	64.2	0.0	5.7	13.2	0.0

Table 7.3.18: GLMM results for (HW):[ʍ] – fixed factors in wordlist style

Factor	Log-odds	N	Proportion	Centred factor weight
Age, $p < .001$				
adult	2.13	76	0.83	0.89
teen	-0.89	111	0.27	0.29
young	-1.24	106	0.22	0.23

Speaker effects: 0.92 (0.61); Deviance: 302.75, df: 4, intercept: -0.263, Grand mean: 0.4, Centred input probability: 0.44

peers. The other interactions as well as the data for parents' birthplaces and rating of their own speech do not reveal any patterns.

The output of the GLMM I calculated for [ʍ] is shown in Table 7.3.18. Only age comes out as a significant fixed factor. It confirms the clear polarisation of adults (log-odds: 2.132) and the teenagers (-0.894) and even more so the young speakers (-1.237). This once again supports the view that a rapid change towards the incoming variant has taken place. The by-speaker effect is smaller than for the interview with a value of 0.916 (0.610) log-odds sd. Because of the small amount of tokens in this style (maximally seven) and relative uniformity within the age groups, an individual classification of speakers into the five innovator groups is not informative.

The results of the GLMM for [w] are presented in Table 7.3.19. We note that the incoming variant is overall relatively strongly disfavoured (intercept: -0.923). Again, only age turns out to contribute significantly and confirms the polarisation of the adults (-2.641) and the younger speaker groups (teen: 1.467; young: 1.175).

Table 7.3.19: GLMM results for (HW):[w] – fixed factors in wordlist style

Factor	Log-odds	N	Proportion	Centred factor weight
Age, *p* < .001				
teen	1.47	111	0.61	0.81
young	1.18	106	0.55	0.76
adult	-2.64	76	0.04	0.07

Speaker effects: 0.94 (0.62); Deviance: 308.289, df: 4, intercept: -0.92, Grand mean: 0.44, Centred input probability: 0.28

Speaker effects account for a further 0.936 (0.608) log-odds sd. The homogeneity between the individuals within the age groups is even greater here.

7.3.4 Summary and discussion

In comparison to the more rural varieties researched by (Marshall 2004) and Smith (2005), the rapidity and nearly completed loss of the stereotypical [f] realisation for the phoneme /ʍ/, which was considered to be the hallmark of North-Eastern Scots, is quite remarkable. If we assume that the diffusion of the SSE variant into these varieties follows the model of contagion diffusion outlined in section 4.1, then we must assume that Aberdeen being the centre and starting point, loss of [f] must have been underway for some time in the city. The lack of earlier quantitative data on the distribution of this variant makes it difficult to assess at which point in time and also in which social groups this began. However, since none of the previous comments on the variety mention [w] as an alternative to the SSE variant, we must assume that this is a relatively recent phenomenon that has, however, practically levelled away the other two variants. These have reallocated to very specific and restricted social and linguistic contexts. The question also arises how [w] came to Aberdeen in the first place and why it can be found in younger speakers from both social classes.

Let us turn first to the latter. I have pointed out in chapter 2 not only that there was internal migration mainly from WC speakers from the western Central Belt, but also that many MC speakers from England and other places came to the city. None of these immigrant groups had [f], and of course the non-Scottish migrants would have used [w] and it is not unlikely that even some of the Glaswegians already had already lost the distinction (cf. Macafee 1983a). Furthermore, the salience of [f] of course makes it a prime candidate for levelling. In the older speakers this has led to the adoption of the supraregional standard variant, which is today prevalent here. Reallocation of [f] has taken place in that it is by now restricted to word-initial contexts and furthermore that it is most likely to occur in either set phrases (e.g. *Fit like?*) or a very small set of words. Besides the linguistic refunctionalisation, it has also been reallocated socially. With the exception of one adult male, MC speakers avoid it completely and even in the WC speakers, the distribution is far from uniform. All adults have at least some labiodentals, but only two use it to any greater extent. There is a similar finding in the teenagers and reasons for this have been discussed above.

While for the older generations this means that the change was almost unanimously towards the supraregional standard variant, as for the younger speakers, I think there are two different processes going on which are strongly determined by the methodological approach in the choice of informants. All WC children are from Torry. As I have pointed out in chapter 2 this part of the city has always been considered to be different from the rest of Aberdeen. Networks were traditionally close-knit and multiplex and policing ensured linguistic uniformity which was clearly oriented towards the Scots end of Aitken's continuum and to a large degree still is today. Therefore we would expect [f] to survive relatively strongly; however, six of the eight young WC speakers do not have it at all and furthermore the usage of [ʍ] is also very low. It seems, therefore, that neither [f] nor [ʍ] are being passed down successfully. As regards the former this could be because of or despite its salience or (since the teenagers use it) that it is adopted at a later stage in the linguistic development in a relatively conscious process as a marker of teenage identity to dissociate from the SSE forms spoken by the MC adults. Since the social networks of the younger and teenage speakers often do not extend past the immediate community, it seems likely that contact with migrants who have already lost the contrast of [ʍ] and [w] has contributed to the avoidance of the SSE variant.

As for the MC children and teenagers, one possible explanation is that they attend a public school. Both their fellow pupils and many of the teachers are non-Scottish, so that there is regular and consistent contact to speakers for whom [ʍ] is not a typical variant. In fact, we can compare this situation to that described by Schützler (2010), who found that a more international context favoured the adoption of [w]. If we add to that the greater geographical mobility of these children and the fact that many of them have relatives in England, it seems not unlikely that they try to avoid [ʍ] in order not to sound too Scottish.

7.4 (L)

The variable (L) is concerned with variation in the realisation of the phoneme /l/ in coda position, in the environments not affected by Scots L-vocalisation (i.e. /al, ol, ul/, also see section 3.3.1.4).

7.4.1 Background

The phoneme /l/ is generally realised as a velarised [ɫ] in all positions in the word both in Scots and SSE (Johnston 2007: 113). In Scots, the realisation can also be strongly pharyngealised (Johnston 1997b: 510). There seem to have been some clear coda variants (attested for the North-East following front vowels by Mutschmann 1909: 72). In the onset, a clear variant, albeit rarely, is attested by Grant & Dixon (1921: 17). Both are uncommon today.

A common process in a range of varieties of English is L-vocalisation, which refers to the process whereby /l/ in coda position is vocalised to a close-mid back rounded [o] or unrounded [ɤ] vowel, thus *milk* is pronounced [mɪok], syllabic [ɫ̩] as in *middle* becomes [o] as in [ˈmɪdo]. It is strongly associated with South-East England and Cockney (e.g. Wells 1982: 313–317; Tollfree 1999: 174–175) as well as Estuary English (e.g. Altendorf 1999), but is also found in Australian English (Borowsky 2001; Borowsky & Horvarth 1997, 2001) and a number of Northern American and African varieties (Schneider 2004: 1125).

In the Scottish context, this 'new' process of L-vocalisation that is not conditioned by the backness of the preceding vowels or blocked by a following /d/ was first mentioned by Macafee (1983a: 34) for Glasgow and has since been found frequently in young WC speakers in Stuart-Smith et al.'s (2006) 1997 Glasgow data. Brato (2004: 53–62) describes a sharp increase in the use of vocalised tokens in both WC and MC teenagers.[35] Chirrey (1999: 229) mentions widespread L-

[35] We should note that whereas the WC areas can be compared well, there is a clear social difference in the MC groups. Whereas Stuart-Smith collected data in an upper middle-class suburb, my data for the MC speakers stems from an inner-city lower MC area.

vocalisation in Edinburgh in syllable-final position and consonant clusters. Johnston (1997b: 510) also attests this new type as a possible variant in urban areas other than Glasgow, where it can occur "more rarely", without going into any further detail as to which cities these are. He points out, though, that the "change has not reached Northern, Southern or Insular dialects, or even peripheral Mid varieties" so that we must assume that it is restricted to the Central Belt. This assumption is fostered by the absence of comments on it in more recent work on the North-Eastern varieties such as that of McClure (2002), Marshall (2004) and Millar (2007).

7.4.2 Methodology

As has been outlined above, this phoneme is usually realised as the dark variant [ɫ] in all positions and in Scots is subject to vocalisation following the back vowels /a, o, u/. A different process referred to as 'new' L-vocalisation by Stuart-Smith et al. (2006) extends the possibility of vocalised forms to other postvocalic environments as well as syllabic /l/. In this study, contexts in which Scots L-vocalisation commonly occurs were disregarded. There are 1663 tokens, of which 820 were collected in wordlist style and another 843 in the interview data. Five variants were identified:

1. [l], a (usually) velarised voiced alveolar lateral approximant
2. [V], a range of vocalised variants, most commonly a close-mid back rounded or unrounded [o] or [ɤ], but also a fairly close fairly back rounded [ʊ]
3. an in-between form [l/V], which auditorily was difficult to assign to either category, i.e. sounds which sounded neither like a fully articulated [l], nor like a vowel (cf. Stuart-Smith et al. 2007: 236)
4. [Vl], a small category of realisations that were heard as consisting of a sequence of a vowel followed a by /l/
5. [M], a very small group of articulations that could be categorised. These include a couple of completely deleted forms.

The data were separated according to the following phonetic environments:

1. word-internally, both following a vowel or consonant, e.g. *field, world, kilt,* labelled *word-internal*

2. word-finally, preceding a vowel, e.g. *hill and*, *ideal airport*, *Mile End*, labelled *word-final pv*
3. word-finally, preceding a consonant, e.g. *annual holiday*, *real ned*, *several teachers*, labelled *word-final pc*
4. word-finally, preceding a pause, e.g. *hill#*, *hospital#*, *medal#*, labelled *word-final pp*
5. whether /l/ occurred in syllabic position or not, both word-internally and -finally, e.g. *bottle of*, *people came*, *gentleman*, labelled *syllabic*.

General linear mixed-effects models (GLMM) were fitted separately for interview and wordlist style for the [l] and [V] variants as the dependent variable. Since the number of tokens for [Vl] and [l/V] were too small, no statistical model was fit for these. I will refer to them only in the descriptive statistics sections. Speaker was entered as a random factor and the following items fixed factors: Context, Age, Social class, Gender, Age*Social class, Age*Gender, Social class*Gender, Father's birthplace, Mother's birthplace and rating of one's speech.

7.4.3 Findings

The overall results for the realisation of coda /l/ are presented in Table 7.4.1. [l] is still prevalent with about two thirds of all tokens in the interviews and just over 57% in the wordlists. [V] is found in 23% in the interviews and in a third of tokens in the wordlists. This stylistic variation follows the patterns described by Stuart-Smith et al. (2006: 81) who also find it much more frequently in their wordlist data. One possible explanation they give and that has probably also influenced my analysis is that "[i]t seems likely that it was easier to hear fine differences in the wordlist data than in connected speech." Stuart-Smith et al. (2006: 80). Since the previous treatments of the variety do not mention L-vocalisation in the North-East and Johnston (1997b: 510) explicitly excludes the area, we must assume that this

Table 7.4.1: Descriptive statistics for all tokens of (L) separated by style (in %)

Style	N	[l]	[V]	[Vl]	[l/V]	[M] [36]
interview	843	64.2	23.0	5.5	7.2	0.1
wordlist	820	57.3	33.3	3.2	5.4	0.9

[36] There is only a single [M] token in the interviews, so that in the remaining tables I will exclude this variant.

innovation is very recent and probably ongoing and still unfolding at present. This assumption is fostered by a number of factors. Over 12% of tokens in the interviews and 8.5% in the wordlists are classified as consisting of a vowel + /l/ or in-between variant, both of which are possible intermediate steps towards vocalisation.

In comparison to Stuart-Smith et al. (2006), vocalisation is considerably more widespread in Aberdeen than it is in Glasgow. However, my own Glasgow data collected in different areas of the city in 2004 (Brato 2004: 53–62) showed a drastic real-time increase in comparison to the data collected by Stuart-Smith et al. (2006) in 1999. Comparing the current data to the more recent Glasgow data shows that there is less L-vocalisation in Aberdeen. In the following sections I will trace possible factors contributing to the current variation patterns.

7.4.3.1 Interview style

As could be seen in Table 7.4.1, innovative (i.e. vocalised or intermediate) variants account for over 35% of all tokens in the interviews. Before turning to the results of the GLMMs, I will outline the descriptive results.

Table 7.4.2 presents the results separated by context. The standard variant accounts for more than 50% of the tokens in all phonological environments with the exception of word-finally preceding a pause, in which it occurs in just under half of the 54 tokens. Here, vocalised variants are most widespread. [V] accounts for over 38% and [Vl] is found in another 10.6%. In syllabic position and finally before a consonant we find that [V] accounts for over a quarter of the realisations. It is much less common word-internally and word-finally preceding a vowel at 13.3 and 13.6% respectively. It seems that in the context of the latter /l/ is realised in order to avoid two vowels co-occurring next to one another. Intermediate variants are found in all contexts and are particularly strong in those environments which favour vocalised forms.

Table 7.4.2: Descriptive statistics for all tokens of (L) separated by context in interview style (in %)

Context	N	[l]	[V]	[Vl]	[l/V]
syllabic	139	59.7	26.2	6.0	8.2
word-final pc	107	62.2	26.7	2.9	8.1
word-final pp	54	47.8	38.1	10.6	3.5
word-final pv	70	77.8	13.3	2.2	5.6
word-internal	171	72.8	13.6	5.5	8.1

Table 7.4.3: Descriptive statistics for all tokens of (L) separated by age in interview style (in %)

Age	N	[l]	[V]	[Vl]	[l/V]
adult	192	82.4	10.7	1.7	4.7
teen	171	55.7	29.0	6.2	9.1
young	178	58.7	26.4	7.6	7.3

As for most of the other variables, there is a strong and robust separation by age (Table 7.4.3), which confirms the assumption of an apparent-time change towards vocalised forms. For adult speakers, [l] accounts for over 82% of all tokens, in both teenagers and children this figure drops to below 60%. Also, in the adult group 12 of the 25 [V] tokens come from only three speakers. Three other adults on the other hand have no or only a single token that is not the standard variant. Similarly, in-between and vowel + /l/ realisations are rare. This very high conformity (only the values for the [θ] variant of the (TH) variable are even higher) is a good indicator that the innovation is in fact recent. Speakers in the two other age groups have adopted the incoming variant in more than a quarter of their tokens and also show considerably (at around 15% about 2.5 times that of the adults) more in-between and [Vl] tokens. All 16 teenagers have vocalised tokens and nearly all have the [Vl] and/or intermediate [l/V] variants. In the youngest group [V] is nearly as strong as in the teenagers, but the distribution is rather different. Whereas three speakers use it very frequently, others have only a single token or none at all. I will return to this in the discussion of the by-speaker effects below.

The absence of a social class-based variation pattern is very striking (Table 7.4.4). In fact, both groups use exactly the same amount of [l] (64.2%) and as re-

Table 7.4.4: Descriptive statistics for all tokens of (L) separated by social class in interview style (in %)

Social class	N	[l]	[V]	[Vl]	[l/V]
middle-class	402	64.2	24.6	4.0	7.0
working-class	441	64.2	21.5	6.8	7.5

Table 7.4.5: Descriptive statistics for all tokens of (L) separated by the interaction of age and social class in interview style (in %)

Age:Social class	N	[l]	[V]	[Vl]	[l/V]
adult:middle-class	107	79.4	12.1	1.9	5.6
adult:working-class	126	84.9	9.5	1.6	4.0
teen:middle-class	146	57.5	30.8	3.4	8.2
teen:working-class	161	54.0	27.3	8.7	9.9
young:middle-class	149	59.7	27.5	6.0	6.7
young:working-class	154	57.8	25.3	9.1	7.8

Table 7.4.6: Descriptive statistics for all tokens of (L) separated by gender in interview style (in %)

Gender	N	[l]	[V]	[Vl]	[l/V]
female	417	59.0	26.9	6.5	7.4
male	426	69.2	19.2	4.5	7.0

gards vocalised forms the MC speakers are even slightly in the lead. Interestingly, this pattern holds true even if we break it down to the interaction of social class and age (Table 7.4.5). In all age groups, the MC speakers produce slightly more vocalised forms than the WC speakers. This is – at first sight – counterintuitive because of the potential stigma that is still attached to L-vocalisation. Also it runs counter to the variation reported for Glasgow (Brato 2004: 59; Stuart-Smith et al. 2006: 81–82). There is some gender variation (Table 7.4.6). Females produce about 10 percentage points less standard variants than males. If we look at the interaction between age and gender (Table 7.4.7), we find relative homogeneity in the adult and teenage groups but a clear gender division in the young speakers. Whereas the girls are strongly promoting the incoming variants ([V] is found in 36.8% of all tokens), the boys are the complete opposite with [l] values almost as high as those of the adults.

Table 7.4.7: Descriptive statistics for all tokens of (L) separated by the interaction of age and gender in interview style (in %)

Age:Gender	N	[l]	[V]	[Vl]	[l/V]
adult:female	92	82.1	10.7	0.9	5.4
adult:male	100	82.6	10.7	2.5	4.1
teen:female	86	56.2	28.8	6.5	8.5
teen:male	85	55.2	29.2	5.8	9.7
young:female	68	44.7	36.8	10.5	7.9
young:male	110	72.8	15.9	4.6	6.6

There is some variation on the level of how speakers rated their own speech (Table 7.4.8). Speakers at the SSE end produce considerably more [l] variants (72.8%) compared to the in-betweeners (54.1%) and those who self-reported as speaking a more localised accent (59.7%). There are some differences according to where the speaker's parents were born. Speakers with at least one English-born parent use vocalised variants more frequently than those with Scottish-born parents.

GLMMs were run for the three main variants as outlined above ([l], [V], [Vl~l/V]. Table 7.4.9 presents the results for the fixed factors for [l]. We first note that overall the standard variant is favoured strongly at 0.86 log-odds, which con-

Table 7.4.8: Descriptive statistics for all tokens of (L) separated by rating of own speech in interview style (in %)

Age	N	[l]	[V]	[Vl]	[l/V]
(rather) local	191	59.7	23.0	7.3	9.9
in-between	255	54.1	29.8	9.0	7.1
(rather) SSE	397	72.8	18.6	2.3	6.0

firms our descriptive impression that it is still the main variant in Aberdonian. Only two factors – phonological context and speaker age – contribute significantly and also confirm our descriptive findings. [l] is favoured intermediately strongly when it precedes a vowel and slightly word-internally. The effects of word-final pre-consonantal and syllabic positions are only minimal but there is a relatively strong negative effect in the case of the word-final pre-pausal position. This suggests that the standard variant is overall still very much favoured, but is losing ground only in the position in which it receives the potentially highest attention. Also, the clear age pattern is confirmed. There is a strong positive effect for adult speakers of 0.88 log-odds compared to the small (-0.32) and intermediate (-0.56) negative effects for children and teenagers respectively. No other fixed factors or interactions are significant.

There is an intermediate by-speaker effect of 0.73 (0.58) log-odds sd. The individual speakers' values are shown in Figure 7.4.1. Focusing on the values for [l] here, we note the relative homogeneity in the adult group with the standard variant being strongly favoured by all speakers with the exception of AWM1, for whom it

Table 7.4.9: GLMM results for (L): [l] in interview style

Fixed factors	Log-odds	N	Proportion	Centred factor weight
Context, $p < .001$				
word-final pv	0.81	90	0.78	0.69
word-internal	0.32	235	0.73	0.58
word-final pc	-0.13	172	0.62	0.47
syllabic	-0.19	233	0.60	0.45
word-final pp	-0.81	113	0.48	0.31
Age, $p < .001$				
adult	0.88	233	0.82	0.71
young	-0.32	303	0.59	0.42
teen	-0.56	307	0.56	0.37

Speaker effects: 0.73 (0.58); deviance: 977.97, df: 8, intercept: 0.86, grand mean: 0.64, centred input probability: 0.70

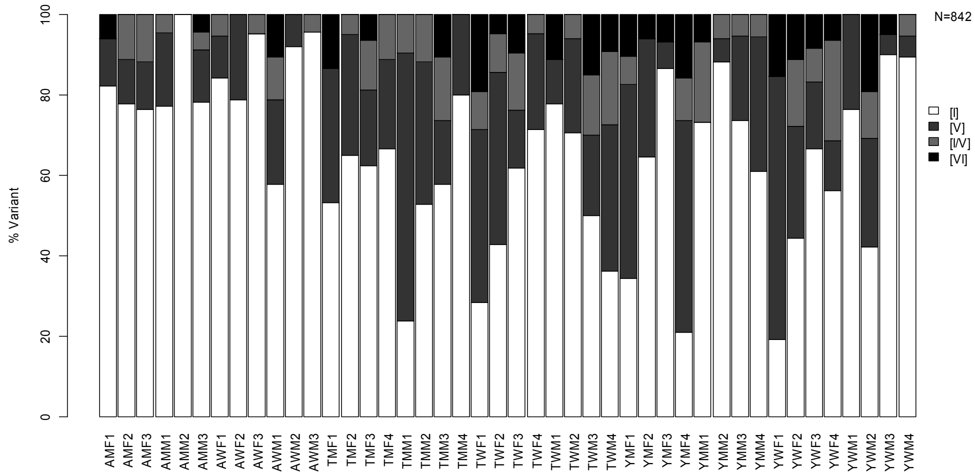

Figure 7.4.1: Distribution of variants of (L) by speaker in interview style

accounts for only 58%. I have already mentioned above that the MC adults are leading in the replacement of [l] by other variants. It is interesting to see that with the exception of AMM2 – who uses the standard variant exclusively – all speakers from this group have very similar values of around 75%. Comparing this to their WC counterparts we note that three speakers (AWF3, AWM2 and AWM3) are very conservative in using [l] in more than 90% of their tokens with the two other females falling in-between.The category of "teenagers" is the one which avoids [l] most strongly at only 55.4% and thus it is not surprising that only five speakers use it in more than two thirds of their tokens. TMM4 is the most conservative speaker at 80%. At the other end we find TMM1 who uses [l] in just 23.4% of cases and thus seems to be the innovator in this group. The MC teenage girls are quite a homogeneous group, but the replacement of [l] is fairly advanced in all speakers. Interestingly, in the WC teenage boys there is a clear split. TWM1 (77.8%) and TWM2 (70.6%) are in fact rather conservative and do not seem to have picked up the innovation yet. In the case of TWM1, I have argued that his usage of [w] as a variant for /ʍ/ (section 7.3.3) could be linked to his strong North-Eastern ties and it seems that this also has an effect on retaining [l]. As for TWM2 no such network is attested, but he too was rather conservative as regards the other innovation. The other two boys, and particularly TWM4, are much more advanced in their avoidance of the standard variant. We find a similar pattern in the girls. Here, TWF1 is leading the change away from [l] with TWF2 and TWF3 falling in-between and TWF4 being relatively conservative and using it in over 70% of cases.

Overall, the young speakers are the most heterogeneous of the groups with values ranging from only 19.2% [l] for YWF1 to 90% in YWM3, with another three speakers using it in over 80% of their tokens. The exception here is the MC boys. They are all relatively conservative and they form the only group in which there is no speaker below the overall average in this age group. The large range of values here can once again be seen as an indicator of a change in progress with some speakers taking the lead and others clearly falling behind.

Table 7.4.10 and Figure 7.4.2 show the log-odds and values for the individual speakers. Since vocalised forms are considered innovative and lateral forms conservative, the higher the negative log-odds, the more innovative a speaker is rated. Given the trend towards vocalised forms in the young age group it comes as no surprise to find YWM3 and YMM2, the two speakers with strong positive log-odds, to be in the conservers group. The traditionalists are made up of another six speakers, who were identified as being rather conservative before. What is very striking in this respect is that of the eight speakers in these two groups, six are male and only two are female. This confirms our descriptive finding which showed that females produced less [l] than males, even though gender is not a significant factor.

Table 7.4.10: GLMM results for (L):[l] – individual by-speaker variation in interview style

Speaker	Log-odds	N	Proportion	Centred factor weight	Category
YWM3	0.92	20	0.90	0.72	Conservers
YMM2	0.90	17	0.88	0.71	
TMM4	0.84	20	0.80	0.70	Traditionalists
YWM4	0.79	19	0.90	0.69	
YMF3	0.71	15	0.87	0.67	
AWF3	0.67	21	0.95	0.67	
AWM3	0.61	23	0.96	0.65	
TWM1	0.59	18	0.78	0.65	
YWM1	0.56	17	0.77	0.64	Conformers
TWF4	0.49	21	0.71	0.62	
AMM2	0.46	9	1.00	0.62	
YMM3	0.41	19	0.74	0.61	
TWM2	0.41	17	0.71	0.61	
AWM2	0.35	25	0.92	0.59	
YMM1	0.34	15	0.73	0.59	
TMF4	0.34	18	0.67	0.59	
TMF2	0.22	20	0.65	0.56	
TWF3	0.13	21	0.62	0.54	
AWF1	0.10	19	0.84	0.53	

TMF3	0.09	16	0.63	0.53	
YWF3	0.05	12	0.67	0.52	
TMM3	0.04	19	0.58	0.51	
YMF2	0.03	17	0.65	0.51	
TMF1	-0.09	15	0.53	0.48	
YMM4	-0.09	18	0.61	0.48	
AWF2	-0.16	19	0.79	0.46	
YWF4	-0.21	16	0.56	0.45	
TMM2	-0.22	17	0.53	0.45	
AMM3	-0.26	23	0.78	0.44	
TWF2	-0.26	21	0.43	0.44	
AMF1	-0.27	18	0.78	0.44	
TWM3	-0.28	20	0.50	0.44	
AMF2	-0.31	18	0.78	0.43	
AMM1	-0.38	22	0.77	0.41	
AMF3	-0.42	17	0.77	0.40	
YWF2	-0.47	18	0.44	0.39	
TWM4	-0.60	22	0.36	0.36	Promoters
YWM2	-0.61	26	0.42	0.36	
TWF1	-0.77	21	0.29	0.32	
AWM1	-0.87	19	0.58	0.30	
TMM1	-1.04	21	0.24	0.26	Innovators
YMF1	-1.07	29	0.35	0.26	
YMF4	-1.09	19	0.21	0.26	
YWF1	-1.37	26	0.19	0.21	

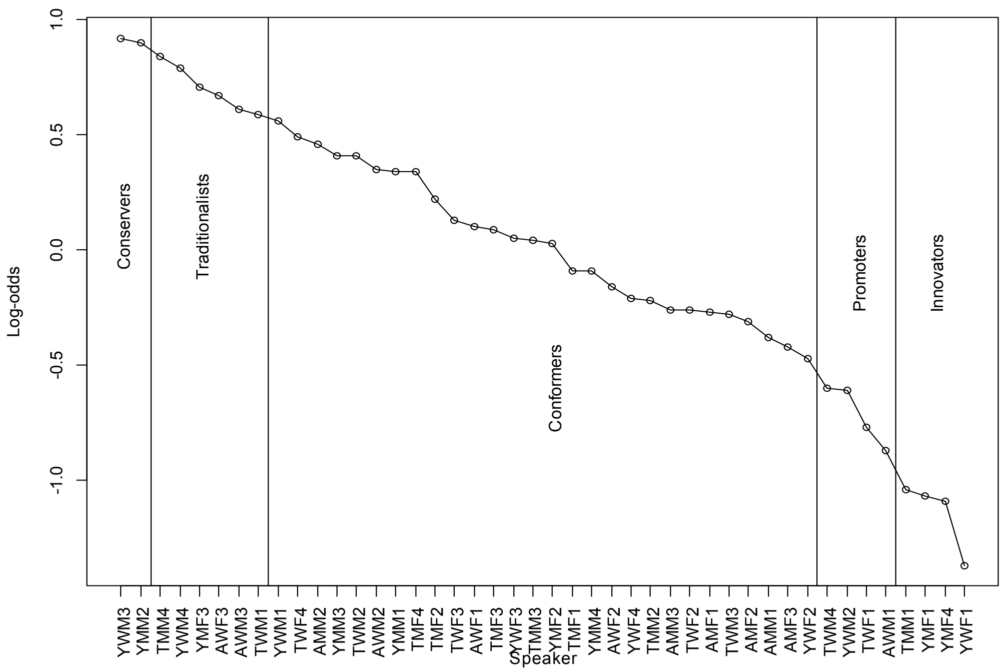

Figure 7.4.2: Innovation plot for (L)-[l] in interview style

The conformers group comprises all speakers whose individual log-odds are in the region of +0.56 and -0.47 log-odds. We note that – again despite not being significant – there is some social class effect. The only speaker to produce [l] in all his tokens (AMM2) is not grouped with either the conservers or traditionalists, unlike two WC adults (AWF3 and AWM3). While there is a relatively steady decrease in log-odds from conservers to traditionalists (-0.06 log-odds) and from there to the conformers (-0.03 log-odds), there is not only a steeper drop between conformers to promoters (0.13 log-odds) and innovators (0.17 log-odds), but the log-odd ranges in the final two categories are more extreme. All speakers with the exception of the only adult (AWM1) have shifted away from [l] in more than half of their realisations. The innovators group consists of three speakers who are clearly set apart from both the promoters, but also from YWF1 and her very strong negative log-odds of -1.37. There is no obvious reason from the background data as to why this should be the case. She was born to North-Eastern parents and self-identifies as speaking a localised variety, just like almost all of the other WC children. As for the two young MC girls in the innovators, they are set apart from the two other MC girls by both having one non-North-Eastern parent; but then this is true for all the MC young boys, none of whom come even close to the values the girls produce. An explanation based purely on parentage is therefore unsatisfactory.

We now turn to the discussion of the analytical statistical results for the [V] variant, presented in Table 7.4.11. The intercept of -1.56 log-odds indicates that

Table 7.4.11: GLMM results for (L):[V] in interview style

Fixed factors	Log-odds	N	Proportion	Centred factor weight
Context, $p<.001$				
word-final pp	0.81	113	0.38	0.69
word-final pc	0.33	172	0.27	0.58
syllabic	0.21	233	0.26	0.55
word-internal	-0.59	235	0.14	0.36
word-final pv	-0.76	90	0.13	0.32
Age, $p<.01$				
teen	0.50	307	0.29	0.62
young	0.27	303	0.26	0.57
adult	-0.77	233	0.11	0.32

Speaker effects: 0.68 (0.50); deviance: 820.40, df: 8, intercept: -1.56, grand mean: 0.23, centred input probability: 0.17

[V] is overall very strongly avoided. As for [l] there is a highly significant difference as regards phonological context; age contributes very significantly. Overall, the speaker effects are somewhat smaller at 0.68 (0.50) log-odds sd, which, however, still indicates an intermediate effect size. The results are the expected counter-image to [l] since – unlike for e.g. (HW) and (TH) there is only a two-way distinction. Thus, we find that the prepausal position favours [V] relatively strongly at 0.81 log-odds, with small positive effect sizes for preconsonantal and syllabic items. Vocalised forms are less likely to occur word-internally and are even more rare before a vowel. Also, when we consider age, we find the same polarisation of adults (-0.77 log-odds) and teenagers (0.50 log-odds) with young speakers falling in-between (0.27 log-odds), but it is not quite as strong as for [l]. Still, this confirms the assumption that there is an apparent-time change towards a vowel-like articulation.

Turning to individual speaker variation, let us refer to Figure 7.4.1 again. It shows that only four speakers (AMM2, AWF3, AWM3 and YMM1) have no [V] at all and that for only three speakers (TMM1, YMF4 and YWF1) [V] exceeds 50%. Again, I will first discuss the descriptive speaker results in comparison to those of the larger social factors. The adult group is very heterogeneous, with three speakers (see above) using no [V] at all, but another three (AMM1, AWF2 and AWM1) using it well above average. The reason is unclear , but at least for AWM1 we note a parallel here to his high usage of innovative [w] for the (HW) variable. The vowel variant is most widespread in teenagers and for only four does it account for less than 20%. However, there is no clear pattern yet. The distribution is far from homogeneous, with values ranging between 11.1% for TWM1 and a very high 66.7% for TMM1 and no real indication from the background data as to why this could be. The youngest group is even more heterogeneous, showing a full range from no [V] at all (YMM1) to over 65% for YWF1.

Table 7.4.12: GLMM results for (L):[V] – individual by-speaker variation in interview style

Speaker	Log-odds	N	Proportion	Centred factor weight	Category
YMM1	-0.82	15	0.00	0.30	Conserver
YMM2	-0.67	17	0.06	0.33	Traditionalists
AWF3	-0.63	21	0.00	0.34	
YWM3	-0.61	20	0.05	0.35	
AWM3	-0.58	23	0.00	0.35	

YWM4	-0.53	19	0.05	0.36	
YMF3	-0.51	15	0.07	0.37	
TWM1	-0.50	18	0.11	0.37	
TWF3	-0.43	21	0.14	0.39	
TMM3	-0.42	19	0.16	0.39	
TMM4	-0.33	20	0.20	0.41	
YWF4	-0.33	16	0.13	0.41	
AMM2	-0.27	9	0.00	0.43	
TMF3	-0.24	16	0.19	0.43	
TMF4	-0.22	18	0.22	0.44	
TWM3	-0.21	20	0.20	0.44	
TWF4	-0.12	21	0.24	0.46	
YWF3	-0.11	12	0.17	0.47	
TWM2	-0.10	17	0.24	0.47	
YMM3	-0.10	19	0.21	0.47	
YWM1	-0.05	17	0.24	0.48	
AWM2	-0.03	25	0.08	0.49	
AWF1	-0.02	19	0.11	0.49	
AMF1	0.05	18	0.11	0.51	Conformers
AMF2	0.12	18	0.11	0.52	
YWF2	0.12	18	0.28	0.52	
YWM2	0.14	26	0.27	0.53	
TMF1	0.14	15	0.33	0.53	
TMF2	0.15	20	0.30	0.53	
AMM3	0.20	23	0.13	0.54	
AMF3	0.24	17	0.12	0.55	
YMF2	0.25	17	0.29	0.56	
TWM4	0.27	22	0.36	0.56	
TMM2	0.35	17	0.35	0.58	
TWF2	0.36	21	0.43	0.58	
YMM4	0.39	18	0.33	0.59	
AWM1	0.42	19	0.21	0.60	
TWF1	0.43	21	0.43	0.60	
AWF2	0.47	19	0.21	0.61	
AMM1	0.54	22	0.18	0.62	Promoter
YMF4	0.78	19	0.53	0.68	
YMF1	1.14	29	0.48	0.75	Innovators
TMM1	1.23	21	0.67	0.77	
YWF1	1.32	26	0.65	0.78	

Table 7.4.12 and Figure 7.4.3 show the by-speaker variation results for the GLMM calculated for [V]. Again, despite only age contributing significantly to the model, we find that the by-speaker classification is somewhat influenced by other social factors as well. We would expect the only non-adult to have no vocalised forms at all to be in the conservers group and in fact YMM1 is set apart from all other speakers relatively strongly on this account. The traditionalists group contains

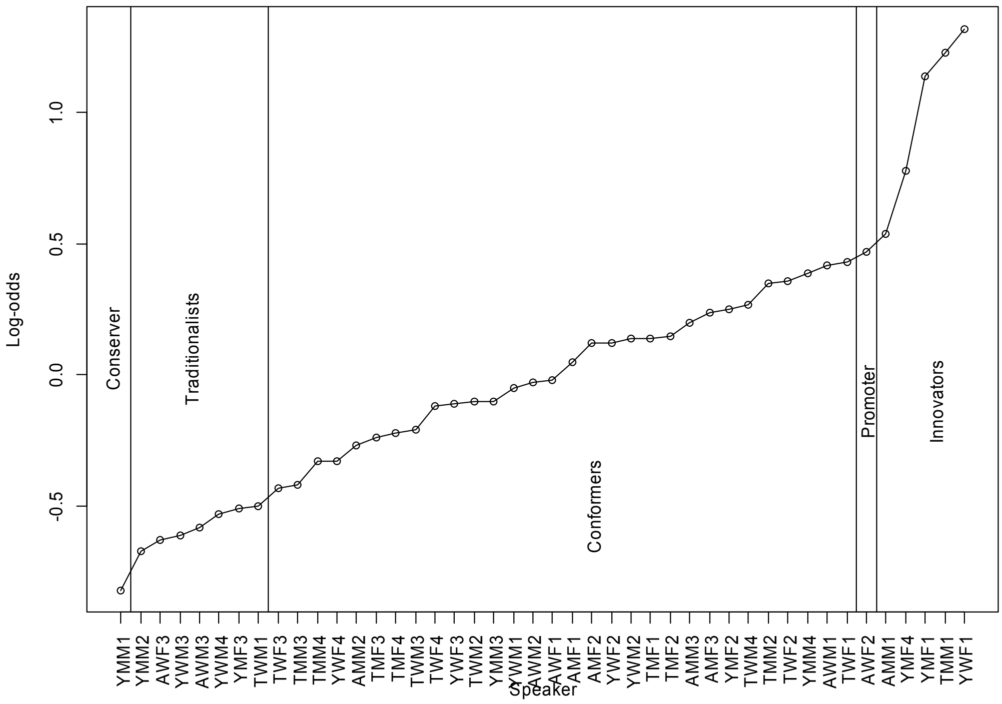

Figure 7.4.3: Innovation plot for (L):[V] in interview style

seven speakers and – in comparison to the log-odds values for [l] – is more homogeneous with a spread of only 0.17. Here, we note that the two [V]-avoiding WC adults are part of this group, but not AMM2, an MC speaker, who is grouped rather with the conformers. This could indicate that there is some social-class based pattern in the adult group. The descriptive results (Table 7.4.5) shows that [V] is slightly more common in the MC adults. Also, we find that there are another four young speakers here, all of whom only had a single vocalised token and – incidentally – also only one token each for the [Vl] and [l/V] variants, so that we must assume that L-vocalisation is not yet an option for these speakers, whereas for all other young speakers, including YMM1, there is considerably more variation (also cf. Figure 7.4.1).

It is very noteworthy that 14 of the 16 teenagers fall into the conformers group, which is a good indicator that this age group has begun to shift to the more innovative pronunciation on a broader basis. Only TWM1 tends to avoid [V], whereas on the other hand TMM1 is clearly leading the change.

The single promoter is AMM1, who is set apart from the conformers by only 0.07 log-odds units, so that we should rather group him with these speakers. This is particularly clear when we look at the distribution in the innovators group. Here, the distribution of values is very widespread and furthermore seems to be influenced very strongly by factors other than age alone. We note that despite belonging to same sub-group of MC young girls, YMF4, who produces slightly more vocalised variants than YMF1 percentage-wise, has log-odds of only 0.78, whereas YMF1's score of 1.14 log-odds is much higher. We can only speculate as to why this should be. According to the background data, they are good friends; also they were interviewed together. There is a difference in how they rate the way they speak. YMF1 describes herself as speaking with a rather local accent, which has a slightly higher overall percentage than SSE, the variety YMF4 claims to speak. Neither has a non-North-Eastern father. YMF1's father is Scottish; YMF4's is English. As a general rule, having only one North-Eastern parent leads a speaker to producing a considerably higher percentage of [V], particularly if the other parent is Scottish or English as in these cases. However, overall, this helps only little in explaining the difference between the two speakers, so we must assume that other factors play a role here. YWF1, the speaker who came out as being most innovative for [l], is also the innovative speaker as regards [V]. Also, all four innovators are the same for both variants.

7.4.3.2 Wordlist style

As could be seen in Table 7.4.1, in wordlist style, only about 57% of all tokens were identified as [l], with fully vocalised forms accounting for a third and in-between and [Vl] tokens being found in 8.6%. The data were separated according to three contexts, the results for which are presented in Table 7.4.13. We note that in comparison to the interview data, the distribution is more homogeneous with very similar values for contexts. There is steep rise in the usage of [V] in syllabic position and more so word-internally in this style.

Again, the strongest separation of all factors is found in the age variable (Table 7.4.14). The values for the adults are near-consistently [l], with only eight of a total

Table 7.4.13: Descriptive statistics for all tokens of (L) separated by context in wordlist style (in %)

Age	N	[l]	[V]	[Vl]	[l/V]
syllabic	204	57.8	31.4	3.9	6.4
word-final	359	55.4	36.8	3.9	3.1
word-internal	203	54.7	34.5	2.0	7.4

Table 7.4.14: Descriptive statistics for all tokens of (L) separated by age in wordlist style (in %)

Age	N	[l]	[V]	[Vl]	[l/V]
adult	225	96.4	1.3	0.9	1.3
teen	302	40.1	48.0	3.6	7.6
young	293	45.1	42.7	4.4	6.1

of 206 tokens being identified as an innovative form. On the other hand, in the teenagers and children, [V] outnumbers the standard variant and accounts for almost half of all realisations. Also, as Table 7.4.15 shows, there is some social class pattern. MC speakers are less likely to use the [V] variant at under 30%, some eight percentage points less than the WC speakers, but therefore have about double the in-between and [Vl] tokens. This, however, is greatly influenced by patterns in the teenage and young speakers, which we should look at in more detail (Figure 7.4.4).

There is only a relatively minor difference in the usage of [l] in the MC teens, with the girls using this variant in about 49% and the boys in 45% of cases. Also, the difference as regards [V] is minimal, but the boys were much more likely to use

Table 7.4.15: Descriptive statistics for all tokens of (L) separated by social class in wordlist style (in %)

Age	N	[l]	[V]	[Vl]	[l/V]
middle-class	413	57.9	29.3	5.1	6.1
working-class	407	56.8	37.3	1.2	4.7

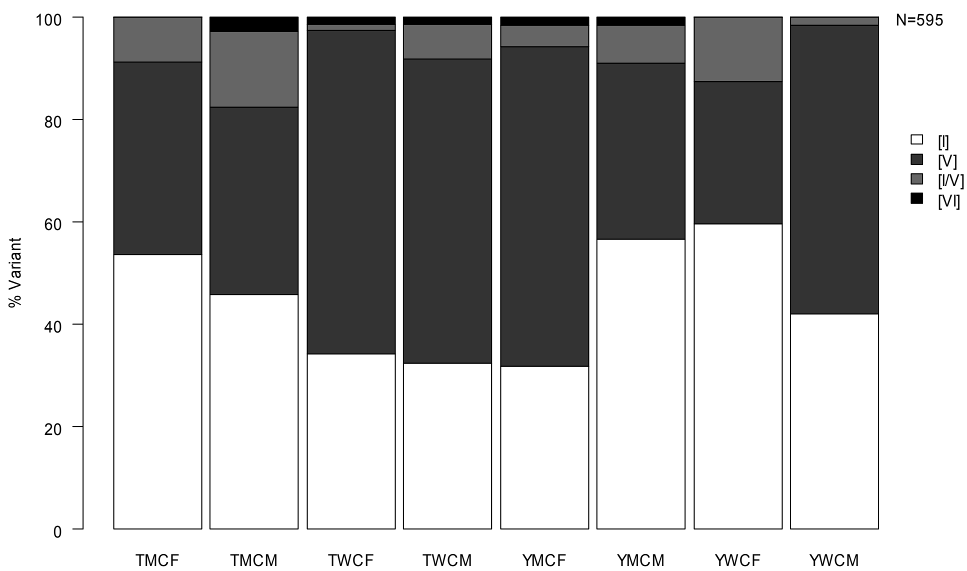

Figure 7.4.4: Distribution of variants of (L) by the interaction of age, social class and gender in wordlist style (only teenagers and children)

Table 7.4.16: Descriptive statistics for all tokens of (L) separated by rating of own speech in wordlist style (in %)

Rating of own speech	N	[l]	[V]	[Vl]	[l/V]
(rather) local	186	41.9	46.8	1.6	7.5
in-between	241	40.7	46.1	4.6	8.3
(rather) SSE	393	74.8	19.1	3.1	2.5

[l/V] and are overall slightly leading in the loss of [l]. In the WC teens, there is also relatively strong homogeneity with [V] and the intermediate variants accounting for about two thirds of all tokens, which confirm the leading role of these groups. The more unexpected results are those of the young speakers. Here, we note once more the conservativeness of the MC boys that we also found for other variables, but what is really surprising is the fact that the MC girls on the other hand are producing the smallest amount of [l] and are aligning with the WC teenagers as regards their [V] usage. On the other hand, the young WC females are unique in being more conservative in the wordlists than in the interviews.

The final factor we should look at is the speakers' rating of their own speech (Table 7.4.16). Speakers rating themselves as using (rather) SSE show no difference in their clear preference of [l] in both the wordlists and the interview with values in both clearly exceeding 70%. This is interesting since it includes two of the four MC young girls, most of the MC teens, but only three of the adults. This indicates that there is some speaker-based variation, but at least for this factor a clear pattern along the lines of speech rating can be detected.

We now need to look at the results of the GLMMs run for the two main variants in this style. Table 7.4.17 presents the results for [l], which is overall intermediately favoured with an intercept of 0.92. There is only a single significant fixed factor, which is age. Given the almost unanimous use of the standard variant by

Table 7.4.17: GLMM results for (L):[l] in wordlist style

Fixed factors	Log-odds	N	Proportion	Centred factor weight
Age, $p < .01$				
adult	2.43	206	0.96	0.92
young	-1.17	258	0.42	0.24
teen	-1.26	302	0.40	0.22

Speaker effects: 0.42 (0.24); deviance: 873.63, df: 4, intercept: 0.92, grand mean: 0.57, centred input probability: 0.72

Table 7.4.18: GLMM results for (L):[V] in wordlist style

Fixed factors	Log-odds	N	Proportion	Centred factor weight
Age, $p < .01$				
teen	1.57	302	0.48	0.83
young	1.32	293	0.43	0.79
adult	-2.89	225	0.01	0.05

Speaker effects: 0.71 (0.6); deviance: 823.26, df: 4, intercept: -1.65, grand mean: 0.33, centred input probability: 0.16

adults, the log-odds of 2.43 are expected. Teenagers and children on the other hand have about the same strong negative log-odds of about -1.2, confirming their overall strong disfavouring of [l]. In addition, speaker effects are comparatively small at only 0.42 (0.24) log-odds sd. Because of the small effect sizes and the robust age pattern, a more detailed discussion is not meaningful. The results for the [V] variant are even more extreme, as Table 7.4.18 shows. [V] is very strongly disfavoured overall (intercept: -1.65) and is clearly no option for adult speakers (-2.89), which again confirms the assumption that it must be a very recent phenomenon that has been picked up by both teenagers (1.57) and young speakers alike (1.32).

7.4.4 Summary and discussion

In the previous sections I have shown that Johnston's (1997b) observation of the absence of new L-vocalisation in Aberdeen no longer holds. Vocalised and intermediate variants – while still generally being minority variants – have diffused rapidly and relatively uniformly into the speech of teenagers and children, whose values for the innovative forms are about three times higher than those of the adults. Also, what is interesting to note about (L) is that speakers seem to be adopting the new form on a word-by-word basis, i.e. by means of lexical diffusion. The data suggests that when there are several tokens of a word in the interview by the same speaker, they tend to either use [l] consistently or use a vocalised or intermediate form.

This is in stark contrast to the results Stuart-Smith et al. (2006) report for Glasgow. In their data, new L-vocalisation was virtually restricted to the speech of WC children who used this variant as an additional means of dissociating from the established standard spoken by the MC adults. In Aberdeen it seems that L-vocalisation does not perform this role, but appears to be a more general trend in the speech of the younger generations. In this respect it bears some resemblance to the spread of [w] in (HW), which seems to be proceeding in a similar manner with a social class effect only found for the loss of the standard variant, but not the diffusion of the innovative form. It is, however, in stark contrast to the results for the other non-Scottish variants (TH-fronting and the loss of POSTVOCALIC R). Fronted variants of /θ/ only are being adopted and at present are restricted virtually to handful of mainly WC boys (section 7.6). Also r-loss is proceeding at a much lower rate. Unlike the cases of (HW) and (TH), there is no Scots choice – be it local and old-fashioned or potentially urban and "hip" –for this new type of L-vocalisation.

This raises the question how new L-vocalisation has diffused to Aberdeen and why it is so much more widespread than it is in Glasgow. One possible explanation is that the emergence of the innovative variants is an extension of the fossilised Scots form into the new contexts. This, however, would presuppose that non-Scots vocalised variants must have been present to a larger degree in the original dialect contact situation, which is unlikely. It would not have been a feature of the Scottish migrants and would only have been marginally present in speakers from England and elsewhere, most of whom had an MC background. It is much more likely that it has indeed diffused from Glasgow along with the other recent innovations. There are parallels in this variable to the distribution of variants of (POSTVOCALIC R) (see section 7.5), in that both L-vocalisation and r-derhoticisation behave very differently in Aberdeen than in the in the Central Belt city, where either variant is considered working-class and used as means of dissociation. In Aberdeen, on the other hand, I think we can assume that the current generation of teenagers and children is still relatively open to adopting new features if these – unlike TH-fronting – are not too extremely marked and negatively connotated. It seems that [V] as a variant of /l/ does indeed not have these connotations and is therefore strongly promoted.

7.5 (POSTVOCALIC R)

7.5.1 Background

Traditionally, Scots and Scottish English are rhotic varieties, i.e. the /r/ is realised in every position. The exact realisation can vary both regionally as well as along the lines of the Scots-SSE continuum outlined by Aitken (1984a) and discussed in greater detail in chapter 3. There is a major distinction nowadays between forms in which /r/ is realised and those in which it is vocalised or derhoticised (Stuart-Smith 2007; Lawson et al. 2011). Grant (1914: 35) describes Scottish speech as fully rhotic, with the trill [r] being the most common variant, but taps [ɾ] and approximants [ɹ] making some inroads, whereby in the latter “a change of quality in the preceding vowel is perceptible” without going into detail what this change is. However, he points to “a peculiar modification of the preceding vowel” in some of the Celtic districts, in which retroflex approximants [ɻ] are more common. For the North-East, he attests regular ‘r-dropping’ before /s/, as in *purse* [pʌs]. More recently, Wölck (1965: 29) attests free variation between [r]~[ɾ]~[ɹ] and notes the consistent usage of a uvular [ʀ] in the speech of some of his Buchan informants.

Today – at least in the urban centres – there is a relatively stark polarisation determined by social factors, with speakers at the “high status SSE” end preferring retroflex approximants [ɻ] (Johnston 2007: 113) and a range of other variants in the other social groups. While taps are still quite common in all positions, more recently in younger speakers at the Scots end there have been reports of the vocalisation (or derhoticisation), e.g. of postvocalic /r/. It was first attested by Romaine (1978) in Edinburgh WC children and has since been mentioned by many scholars working in the urban Central Belt (e.g. Speitel & Johnston 1983: 27–29; Macafee 1983a: 33; Pollner 1985: 272–290; Stuart-Smith 1999a: 210, 2003: 126–135; Lawson et al. 2011)[37] as a socially stratified variant, with younger female WC speakers leading the change. The variants of derhoticisation have been described in great detail by Stuart-Smith (2003: 130), who finds that besides ‘plain’ vowels without any obvious auditory secondary articulation, there is a fairly large category of ‘velarised’ (or rather pharyngealised) vowel variants, which is also noted by Johnston (1997b: 511), who gives the following outcome: /ar ʌr ɔr/ become [ɑˤː ʌˤ ɔˤː], all other vowels are followed by an [ʌˤ] segment, as in [hiʌˤ] *here.* Derhoticisation is not attested for Huntly (Marshall 2004: 139–140) and Aberdeen (Robinson & Crawford 2001; Hughes et al. 2005), but according to Millar (2007: 63) is now spreading to South Northern Scots and Aberdeen.

[37] The non-occurrence in Chirrey’s Edinburgh data is noted by herself as being “at odds with what one might expect to encounter in the line of Romaine’s (1978) findings” (1999: 228, fn.3).

7.5.2 Methodology

2189 tokens were analysed, of which 1012 occurred in wordlist style. Eight variants were identified:

1. [ɾ], a voiced alveolar tap, labelled [rat]
2. [ɽ], a voiced retroflex tap, labelled [Rrt]
3. [ɹ], a voiced alveolar approximant, labelled [ra]
4. [ɻ], a voiced retroflex approximant, labelled [Rr]
5. [r], a voiced alveolar trill, labelled [Rtt]
6. [r/V], articulations that could not be clearly assigned to any of the [r] or [V] categories.
7. [Vr], a range of variants covering articulations of pharyngealised and velarised forms as well as a relatively small amount of rhoticised vowels
8. [V], a (relatively) pure vowel with no audible rhoticity

Because of the phonetic similarity between variants 1 and 2 (the taps) as well as 3 and 4 (the approximants) on the one hand and the small amount of tokens in some of these variants on the other, the taps were grouped together under the heading of [RT] and the approximants as [RA] in the descriptive statistics sections for the individual factors discussed in 7.5.3.1 and 7.5.3.2.

Since postvocalic /r/ can only occur in coda position, the four phonetic environments were taken into account:

1. word-internally, e.g. *third, pattern, birthday*
2. word-finally before a pause, e.g. *fur#, year#, over#*, labelled *word-final pp*
3. word-finally before a consonant, e.g. *either way, four times, sister called*, labelled *word-final pc*
4. word-finally before a vowel, e.g. *over anyway, together around, hear about*, labelled *word-final pv*

In addition, the data were separated according to whether the variable occurred in stressed or unstressed position.

Mixed-effects regressions were fitted to the data first using a binary categorisation into articulated variants of /r/, referred to as [R+] and comprising variants 1 to 5, and vocalised forms (variants 6 to 8 – [R-]) to capture the bigger picture of variation (cf. Stuart-Smith's 2003: 126–135 separation into R-realisation and R-vocalisation). Following that, individual models were fitted for the [RA], [RT] and [Vr~V] variants.

7.5.3 Findings

Table 7.5.1 shows the great realisational variability in this variable separated by style. Overall, articulated variants are still slightly more common than those pointing towards /r/-loss. In the interviews, this process is already quite advanced, though. Here, plain vowels and vowels with a secondary articulation account for about 40% of all tokens, with another 6% that could not be identified as either some form of articulated /r/ or vowel. In the wordlist data, on the other hand, the new, i.e. non-rhotic, variants are much less common at present. Turning only to those contexts in which /r/ is realised, we note that approximants (mainly [ɻ], but some [ɹ]) are by far the most common forms, with both alveolar [ɾ] and retroflex [ɽ] accounting for only about 11% in either style. [r] is now almost extinct. Only two tokens were identified in the interviews and there were five tokens in the wordlist data.

Table 7.5.1: Descriptive statistics for all tokens of (POSTVOCALIC R) separated by style (in %)

Style	N	[Rrt]	[rat]	[Rr]	[ra]	[Rtt][38]	[r/V]	[Vr]	[V]
interview	1177	4.5	10.8	32.7	6.5	0.2	6.0	30.8	8.5
wordlist	1012	10.6	17.9	46.0	2.0	0.5	3.0	18.2	1.9

Taking these results and previous comments on the direction of change in Scottish varieties as regards the realisation of /r/ we can classify the variants on an innovation scale as follows:

1. Tapped variants [ɾ~ɽ], henceforth referred to as [RT], as being the most conservative variant
2. Approximant variants [ɹ~ɻ], henceforth referred to as [RA], as being the least marked option and
3. Variants that cannot be assigned as being clearly articulated ,or vocalised [r/V]
4. Vowels with an audible secondary articulation [Vr] and
5. relatively pure vowels [V].

[38] Because of the small amount of trilled variants, this figure is not reported in subsequent tables and figures.

Because of the relatively small amount of tokens of pure vowels in the present sample (particularly in the wordlist data), these are regrouped with the [Vr] variant in the regressions.

7.5.3.1 Interview style

There is considerable variation in the realisation of postvocalic /r/ in all speakers. No speaker has less than three different variants; [RA] and [Vr] are found in all speakers.

I will now first turn to the discussion of the internal factors. The results for phonetic context are presented in Table 7.5.2. We note that variation is greatest in the word-final pre-pausal and pre-consonantal contexts and that when /r/ occurs before a vowel vocalised variants are particularly rare. This is likely to be due to the binding effect of realising the consonant in this position. Instead, taps are rather common here. This resembles the pattern I found for prevocalic /r/ (the details of which are not reported in the present thesis), in which [RT] was strongest intervocalically. Approximants are predominantly found in this context as well as word-internally, but the latter is characterised by having a large amount of [Vr] realisations as well. Pure vowels are becoming increasingly common in the other word-final contexts.

As regards stress (Table 7.5.3), the differences are minimal for the tapped and [Vr] variants. There is, however, a strong pattern in the other variants, in that pure vowels as well as [r/V] tokens are about twice as likely to occur in an unstressed position. This resembles the pattern described by Stuart-Smith (2003: 133).

Table 7.5.2: Descriptive statistics for all tokens of (POSTVOCALIC R) separated by context in interview style (in %)

Context	N	[RT]	[RA]	[r/V]	[Vr]	[V]
word-final pc	307	14.7	27.0	11.1	34.2	12.7
word-final pp	137	13.9	24.8	10.2	38.7	12.4
word-final pv	119	32.8	54.6	0.8	7.6	3.4
word-internal	614	12.5	45.4	3.6	31.9	6.5

Table 7.5.3: Descriptive statistics for all tokens of (POSTVOCALIC R) separated by stress in interview style (in %)

Stress	N	[RT]	[RA]	[r/V]	[Vr]	[V]
stressed	738	14.9	43.9	4.1	31.4	5.6
unstressed	439	15.9	31.2	9.3	29.8	13.4

Table 7.5.4: Descriptive statistics for all tokens of (POSTVOCALIC R) separated by age in interview style (in %)

Age	N	[RT]	[RA]	[r/V]	[Vr]	[V]
adult	313	34.5	40.6	2.6	18.2	3.5
teen	419	7.9	48.9	5.7	28.9	8.6
young	445	8.8	29.0	8.8	41.6	11.9

Turning to the social factors, Table 7.5.4 shows the by now familiar pattern, in which the adult speakers are strongly polarised from the teenagers and even more so from the children. Adults are separated from the younger groups mainly by their very high usage of taps (34.5%) compared to less than 10% in the other groups and on the other hand their avoidance of pure vowels, but also those with a secondary articulation. In the teenagers, we find that approximants are by far the most common variant, but that [Vr] realisations have made some inroads. The results for the children are even more extreme and again we must wonder if these large differences in comparison to the teenagers' data is due to actual apparent-time change or has other factors. Just like the teens, the children avoid taps, but also their usage of approximants is relatively low at less than 30%. Instead, they are clearly leading the change towards the [Vr] variant.

The differences as regards social class and gender are only minimal and therefore not presented in table format. What is noteworthy, though, is the fact that MC speakers have about double the amount (11.2%, compared to only 5.9% in the WC speakers) of pure vowels. This, however, can be attributed very much to a single speaker (YMM4), who accounts for 15 of the 100 tokens that were found overall. I will return to this below.

The separation by the interaction of age and social class (Table 7.5.5 and Figure 7.5.1 by and large confirms our findings for age, but allows for a more fine-

Table 7.5.5: Descriptive statistics for all tokens of (POSTVOCALIC R) separated by the interaction of age and social class in interview style (in %)

Age:Social class	N	[RT]	[RA]	[r/V]	[Vr]	[V]
adult:middle-class	152	31.6	49.3	3.3	11.2	3.9
adult:working-class	161	37.3	32.3	1.9	24.8	3.1
teen:middle-class	211	8.1	36.5	10.4	34.6	10.4
teen:working-class	208	7.7	61.5	1.0	23.1	6.7
young:middle-class	216	7.4	22.7	10.6	42.1	17.1
young:working-class	229	10.0	34.9	7.0	41.0	7.0

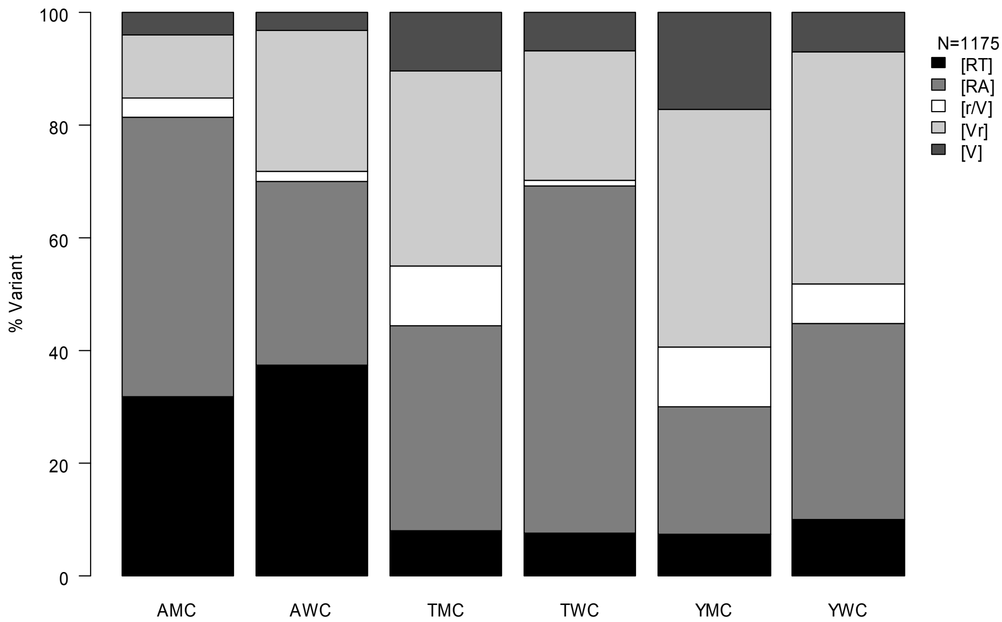

Figure 7.5.1: Distribution of variants of (POSTVOCALIC R) by the interaction of age and social class in interview style

grained analysis and reveals some more unexpected results, particularly in comparison to the data presented in Stuart-Smith (2003). The differences in the adult speakers are comparatively small as regards variants identified as [RA~RT]. MC speakers use articulated /r/ in about 80% of all tokens and their WC counterparts in about 70%. A difference is found in the type of variant that follows the Scots-SSE pattern, with slightly more taps in the WC adults and approximants accounting for nearly 50% of all tokens in the MC speakers. Intermediate and fully vocalised forms are rare in both groups, but WC speakers have about double the amount of [Vr] tokens.

These patterns are somewhat reversed in the teenagers and children. As regards articulated forms of /r/, we first note that the WC teens are still rhotic and their values are similar to those of their adult counterparts. However, there has been a dramatic change in the choice of the preferred variant. Adults are about equally likely to use either form, but in the teenagers there is a strong preference for [RA] variants, accounting for over 60% of all tokens in this group; the boys even have slightly higher values than the girls. In addition, retroflex forms clearly outnumber alveolar variants. On the other hand – the most frequent variant of articulated /r/

Table 7.5.6: Descriptive statistics for all tokens of (POSTVOCALIC R) separated by father's birthplace in interview style (in %)

Father's birthplace	N	[RT]	[RA]	[r/V]	[Vr]	[V]
North-East	905	17.8	38.8	4.5	31.0	7.6
Scotland	186	7.5	47.3	10.8	24.7	9.7
England	86	5.8	25.6	11.6	41.9	15.1

in Glasgow (Stuart-Smith 2003: 129, Table 6.4) at 20% in the girls and over 28% in the boys – is found in less than 8% in the Aberdeen WC teens. Also, we find a reversed distribution in the MC teenagers. In Glasgow, approximants and [ɾ] accounted for over 95% of realisations in these speakers. In Aberdeen, we find that this figure drops quite radically to below 45%. Instead, over a third of tokens are vowels with secondary articulations and there are 10.4% each of intermediate realisations and pure vowels.

The results for the youngest speakers are even more extreme and follow the pattern outlined above in that it is the MC speakers who show the strongest signs of losing rhoticity and have by far the smallest amount of [RA~RT] variants. But also in the WC children, there is a steep drop in articulated variants to only about 45%. Both groups of children have about equally high amounts of vowels with a secondary articulation, which in this sample is the clear majority variant. Again we find that the MC speakers are leading in the adoption of pure vowels. They are particularly common in the boys, where they account for over a fifth of all tokens.

Rating of one's own speech does not have an effect, but there is clear preference in speakers with an English-born father as regards both pure vowels and those with a secondary articulation (Table 7.5.6). All three speakers are MC, but neither is leading in the avoidance of articulated [r] in their respective group, so that we should be careful not to overinterpret these findings. Similarly, taps are about three times as common in speakers with a North-Eastern father, but this includes all adults, i.e. the group of speakers that is most likely to use taps anyway. Also, with the exception of YWF3 all speakers with a Scottish-born father are MC, which may help explain the preference for the SSE variant.

Table 7.5.7 shows the results of the GLMM for the binary division into variants that had some form of articulated /r/ and those which indicate vocalisation. Four fixed factors contribute significantly: context, stress, Age:Social class and father's birthplace. In addition to that, there is a relatively small effect of speaker on the

Table 7.5.7: GLMM results for (POSTVOCALIC R): [R+] in interview style

Fixed factors	Log-odds	N	Proportion	Centred factor weight
Context, $p < .001$				
word-final pv	1.86	119	0.88	0.87
word-internal	-0.10	614	0.58	0.47
word-final pc	-0.75	307	0.42	0.32
word-final pp	-1.00	137	0.39	0.27
Stress, $p < .001$				
stressed	0.29	738	0.59	0.57
unstressed	-0.29	439	0.47	0.43
Age: Social class, $p < .001$				
adult:middle-class	0.64	152	0.82	0.65
teen:working-class	0.36	208	0.69	0.59
young:working-class	0.28	229	0.45	0.57
young:middle-class	-0.28	216	0.30	0.43
teen:middle-class	-0.36	211	0.45	0.41
adult:working-class	-0.64	161	0.70	0.35
Father's birthplace, $p < .01$				
Scotland	0.65	186	0.55	0.66
England	-0.24	86	0.31	0.44
North-East	-0.41	905	0.57	0.40

Speaker effects: 0.44 (0.3); deviance: 1313.18, df: 13, intercept: 0.75, grand mean: 0.55, centred input probability: 0.68

level of 0.44 (0.30) log-odds sd. There is a very strong positive effect for articulated variants word-finally before a vowel, where /r/ is generally used to link the elements together. Word-internally, the effect is minimal, but we find an intermediate negative effect of 0.75 log-odds before consonants and an even stronger effect for prepausal tokens. Also, we find that stress has a significant influence on the type of variant, with unstressed tokens slightly favouring vocalised forms. Both findings resemble those found in Glasgow and the combination of both factors shows the way by which the innovative variants enter the Aberdeen system.

As regards the interaction of age and social class, the predicted pattern is counterintuitive. While the MC adults come out as the most conservative group (log-odds: 0.64), their WC counterparts, on the other hand, are polarised from this and all other groups by an intermediate positive effect despite 70% [R+]. I am not sure why this is; especially since the individual factors (being adult and being WC) both indicate that there is a preference for [R+]. As for the other groups, we find confirmation of our assumption that unlike in other Scottish varieties the change towards [R+] is being led by MC speakers from the two younger age groups.

The effects of father's birthplace suggest that speakers with Scottish-born parents retain [R+] most, whereas those from the North-East are promoting the changes. Again, this likely to be strongly influenced by the unequal distribution of speakers from each group.

The individual speaker effects are presented in Table 7.5.8 and the innovation plot (Figure 7.5.2. We note that despite the interaction of age and social class being highly significant, there is considerable in-group variation. This is overall stronger in the WC speakers. Of the twelve speakers falling outside the conformers' group, only three are MC. This is particularly true for TWM1 and TWM4, speakers from the same social and local background, but also for AWM3 and AWF1, who are separated by about 1.4 log-odds. Despite rating of one's own speech not being significant in itself, it may have an effect here, since AWF1 is one of only two WC speakers to refer to themselves as tending towards the SSE end in her speech. Since it seems that speakers from this end are currently promoting [R-], this could explain these findings.

Table 7.5.8: GLMM results for (POSTVOCALIC R):[R+] – individual by-speaker variation in interview style

Speaker	Log-odds	N	Proportion	Centred factor weight	Category
AWM3	0.66	24	0.96	0.66	Conservers
YWF2	0.56	28	0.64	0.64	
TWM1	0.47	26	0.85	0.62	
YMM3	0.47	25	0.56	0.62	
YWF4	0.38	28	0.64	0.59	Traditionalist
YMF3	0.29	24	0.33	0.57	Conformers
TMM2	0.26	30	0.50	0.57	
AWF2	0.23	33	0.79	0.56	
TWF4	0.22	25	0.80	0.56	
YMF1	0.18	32	0.50	0.55	
TMF1	0.17	26	0.65	0.54	
YWM1	0.16	27	0.52	0.54	
TMM3	0.13	24	0.46	0.53	
AMF1	0.13	28	0.89	0.53	
AMM3	0.12	25	0.84	0.53	
AMM1	0.12	25	0.88	0.53	
YMF2	0.11	29	0.24	0.53	
TWF3	0.11	23	0.74	0.53	

YWM3	0.09	26	0.42	0.52	
TWM3	0.08	25	0.68	0.52	
AWM1	0.07	25	0.68	0.52	
AWF3	0.07	28	0.75	0.52	
TMF2	0.05	27	0.63	0.51	
YMM1	0.05	25	0.32	0.51	
TMM4	-0.02	25	0.36	0.49	
TWF1	-0.06	26	0.65	0.49	
TMM1	-0.07	26	0.35	0.48	
TWM2	-0.07	26	0.85	0.48	
AMF3	-0.08	26	0.77	0.48	
AMF2	-0.10	23	0.78	0.48	
TMF4	-0.12	27	0.37	0.47	
TWF2	-0.16	26	0.62	0.46	
YWM4	-0.20	26	0.39	0.45	
YWM2	-0.23	28	0.39	0.44	
YMM4	-0.26	26	0.12	0.44	
AMM2	-0.26	25	0.72	0.44	
YMF4	-0.29	31	0.13	0.43	
YWF3	-0.31	26	0.42	0.42	Promoters
AWM2	-0.35	25	0.60	0.41	
TMF3	-0.37	26	0.23	0.41	
YWF1	-0.43	40	0.25	0.40	
YMM2	-0.50	24	0.21	0.38	Innovators
TWM4	-0.66	31	0.42	0.34	
AWF1	-0.72	26	0.42	0.33	

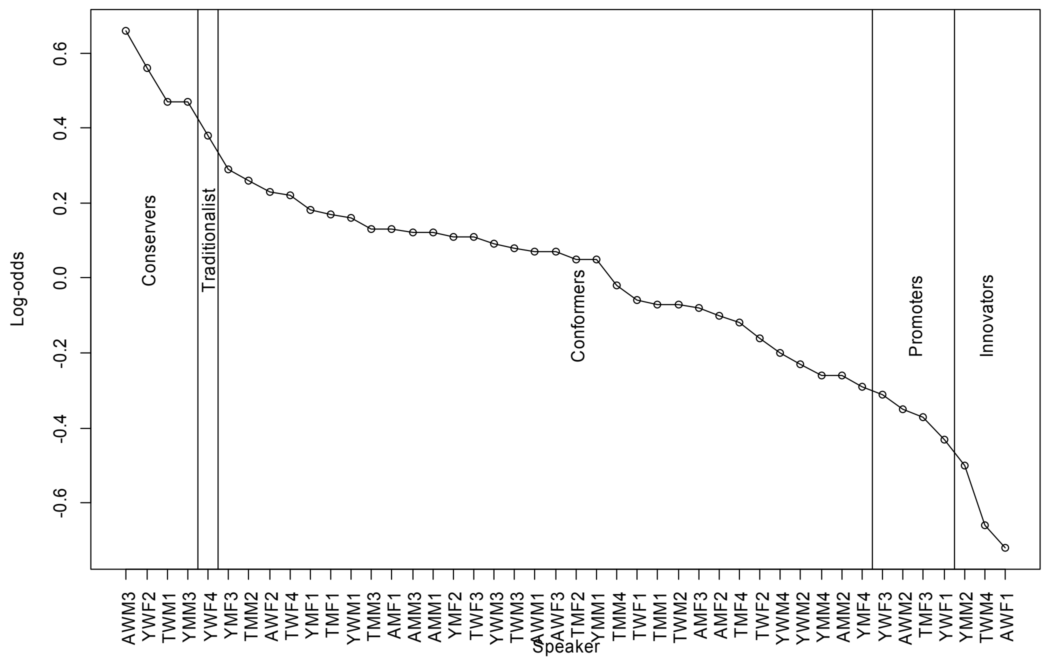

Figure 7.5.2: Innovation plot for (POSTVOCALIC R):[R+] in interview style

Table 7.5.9: GLMM results for (POSTVOCALIC R):[RT] in interview style

Fixed factors	Log-odds	N	Proportion	Centred factor weight
Age, $p < .001$				
adult	1.24	313	0.35	0.78
young	-0.59	445	0.09	0.36
teen	-0.65	419	0.08	0.34
Context, $p < .001$	-0.61	137	0.25	0.35
word-final pv	0.95	119	0.33	0.72
word-final pc	-0.27	307	0.15	0.43
word-internal	-0.33	614	0.13	0.42
word-final pp	-0.36	137	0.14	0.41

Speaker effects: 0.73 (0.54); deviance: 846.73, df: 7, intercept: -1.84, grand mean: 0.15, centred input probability: 0.14

Looking at the type of variant of articulated /r/, we first turn to the most conservative variant, [RT] (Table 7.5.9). There are two highly significant fixed factors: context and age with an additional by-speaker variation of 0.73 (0.54) log-odds sd. The effects of context have been discussed in the descriptive section above and the results of the statistical analysis confirm these findings. The second factor, age, also confirms the strong polarisation of adults from the two younger speaker groups, for whom taps are by now relatively rare.

Table 7.5.10: GLMM results for (POSTVOCALIC R):[RT] – individual by-speaker variation in interview style

Speaker	Log-odds	N	Proportion	Centred factor weight	Category
AWM1	1.10	25	0.64	0.74	
YMF1	0.96	32	0.22	0.71	Conservers
AWM3	0.93	24	0.63	0.71	
TWF4	0.75	25	0.20	0.67	
YWF2	0.72	28	0.18	0.66	
YWM4	0.69	26	0.19	0.66	
TWF3	0.66	23	0.17	0.65	Traditionalists
YWM1	0.66	27	0.19	0.65	
YWF4	0.56	28	0.18	0.63	
AMM3	0.53	25	0.48	0.62	
TMF2	0.53	27	0.15	0.62	
AMF1	0.51	28	0.46	0.61	
AMM1	0.46	25	0.48	0.60	
AWF2	0.41	33	0.42	0.59	
TMM4	0.36	25	0.12	0.58	
TMM1	0.35	26	0.12	0.58	
TMM2	0.31	30	0.10	0.57	

YMF2	0.26	29	0.10	0.55	
TMM3	0.11	24	0.08	0.52	
YWM3	0.10	26	0.08	0.51	
YMF3	0.09	24	0.08	0.51	
TWF2	0.01	26	0.08	0.49	
YMF4	-0.03	31	0.07	0.48	
AWM2	-0.10	25	0.28	0.46	
TMF1	-0.19	26	0.04	0.44	
TMF3	-0.19	26	0.04	0.44	
YMM3	-0.20	25	0.04	0.44	
TWM3	-0.20	25	0.04	0.44	
TWM1	-0.22	26	0.04	0.44	
TWM2	-0.25	26	0.04	0.43	
TWF1	-0.25	26	0.04	0.43	
YMM4	-0.28	26	0.04	0.42	
AMM2	-0.29	25	0.28	0.42	
YWM2	-0.33	28	0.04	0.41	
TWM4	-0.37	31	0.03	0.40	
AWF3	-0.51	28	0.18	0.37	
YMM2	-0.51	24	0.00	0.37	
YWF3	-0.54	26	0.00	0.36	
TMF4	-0.56	27	0.00	0.35	
YMM1	-0.64	25	0.00	0.34	Promoters
YWF1	-0.70	40	0.00	0.32	
AWF1	-0.83	26	0.12	0.29	
AMF2	-0.95	23	0.09	0.27	Innovators
AMF3	-1.02	26	0.08	0.26	

The analysis of the by-speaker effects (Table 7.5.10 and Figure 7.5.3) allows for a more differentiated picture pointing to additional social class and gender patterns. Despite adults being overall much more likely to use a tap, we see that the three innovators are all adult females, whose values tend to approach those of the other age groups. Also, two are MC, and thus more likely to avoid [RT], and again we find AWF1, who classified herself as being more from the SSE end. As the tap it is the traditional Scots variant, it is no surprise to find two WC adult males not only having by far the largest amount of taps overall, but also to find them in the conservers' group. In addition to that, there is only one MC speaker in the more conservative groups (YMF1), which further supports the assumption that there still is some class-based variation along the Scots-SSE continuum, but that overall the trend is away from taps.

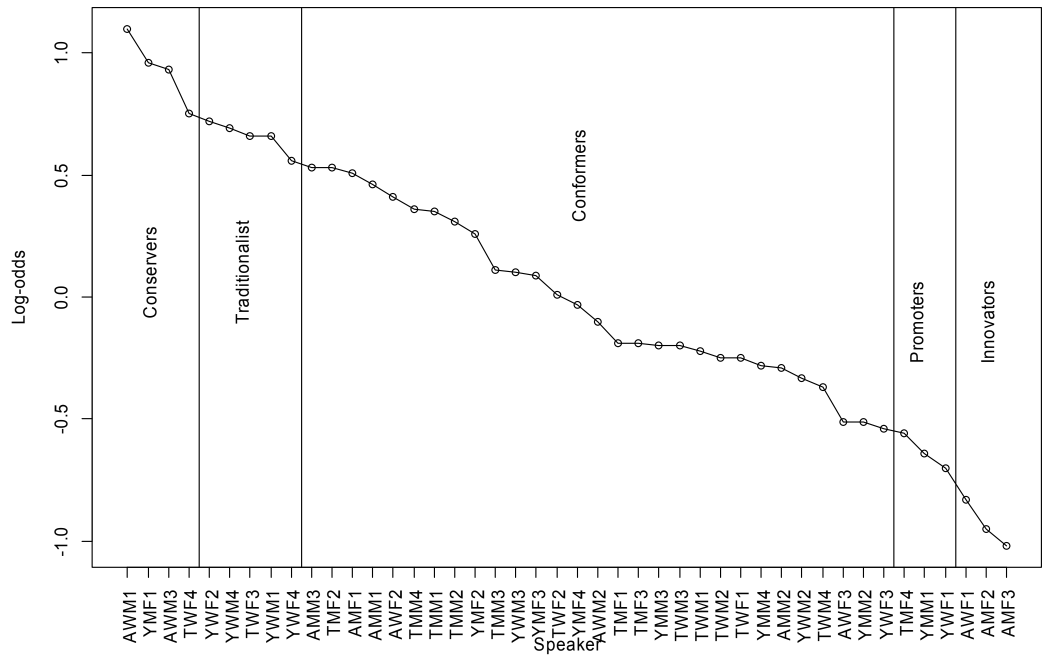

Figure 7.5.3: Innovation plot for (POSTVOCALIC R):[RT] in interview style

Table 7.5.11: GLMM results for (POSTVOCALIC R):[RA] in interview style

Fixed factors	Log-odds	N	Proportion	Centred factor weight
Context, $p < .001$				
word-final pv	0.73	119	0.55	0.68
word-internal	0.29	614	0.45	0.57
word-final pc	-0.41	307	0.27	0.40
word-final pp	-0.61	137	0.25	0.35
Age: Social class, $p < .001$				
adult:middle-class	0.69	152	0.49	0.67
teen:working-class	0.40	208	0.62	0.60
young:working-class	0.28	229	0.35	0.57
young:middle-class	-0.28	216	0.23	0.43
teen:middle-class	-0.40	211	0.37	0.40
adult:working-class	-0.69	161	0.32	0.34
Stress, $p < .001$				
stressed	0.28	738	0.44	0.57
unstressed	-0.28	439	0.31	0.43
Father's birthplace, $p < .001$				
Scotland	0.61	186	0.47	0.65
England	-0.12	86	0.26	0.47
North-East	-0.49	905	0.39	0.38

Speaker effects: 0.35 (0.22); deviance: 1398.59, df: 13, intercept: -0.31, grand mean: 0.39, centred input probability: 0.42

The SSE variant, [RA], has a more complex variation pattern resembling that of the more general [R+] and is shown in Table 7.5.11. Four factors (context, Age:Social class, stress and father's birthplace) contribute highly significantly with an additional by-speaker variation on the level of 0.35 (0.22) log-odds sd. The same contextual and stress patterns described above apply to this variant as well. For the interaction of age and social class we once more find the strong polarisation of the two adult groups. In this case, however, this is very much due to the SSE variant being preferred by the MC group, while WC adults rather use taps – or in the case of AWF1, vocalised forms. Despite the finding that younger and teenage MC speakers lead in the adoption of [V] and [Vr] variants, it is unexpected to see that their WC counterparts have positive log-odds for the SSE variant. This suggests once more that while the trend away from taps is rather universal, there is still a clear class distinction, which, however, goes against the pattern found elsewhere. As regards father's birthplace, here we note a preference for [RA] in speakers with a Scottish-born male parent. They are also much more likely to avoid [Vr~V], which may indicate that they are just following the SSE pattern of their parents.

Table 7.5.12: GLMM results for (POSTVOCALIC R):[RA] – individual by-speaker variation in interview style

Speaker	Log-odds	N	Proportion	Centred factor weight	Category
AWM1	-0.46	25	0.04	0.39	Conservers
TWM4	-0.37	31	0.39	0.41	
YWM4	-0.29	26	0.19	0.43	Traditionalists
YMF4	-0.29	31	0.07	0.43	
YMM2	-0.27	24	0.21	0.43	
AMM1	-0.23	25	0.4	0.44	
TMF3	-0.22	26	0.19	0.45	Conformers
AMF1	-0.21	28	0.43	0.45	
AMM3	-0.19	25	0.36	0.45	
YWF1	-0.15	40	0.25	0.46	
YMF1	-0.14	32	0.28	0.47	
AMM2	-0.12	25	0.4	0.47	
YMM4	-0.11	26	0.08	0.47	
TWF2	-0.1	26	0.54	0.48	
YWF3	-0.1	26	0.42	0.47	
TMM1	-0.1	26	0.23	0.47	
TMF2	-0.08	27	0.48	0.48	
TMM4	-0.08	25	0.24	0.48	
TWF3	-0.08	23	0.57	0.48	
AWM2	-0.05	25	0.32	0.49	

TWF4	-0.04	25	0.6	0.49	
TWM2	-0.04	26	0.81	0.49	
YWM2	-0.02	28	0.36	0.5	
YMF2	-0.01	29	0.14	0.5	
AWM3	-0.01	24	0.29	0.5	
AWF1	-0.01	26	0.31	0.5	
YWM1	0	27	0.33	0.5	
TWF1	0.05	26	0.62	0.51	
TMF4	0.08	27	0.37	0.52	
TMM2	0.09	30	0.4	0.52	
YWM3	0.09	26	0.35	0.52	
AWF2	0.1	33	0.36	0.52	
TMM3	0.13	24	0.38	0.53	
TWM3	0.14	25	0.64	0.53	
TMF1	0.2	26	0.62	0.55	
YMF3	0.21	24	0.25	0.55	
YWF4	0.21	28	0.46	0.55	
YMM1	0.22	25	0.32	0.55	
YWF2	0.3	28	0.46	0.57	Promoter
AMF2	0.34	23	0.7	0.58	
AMF3	0.42	26	0.69	0.6	
YMM3	0.43	25	0.52	0.61	Innovators
TWM1	0.43	26	0.81	0.61	
AWF3	0.46	28	0.57	0.61	

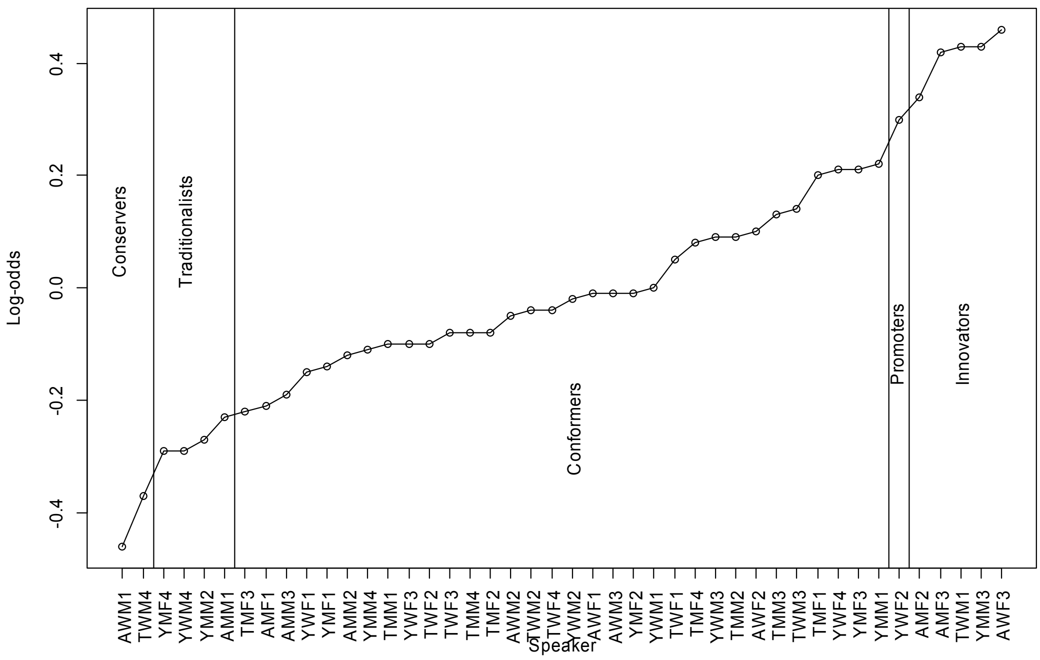

Figure 7.5.4: Innovation plot for (POSTVOCALIC R):[RA] in interview style

Table 7.5.13: GLMM results for (POSTVOCALIC R):[Vr~V] in interview style

Fixed factors	Log-odds	N	Proportion	Centred factor weight
Context, $p < .001$				
word-final pv	0.73	119	0.55	0.68
word-internal	0.29	614	0.45	0.57
word-final pc	-0.41	307	0.27	0.40
word-final pp	-0.61	137	0.25	0.35
Father's birthplace, $p < .001$				
North-East	0.47	905	0.39	0.62
England	0.17	86	0.57	0.54
Scotland	-0.64	186	0.34	0.35
Age: Social class, $p < .01$				
adult:working-class	0.54	161	0.28	0.63
young:middle-class	0.28	216	0.59	0.57
teen:middle-class	0.26	211	0.45	0.56
teen:working-class	-0.26	208	0.3	0.44
young:working-class	-0.28	229	0.48	0.43
adult:middle-class	-0.54	152	0.15	0.37

Speaker effects: 0.33 (0.2); deviance: 1374.62, df: 12, intercept: 1.12, grand mean: 0.39, centred input probability: 0.25

The by-speaker differences (Table 7.5.12 and Figure 7.5.4) are quite small, thus indicating that most of the variation is already covered by the fixed factors. Therefore, we shall focus only on some of the individuals here. TWM4 is an interesting case, since he falls into the conservers' group for RA – which is defined by relatively high negative log-odds for this variant – but is an innovator as regards [Vr~V]. Assuming that vocalised forms are more innovative, this does actually indicate that this speaker seems to have already moved on from [RA] in comparison to the other speakers from his social background. The same is true for YMM2, who falls into the traditionalists' group for [RA], but is a promoter of [Vr~V].

For the most innovative variants, the vocalised forms, there are three significant fixed factors: context, father's birthplace and the interaction of age and social class. In addition, there is by-speaker variation of 0.33 (0.20) log-odds sd (Table 7.5.13). Context shows the expected opposite pattern to the patterns described for the articulated variants. It is very strongly discouraged prevocalically and is most likely to occur before a pause.

Of the social factors, father's birthplace confirms the finding for [RA] in that speakers with a Scottish-born father are least likely to use vocalised forms and that overall those with a North-Eastern parent are most likely to. Regarding the interaction of age and social class we once again find that WC adults have the highest log-odds, but as before this is due to the polarisation of speakers within the group. Whereas AWM3 avoids it almost completely, AWM2 and AWF1 are clearly promoting vocalised forms. Since by-speaker variation is even smaller here than in the other variants, it is not reasonable to go into any greater detail.

7.5.3.2 Wordlist style

As has been shown in Table 7.5.1 there is a strong stylistic difference in the realisation of postvocalic /r/. Articulated variants are overall much more likely in the wordlists than the interviews. Also, the differences between the individual speaker groups are somewhat smaller here. Again, we shall first focus on the internal factors.

The results for phonological context are shown in Table 7.5.14. Overall, realised variants of /r/ are much stronger here than in the informal style, which is mainly due to a strong increase in taps, which are now about twice as common. The differences according to stress are less pronounced (Table 7.5.15), but again we note that the more innovative forms are more likely to occur in unstressed position.

Once more, the strongest single social predictor is age, shown here in Table 7.5.16. Whereas the adult speakers are near-consistent in their use of articulated variants at 96.8%, the same cline as for the interviews can be found in the two younger groups, with teenagers about halfway between adults and children. Social class and gender on their own do not reveal any noteworthy patterns, but if we look at the pairwise interactions of these two factors with age, we find more diverse

Table 7.5.14: Descriptive statistics for all tokens of (POSTVOCALIC R) separated by context in wordlist style (in %)

Context	N	[RT]	[RA]	[r/V]	[Vr]	[V]
word-final	663	27.8	45.1	4.1	20.1	2.4
word-internal	349	29.8	53.6	0.9	14.6	0.9

Table 7.5.15: Descriptive statistics for all tokens of (POSTVOCALIC R) separated by stress in wordlist style (in %)

Stress	N	[RT]	[RA]	[r/V]	[Vr]	[V]
stressed	480	30.0	54.0	1.3	13.8	0.4
unstressed	532	27.1	42.7	4.5	22.2	3.2

Table 7.5.16: Descriptive statistics for all tokens of (POSTVOCALIC R) separated by age in wordlist style (in %)

Age	N	[RT]	[RA]	[r/V]	[Vr]	[V]
adult	278	42.1	52.9	1.1	2.2	0.0
teen	370	23.5	54.9	2.7	18.4	0.5
young	364	23.1	37.4	4.7	30.2	4.7

patterns.

The results for the interaction of age and social class can be found in Figure 7.5.5. We note a relatively steady decrease in tapped variants from MC adults to WC teens and in accordance with that an increase in approximants. The young speakers on the other hand behave very differently and we find a relatively strong social class difference in that the WC children hardly lose the [Vr] variant (37.0%) in comparison to the interviews (41.0%), whereas the MC children have quite a steep drop in favour of both [RT] and [RA]. This indicates that for the young WC speakers, the change is already more advanced.

Similarly, as regards the interaction of age and gender (Figure 7.5.6), there are large differences in the two older age groups that have already levelled out in the children. This is particularly apparent in the usage of taps by the adults, which ac-

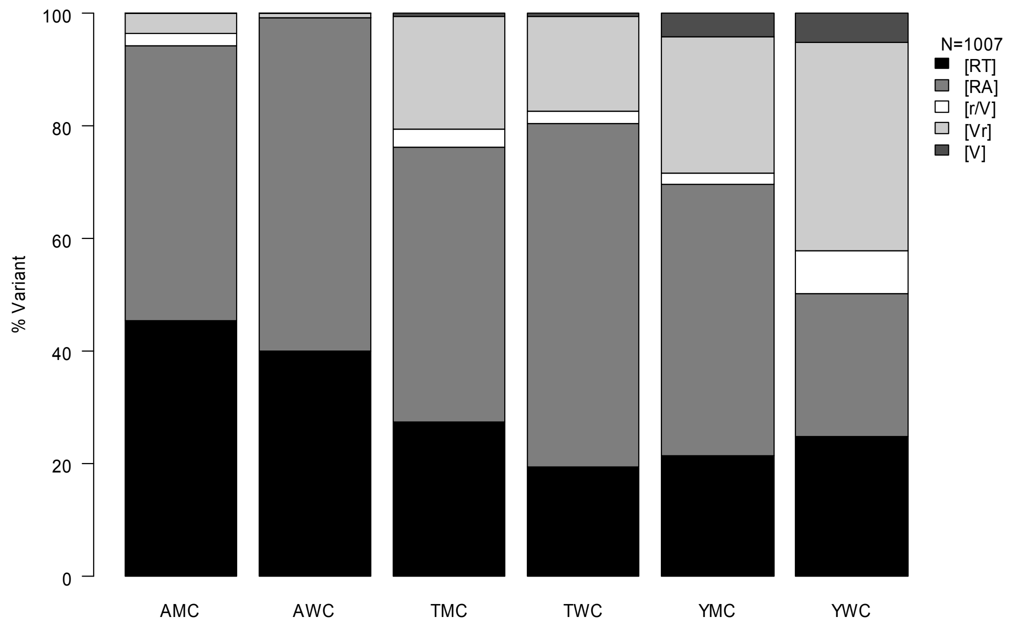

Figure 7.5.5: Distribution of variants of (POSTVOCALIC R) by the interaction of age and social class in wordlist style

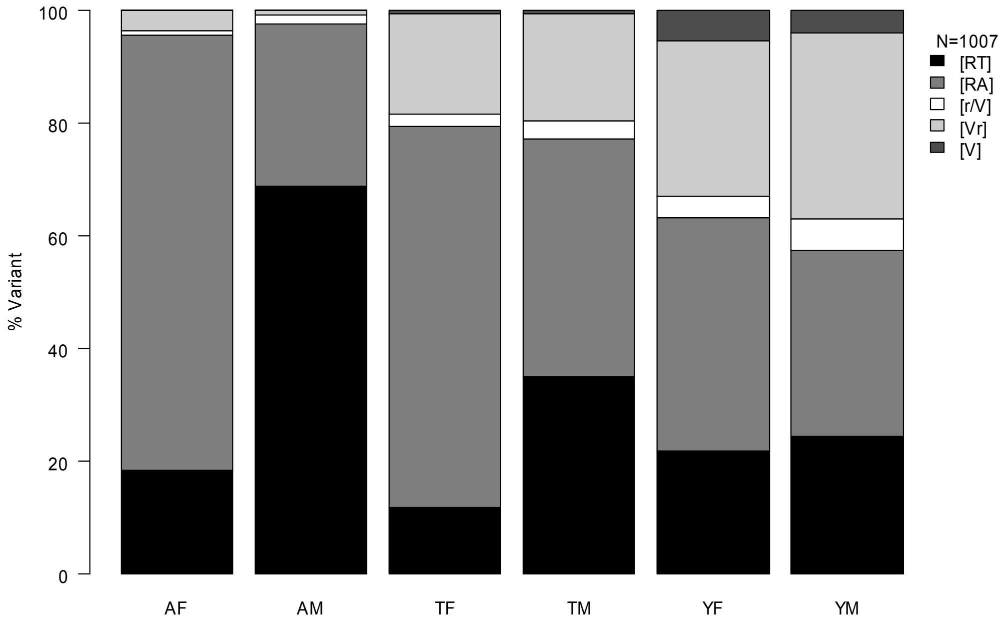

Figure 7.5.6: Distribution of variants of (POSTVOCALIC R) by the interaction of age and gender in wordlist style

count for about two thirds of all tokens in the males, but less than a fifth in the females, who instead are relatively consistent in their use of the SSE variant at over 75%. These values are comparatively close to those of the teenage females, who, however, have begun to adopt vowels with a secondary articulation already. As regards [R+], teenage males and females do not vary very much, but the boys in the sample are relatively equally divided in their use of taps and approximants. Once more, the differences in the young speakers are much smaller, but variation as such is larger. Therefore, however, we need to break the data down further to the three-way interaction.

Figure 7.5.7 shows the differences in the younger speakers separated by social class and gender. There is relative agreement in the usage of taps, but we find both a social class and gender difference in the other variants. This first polarises the WC speakers from the MC ones and, in a second step, the WC boys from the WC girls. It is only the boys who have only very little stylistic variation and for whom [R-] variants are more common.

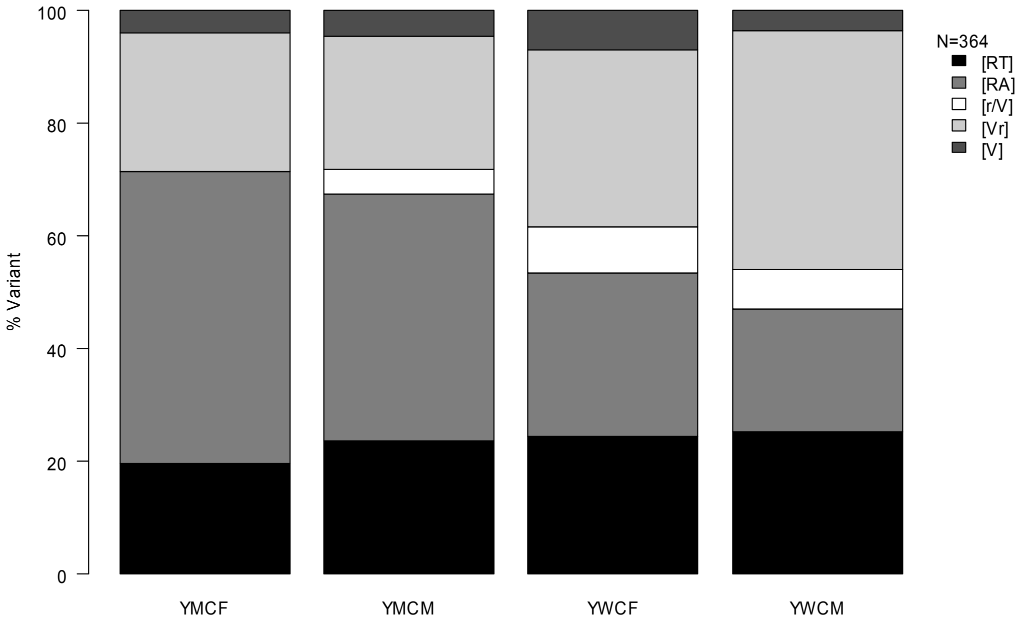

Figure 7.5.7: Distribution of variants of (POSTVOCALIC R) by the interaction of age, social class and gender in wordlist style (only young speakers)

Rating of one's own speech and parents' birthplaces do not show any major variation patterns. There is, though, a slight preference in SSE speakers for [R+] in comparison to the other groups.

The results of the GLMMS largely confirm our descriptive impressions. Table 7.5.17 shows the fixed-factor effects for the binary division into articulated and vocalised forms. [R] is very strongly favoured with an intercept of over 2 log-odds. There is an intermediate positive effect for stressed tokens indicating once more that /r/-loss first affects the unstressed environments. In addition, there is a highly significant difference according to age and social class. Here, the model suggests a strong polarisation of the WC adults from those of the MC in the region of over 1.6 log-odds. The descriptive data on the other hand showed near-consistency in both groups as regards [R+]. While this difference is statistically significant, its importance in actual terms is smaller and quite possibly negligible. More interesting here is the polarisation of the young speakers. The MC speakers are much more likely to be /r/-ful than the WC children.

Table 7.5.17: GLMM results for (POSTVOCALIC R):[R+] in wordlist style

Fixed factors	Log-odds	N	Proportion	Centred factor weight
Stress, $p < .001$				
stressed	0.56	480	0.85	0.64
unstressed	-0.56	532	0.70	0.36
Age: Social class, $p < .01$				
adult:working-class	0.83	137	0.99	0.70
young:middle-class	0.74	191	0.70	0.68
teen:middle-class	0.08	185	0.76	0.52
teen:working-class	-0.08	185	0.81	0.48
young:working-class	-0.74	173	0.50	0.32
adult:middle-class	-0.83	141	0.94	0.30

Speaker effects: 0.57 (0.39); deviance: 878.99, df: 8, intercept: 2.06, grand mean: 0.77, centred input probability: 0.89

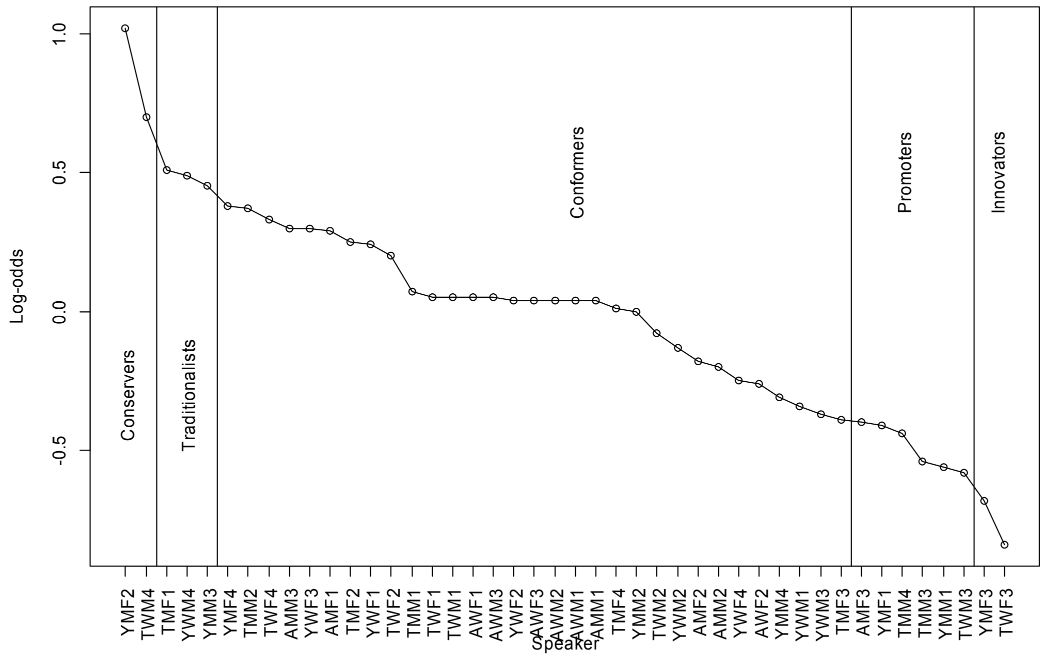

Figure 7.5.8: Innovation plot for (POSTVOCALIC R):[R+] in wordlist style

By-speaker effects are somewhat stronger in the wordlist data than the interviews at 0.57 (0.39) log-odds sd (Figure 7.5.8). There is a strong polarisation of the two speakers classed as conservers from all other speakers, which is not surprising since these two are the only non-adults to categorically use [R+]. In both the promoters' and innovators' group, we find mainly young and teenage MC speakers; i.e.

Table 7.5.18: GLMM results for (POSTVOCALIC R):[RT] in wordlist style

Fixed factors	Log-odds	N	Proportion	Centred factor weight
Age:Gender, $p < .01$				
young:female	0.58	188	0.22	0.64
adult:male	0.51	137	0.66	0.62
teen:male	0.07	185	0.35	0.52
teen:female	-0.07	185	0.12	0.48
adult:female	-0.51	141	0.18	0.38
young:male	-0.58	176	0.24	0.36

Speaker effects: 0.52 (0.37); deviance: 1062.20, df: 7, intercept: -1.01, grand mean: 0.29, centred input probability: 0.27

within the groups which are more likely to use [R-] anyway, there are a number of speakers who take this even further.

For the [RT] variant (fixed-effects results shown in Table 7.5.18), we first note a strong negative intercept of -1.01, so taps are highly disfavoured overall. This can be seen as a further indication that the trend is to go away from the Scots and towards the SSE variant and from there on – or bypassing it – to vocalised forms. The interaction of age and gender is the only significant fixed effect and there is by-speaker variation on the level of 0.52 (0.37) log-odds sd. The Rbrul output, however, is once more counterintuitive in comparison to the descriptive findings, which seems to be due to the fact that in the interaction the gender values are rated more strongly than those for age. Thus, we find an intermediate positive effect of 0.58 log-odds for the young girls, despite them realising postvocalic /r/ as a tap in only 21.8% of their tokens compared to triple the amount of that in the adult males. Similarly, this accounts for the fact that the young boys are considered to be most innovative. Despite having more taps than the most conservative group of females, in comparison to the other males their value of 24.4% taps is relatively small. For the teenagers the effects are minimal, but for the adults there is a relatively strong – and expected – polarisation by gender with being male having an intermediate effect (0.51 log-odds) promoting [RT].

Table 7.5.19: GLMM results for (POSTVOCALIC R):[RT] – individual by-speaker variation in wordlist style

Speaker	Log-odds	N	Proportion	Centred factor weight	Category
AMM3	0.85	24	0.96	0.70	Conservers
YMF2	0.71	24	0.46	0.67	

YMM3	0.64	21	0.48	0.65	
TWM4	0.61	22	0.59	0.64	
AWF3	0.45	22	0.32	0.61	
AMF1	0.42	23	0.30	0.60	Traditionalists
TMF4	0.41	22	0.23	0.60	
TMM2	0.40	24	0.50	0.60	
YWM4	0.36	22	0.36	0.59	
YWF2	0.35	21	0.33	0.58	
AWF2	0.26	24	0.25	0.56	
AWM2	0.26	22	0.77	0.56	
TWF2	0.24	23	0.17	0.56	
YWF1	0.19	22	0.27	0.54	
AMM2	0.17	23	0.74	0.54	
TMM4	0.16	22	0.41	0.54	
YWM1	0.14	21	0.29	0.53	
AMF3	0.12	24	0.21	0.53	
TMM1	0.08	24	0.38	0.52	
TMF3	0.08	23	0.13	0.52	
TMF2	0.06	24	0.13	0.51	
TWF1	0.06	24	0.13	0.51	Conformers
TMM3	0.05	22	0.36	0.51	
YWM2	-0.02	22	0.23	0.49	
YWF3	-0.06	21	0.19	0.48	
YMM2	-0.08	24	0.21	0.48	
YWF4	-0.08	22	0.18	0.48	
TMF1	-0.11	24	0.08	0.47	
YMF4	-0.14	24	0.17	0.46	
YMM4	-0.18	23	0.17	0.45	
TWM3	-0.22	23	0.26	0.44	
YMF3	-0.25	23	0.13	0.43	
TWF4	-0.26	22	0.05	0.43	
TWF3	-0.27	23	0.04	0.43	
YWM3	-0.30	22	0.14	0.42	
TWM2	-0.37	24	0.21	0.40	
AWM1	-0.38	21	0.52	0.40	
AMM1	-0.40	23	0.52	0.40	Promoters
YMM1	-0.42	21	0.10	0.39	
AWF1	-0.47	24	0.04	0.38	
AWM3	-0.56	24	0.46	0.36	
YMF1	-0.56	31	0.07	0.36	Innovators
TWM1	-0.62	24	0.13	0.35	
AMF2	-0.64	24	0.00	0.34	

The by-speaker effects are as strong as for [R+] at 0.52 (0.37) log-odds sd (Table 7.5.19 and Figure 7.5.9). There is no clear-cut picture here, and we note that in comparison to some of the other variables and variants the cline is much more gradual and it is mainly the four conservers that are polarised from all other speak-

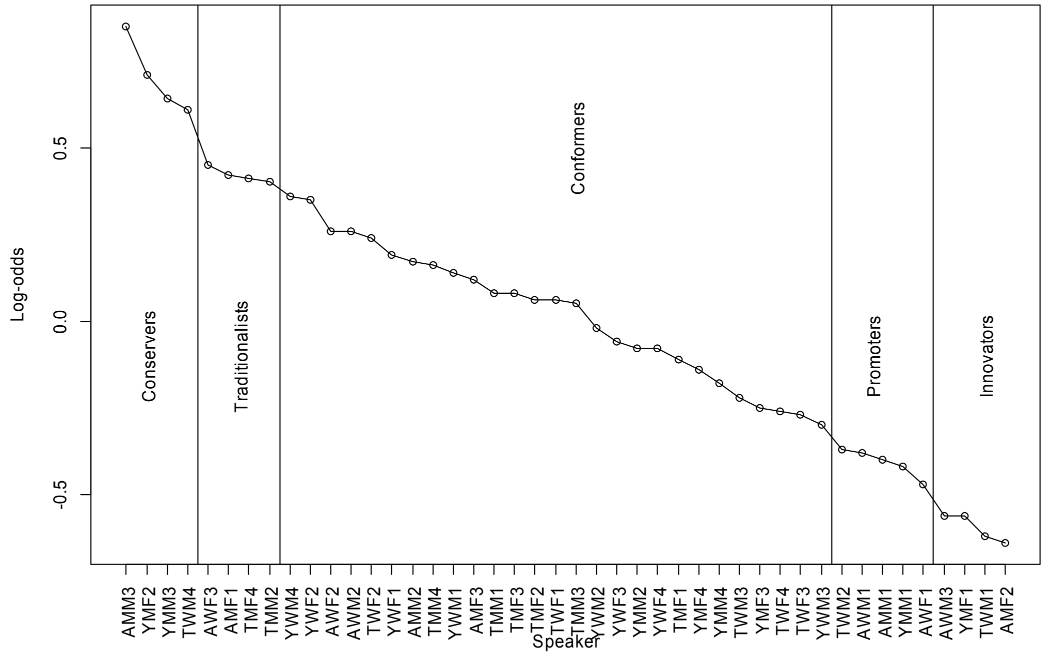

Figure 7.5.9: Innovation plot for (POSTVOCALIC R):[RT] in wordlist style

ers. Particularly in this variant we can see a very interesting distribution based on individual backgrounds. The most conservative speaker, AMM3, is near-consistent in his use of taps, which even in the overall rather conservative group of adult males makes him stand out. Despite his MC background, he very much avoids the SSE variant. This is in stark contrast to AMF2, who has the opposite pattern, avoiding taps completely and almost unanimously sticking to the supraregional standard form. AMM3 is a member of the Aberdeen City Council and for him using local linguistic features is an integral part of his life, whereas AMF2 works in in-house training for a large British company and therefore sticks to the more supralocal pattern despite her being brought up in Footdee, a small community within the city that was characterised by its relative isolation from the surrounding city. For most of the other speakers, it is difficult to assess why they use [RT] or not, but we note here that TWM1, the WC boy who has a relatively strong network with speakers from Aberdeenshire and generally orients himself towards the Scots end, avoids taps to quite large extent (-0.62 log-odds).

Turning to the results for [RA], which is the SSE variant, we find a much more complex distribution pattern (Table 7.5.20). Approximants have an intercept of -0.08, which means that they are just very slightly disfavoured overall. There is a

Table 7.5.20: GLMM results for (POSTVOCALIC R):[RA] in wordlist style

Fixed factors	Log-odds	N	Proportion	Centred factor weight
Stress, $p < .001$				
stressed	0.30	480	0.54	0.58
unstressed	-0.30	532	0.43	0.43
Age:Gender, $p < .001$				
adult:female	0.54	141	0.77	0.63
young:male	0.46	176	0.33	0.61
teen:male	0.08	185	0.42	0.52
teen:female	-0.08	185	0.68	0.48
young:female	-0.46	188	0.42	0.39
adult:male	-0.54	137	0.28	0.37
Age:Social class, $p < .01$				
young:middle-class	0.52	191	0.48	0.63
teen:working-class	0.30	185	0.61	0.58
adult:working-class	0.22	137	0.57	0.56
adult:middle-class	-0.22	141	0.49	0.45
teen:middle-class	-0.30	185	0.49	0.43
young:working-class	-0.52	173	0.25	0.37

Speaker effects: 0.44 (0.31); deviance: 1220.25, df: 11, intercept: -0.08, grand mean: 0.48, centred input probability: 0.48

highly significant difference by stress, with stressed tokens being a little more likely (0.3 log-odds) to be realised as this variant. In addition, both the interactions of age and social class as well as age and gender are significant. With both interactions being significant, this suggests that the three-way interaction of age, social class and gender would also be significant (also see Figure 7.5.7 above). Rbrul cannot fit this type of data, so that the results we get are somewhat illogical because of the great intra-group variation, particularly for the two younger age groups in the interaction of age and gender.

Let us first look at age and social class, which suggests a pattern in which the most innovative speakers belong to the young MC (0.52 log-odds) and their WC counterparts are most conservative (-0.52 log-odds). A similar pattern is also found in the teenagers and adults, but it is weaker and also class-reversed. In both age groups it is the working-class speakers who are more likely to use the supralocal variant. The pattern for age:gender is more difficult to grasp. There is a relative homogeneity in the adult groups with the females clearly outnumbering the males in the use of [RA], which also shows in the respective log-odds (0.54 for the females and -0.54 for the males). In addition, the WC speakers are somewhat more likely to use this variant. In the younger speaker group, Rbrul suggests that the girls have log-odds of -0.46 and the boys of 0.46 despite the girls having somewhat more [RA] percentage-wise. What seems to play a role here is an additional class pattern that was also attested above. Young MC speakers are overall more likely to use [RA] than young WC speakers and within these subgroups the girls are more likely to than the boys. A similar pattern is also found for the teenagers, however this time with the WC speakers (see above) preferring the supralocal form.

Table 7.5.21: GLMM results for (POSTVOCALIC R):[RA] – individual by-speaker variation in word-list style

Speaker	Log-odds	N	Proportion	Centred factor weight	Category
AWM2	-0.74	22	0.00	0.32	Conservers
TWF3	-0.52	23	0.52	0.37	
AMM3	-0.50	24	0.04	0.38	
YMF3	-0.38	23	0.35	0.41	Traditionalists
AWF3	-0.34	22	0.68	0.42	
YWM1	-0.30	21	0.10	0.42	Conformers
AWF2	-0.29	24	0.71	0.43	
TMM4	-0.28	22	0.23	0.43	
TMM3	-0.27	22	0.23	0.43	
TMF3	-0.22	23	0.52	0.45	
YWF2	-0.22	21	0.19	0.45	
TWM3	-0.20	23	0.39	0.45	
AMF3	-0.20	24	0.67	0.45	
TWM4	-0.17	22	0.41	0.46	
TMF4	-0.16	22	0.55	0.46	
AMM2	-0.13	23	0.17	0.47	
AMF1	-0.13	23	0.70	0.47	
YWF4	-0.13	22	0.23	0.47	
YMM3	-0.11	21	0.38	0.47	
TWF2	-0.10	23	0.70	0.47	
TWF1	-0.08	24	0.71	0.48	
YMM1	-0.02	21	0.43	0.50	
YMF1	-0.01	31	0.52	0.50	
YMM4	0.01	23	0.44	0.50	
YMF2	0.04	24	0.54	0.51	
YWM2	0.04	22	0.23	0.51	
YWM3	0.04	22	0.23	0.51	
TMM2	0.07	24	0.38	0.52	
YWF1	0.09	22	0.32	0.52	
YMM2	0.16	24	0.50	0.54	
TMM1	0.16	24	0.42	0.54	
TMF2	0.22	24	0.71	0.55	
TWM2	0.23	24	0.58	0.56	

YWM4	0.26	22	0.32	0.56	
TWF4	0.30	22	0.86	0.58	
YMF4	0.31	24	0.67	0.58	
YWF3	0.32	21	0.43	0.58	
AWM1	0.38	21	0.48	0.59	Promoters
AWF1	0.42	24	0.96	0.60	
AMF2	0.45	24	0.92	0.61	
TMF1	0.49	24	0.83	0.62	
TWM1	0.50	24	0.71	0.62	Innovators
AMM1	0.51	23	0.44	0.62	
AWM3	0.55	24	0.54	0.63	

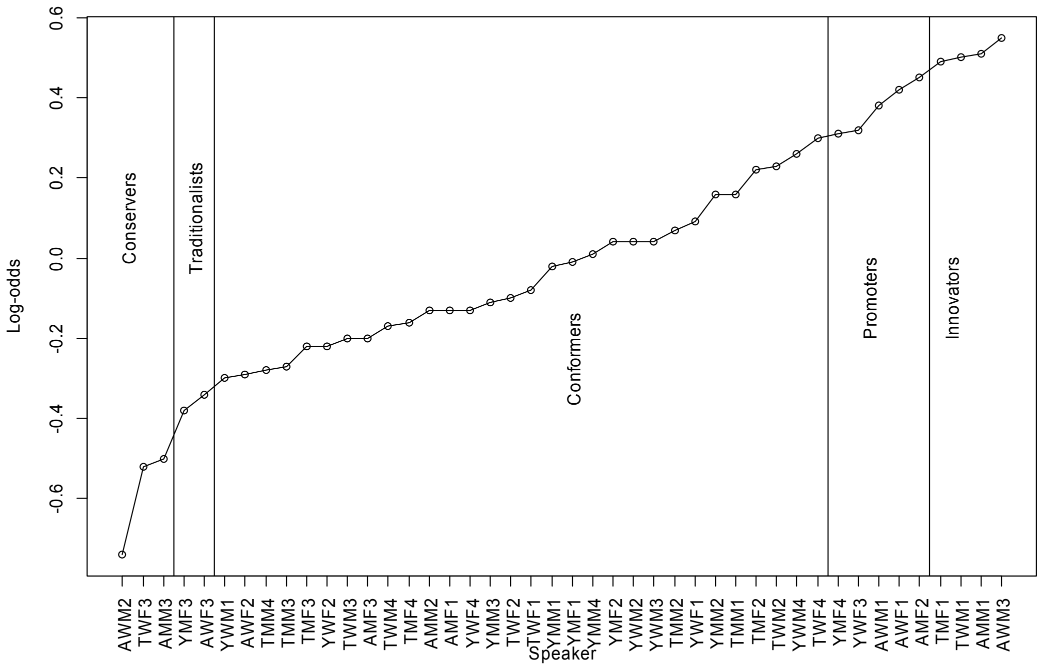

Figure 7.5.10: Innovation plot for (POSTVOCALIC R):[RA] in wordlist style

By-speaker effects are found on the level of 0.44 (0.31) log-odds sd and are presented in Table 7.5.21 and Figure 7.5.10. The pattern very much resembles that of the [RT] variant. There is a relatively strong polarisation of the speakers classified as being conservative from all other speakers. AMM3, who near-categorically used taps, is classified as a conserver for this variant as well. Accordingly, AWF3 also confirms her status as being rather traditionalist in her usage. At the other end of the spectrum we find six of the eight speakers classified as being promoters and innovators for [RT] to be in the same groups for [RA]. Here, we must differentiate between the three MC speakers, for whom the standard variant is likely to be common anyway and the WC speakers who have adopted this feature and seem to be spreading it in their respective networks. Why we find two adult WC males and TWM1 here, all speakers who are relatively conservative otherwise, cannot be answered by the background data available.

For the most innovative variants [Vr~V], the descriptive findings are confirmed (Table 7.5.22). In the wordlists, the innovative variants are still very strongly disfavoured with an intercept of over -2 log-odds. As was suggested before, tokens in which /r/ occurs in the unstressed syllable are much more likely to be vocalised (log-odds: 0.46) than those in stressed position. The second significant fixed factor is age, which shows a strong three-way separation. Adults are almost categorically rhotic and have very strong negative log-odds of -1.97. On the other hand, both teenagers at 0.52 and young speakers at 1.45 log-odds are beginning to adopt [Vr~V].

Table 7.5.22: GLMM results for (POSTVOCALIC R):[Vr~V] in wordlist style

Fixed factors	Log-odds	N	Proportion	Centred factor weight
Stress, $p < .001$				
unstressed	0.46	532	0.25	0.61
stressed	-0.46	480	0.14	0.39
Age, $p < .001$				
young	1.45	364	0.35	0.81
teen	0.52	370	0.19	0.63
adult	-1.97	278	0.02	0.12

Speaker effects: 0.65 (0.45); deviance: 844.19, df: 11, intercept: -2.17, grand mean: 0.20, centred input probability: 0.10

The by-speaker effects (shown here in Table 7.5.23 and Figure 7.5.11) is relatively strong at 0.65 (0.45) log-odds sd. Thus, the individual speaker values are much more extreme than for the other variants. The three conservers (YMF2, YMM3 and TWM4) were all also found to be in the conservers' and traditionalists' groups respectively for [R+] and [RT], so that it is only logical that they show up here. In addition, YMF2 and TWM4 are the only speakers in their age groups who are fully rhotic. For the adults, being rhotic is the norm so that the eight adults that have no [Vr~V] at all are consequently classified as conformers. In the case of the adults, having two vocalised tokens as is the case for AMF2 and AMF3 is enough to group them with the promoters. However, we should not overestimate this effect, since two out of 24 tokens is a relatively small number, although both had a comparatively high number of vocalised forms in the interviews. In comparison, the figures for the teenagers and children are more robust. All three teenagers in the promoters and innovators use about double the amount of [Vr~V], but neither was in these groups for the interview data. For all young speakers in these groups, the innovative variant is also the most common overall.

Table 7.5.23: GLMM results for (POSTVOCALIC R):[Vr~V] – individual by-speaker variation in wordlist style

Speaker	Log-odds	N	Proportion	Centred factor weight	Category
YMF2	-1.28	24	0.00	0.21	Conservers
YMM3	-0.82	21	0.10	0.30	
TWM4	-0.79	22	0.00	0.31	
YMF4	-0.58	24	0.17	0.35	Traditionalists
TWF1	-0.41	24	0.08	0.39	Conformers
TWF2	-0.40	23	0.09	0.40	
TMF1	-0.39	24	0.08	0.40	
TWF4	-0.36	22	0.09	0.41	
YWF3	-0.29	21	0.24	0.42	
TMM2	-0.22	24	0.13	0.44	
YWF1	-0.20	22	0.27	0.45	
YWM4	-0.20	22	0.27	0.45	
YMM2	-0.17	24	0.29	0.45	
AMM3	-0.15	24	0.00	0.46	
AWF1	-0.15	24	0.00	0.46	
AWM3	-0.15	24	0.00	0.46	
AMF1	-0.15	23	0.00	0.46	
AMM1	-0.15	23	0.00	0.46	
AWF3	-0.14	22	0.00	0.46	
AWM2	-0.14	22	0.00	0.46	
AWM1	-0.14	21	0.00	0.46	
YMM4	-0.11	23	0.30	0.47	
TMF2	-0.06	24	0.17	0.48	
TWM1	-0.03	24	0.17	0.49	
TWM2	0.11	24	0.21	0.52	
TMM1	0.14	24	0.21	0.53	
AWF2	0.20	24	0.04	0.54	
TMF4	0.20	22	0.23	0.55	
AMM2	0.21	23	0.04	0.55	
TMM4	0.23	22	0.23	0.55	
YMF1	0.25	31	0.42	0.56	
YMM1	0.30	21	0.43	0.57	
YWM2	0.36	22	0.46	0.58	
TMM3	0.37	22	0.27	0.59	

YWF2	0.43	21	0.48	0.60	
AMF2	0.53	24	0.08	0.63	
AMF3	0.53	24	0.08	0.63	
YMF3	0.55	23	0.52	0.63	
YWF4	0.63	22	0.55	0.65	Promoters
YWM3	0.63	22	0.55	0.65	
TMF3	0.65	23	0.35	0.65	
TWM3	0.65	23	0.35	0.65	
YWM1	0.71	21	0.57	0.67	Innovators
TWF3	0.79	23	0.39	0.68	

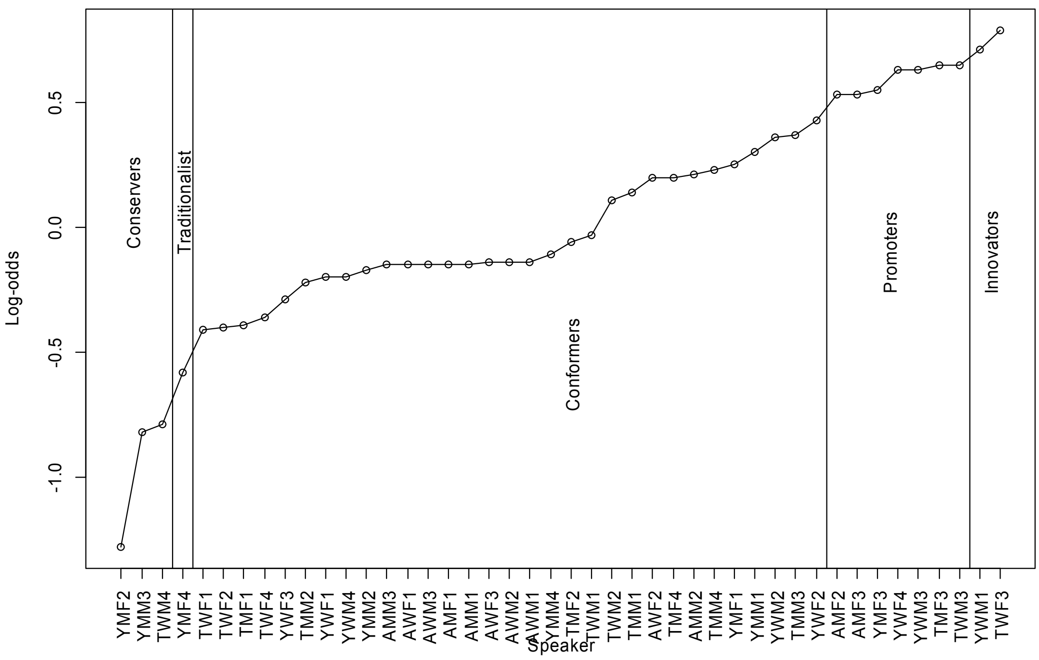

Figure 7.5.11: Innovation plot for (POSTVOCALIC R):[Vr~V] in wordlist style

7.5.4 Discussion

The previous sections have shown that the status of postvocalic /r/ is currently changing in Aberdeen. As elsewhere in Scotland, trills are now extremely rare. There were only two tokens by two adult males in the interviews and another five by a single WC adult male in the wordlists. All other variants are variably strong depending on a range of stylistic, internal and social factors. In addition, there is considerable variation on the level of the individual, with no speaker using fewer than three variants.

Summing up the findings discussed above, we find that the most traditional variant, [RT], is mainly found in adult males, although it has some wider distribution in the wordlists. This, I think, indicates that this variant is losing ground quite rapidly in the speech of the younger generations of Aberdonians and will over time be gradually lost or reallocated to particular phonological contexts, such as word-finally before a vowel, in which at present it has the widest currency. The supraregional SSE variant, [RA], is overall most common in both the interviews and the wordlists irrespective of social class. What is particularly surprising is the fact that is so widespread in the WC teens, but not in any of the groups of young speakers. This is very unlike the situation in Glasgow, where approximants are very rare in the WC teens and taps and vocalised forms are much more common (Stuart-Smith 2003: 128, Table 6.3). This indicates that polarisation of Urban Scots and SSE is much stronger in Glasgow than it is in Aberdeen. This is not unexpected since Glasgow did not see the amount of immigration leading to the breaking up of the traditional speech patterns as Aberdeen did. Another major difference, perhaps similar to what was attested for the [w] variant of /ʍ/ (see section 7.3), is that vocalised ([Vr] and [V]) forms are particularly strong in the MC teenagers and children, who are leading in the adoption of these innovative variants. Again, one possible explanation may be found in the regular and constant contact with non-rhotic speakers, but this cannot be verified using the current data set.

The very different distributions of variants in Aberdeen and Glasgow and Edinburgh suggest that the processes affecting postvocalic /r/ in the Central Belt and the North-East are not immediately related. In the south, vocalised forms are predominantly by Urban Scots speakers as another feature to dissociate themselves from the MC. They were first found by Romaine (1978) in the speech of WC children in Edinburgh at about the time of the large immigration wave into Aberdeen. There is no indication that at that time there were any tendencies towards vocalised forms in the varieties of the North-East. Despite the lack of data from the city itself, it is safe to assume that in Aberdeen variants other than articulated forms of /r/ (possibly with the rare exceptions mentioned by Grant 1914: 35) had any currency. Rather, there would have been the type of free variation described by Wölck (1965: 29) for Buchan, perhaps with some social stratification by class and gender. That [R+] was still the standard variant for all of the adult speakers in my sample can be seen by the near-categorical use of articulated variants in this age group in the wordlist data. Also, it is highly unlikely that it was introduced by Central Belt migrants who came in the 1970s. By far the majority of these migrants were adult speakers, for whom [R-] was not attested. So even if some speakers who were already using vocalised forms of some kind migrated to Aberdeen, the influence on their peers would have been negligible because of [R-] being such a clearly marked minority variant. Also, other non-rhotic migrants, such as those from England, are unlikely to have had a major impact in the original dialect mixing because of their small number.

We should treat it rather as a more recent development, spreading from the south as suggested by Johnston (1997b: 511) and Millar (2007: 63). In Aberdeen, this change is still in progress, but relatively advanced in comparison to the rural North-Eastern varieties. For this we need to once more look at Marshall's (2004: 136–139) data from Huntly, which provides a good reference point. He (2004: 137) explicitly states that all his speakers are "rhotic, with the variants of /r/ being [r][39] and [ɹ]." Approximants are (near)-consistently found in the speech of his two younger female groups and very frequently in the boys of that age. He suggests that this is a weakening process that ultimately results in the loss of rhoticity in postvocalic position, which is exactly what I find in my data. However, my findings show that the change is already much more advanced in Aberdeen. Trills are virtually absent, taps are old-fashioned, approximants are the norm and younger speakers are promoting the change towards vocalised forms. So whereas Marshall (2004: 137) suggests weakening pattern (1), my data shows that pattern (2) is more accurate in the North-Eastern context:

(1) Trill → Approximant → loss in preconsonantal position

(2) (Trill) → Tap → Approximant → vowel with secondary articulation → pure vowel.

[39] This is somewhat misleading. In the outline of variables chosen for his study he writes: "Full rhoticity with a trilled or tapped realisation. In the Doric, /r/ is realised in all positions, either as [r] or [ɾ]" Marshall (2004: 104). In his discussion (137), he does not mention [ɾ] and states that "[t]he trill has been regarded as the dialect variant for this study." I can therefore only assume that this also incorporates tapped variants.

7.6 (TH)

(TH) covers all instances of the voiceless dental fricative /θ/, as in the words *through, something* or *tooth.* This variable is particularly interesting since there is no indication of systematic variation in Aberdeen in previous comments on the variety, but today two nonstandard forms ([h] and [f]) are found as minority variants in my sample. Furthermore, the two innovative forms index two potentially very different associations.

7.6.1 Background

In our discussion of the variable (TH) we need to look at two processes that are most likely to have come to Aberdeen by various means and at very different times. The standard variant [θ] is the only variant attested in Aberdeen and the North-East in the literature so far, but two innovative forms are slowly making inroads into Aberdonian. [h] is a traditional variant that occurs in a restricted set of words in many Scots dialects, e.g. *think, nothing,* particularly the Central Belt and Southern varieties. It is variably, but increasingly attested for Perthshire, but "a little rarer in Northern Scots" (Johnston 1997b: 507). It is mentioned by Nehls (1937: 64) as a possible variant for one speaker, though.[40]

The other is TH-fronting, which refers to the realisation of /θ/ as a labiodental [f]. A traditional feature of the working-class accents of the English South-East, it has spread northwards quite rapidly over the last four decades (Kerswill 2003). In Scotland, it has probably been in use systematically in younger working-class Glaswegians born since the early 1980s, but Macafee (1994: 29) notes that it occurs sporadically before that. Recent research in the Central Belt (for Glasgow cf. Brato 2004: 33–42; Stuart-Smith & Timmins 2006; Stuart-Smith et al. 2007: 234–236, for Livingston cf. Robinson 2005: 188–190) shows strong correlations of age and social class as well as context. [f] occurs frequently in words that are not 'blocked' by the [h] variant, e.g. in *both* or *thousand* in Urban Scots. Also, a recent ethnographic study of WC boys in Glasgow (Lawson 2009) confirms the overall high usage of

[40] This speaker left Aberdeen at the age of 17 and spent an unspecified amount of time in India and following that in Coatbridge, just outside Glasgow. We therefore cannot be sure where he picked up this variant. The fact that he is the only speaker who has it, would suggest that it was not a common feature of North-Eastern Scots at that time.

both non-standard variants, but points to a clear pattern based on membership of different communities of practice. Lynn Clark (2011, personal communication) reports informally that it is also gaining ground in Edinburgh and Dundee and her ethnographic study in Fife (Clark & Trousdale 2009) shows that it is now also diffusing to the more rural areas of Scotland. It is explicitly mentioned as not having diffused to the rural North-Eastern varieties of Buckie and Huntly in Kerswill (2003: 236) as of the early 2000s.

Johnston (1997b: 507) mentions a fronted variant [f] in a small set of words like *Thursday* going back as far as the 16th century in North Northern and Insular Scots. I would assume that this process has thus not affected Aberdeen, which forms part of the Mid-Northern varieties, though. Furthermore, in the initial cluster /θr/, in e.g. *three*, the Scots realisation can be [ɹ̥] (Wells 1982: 410; Macafee 1983a: 33).

7.6.2 Methodology

A total of 2256 tokens were analysed, 1147 in the wordlist and the remainder in the interviews. Six variants were identified:

1. [θ], a voiceless dental fricative
2. [h], a voiceless glottal fricative
3. [f], a voiceless labiodental fricative
4. [t], a voiceless alveolar or dental plosive
5. [θ/f], a category that covers tokens that – at least auditorily – could not be clearly identified as either dental [θ] or labiodental [f] (cf. Stuart-Smith et al. 2007: 234 who mention labialised dental fricatives as an example of such a pronunciation).
6. [M] – for Miscellaneous –, a small number of tokens that had voiced dental fricative [ð] or plosive [d] and some forms of voiced glottal fricatives [ɦ] and complete elisions

The interview data was separated according to the following eight phonetic environments, since it was expected that a three-way distinction (word-initial, word-internal, word-final) such as that outlined in Stuart-Smith & Timmins (2006: 174) would miss important factors:

1. word-initially, following a pause, e.g, *#three, #thirty, #thanks,* labelled *word-initial pp*

2. word-initially, following a consonant, e.g. *Majesty's theatre, going through, were three,* labelled *word-initial pc*
3. word-initially, following a vowel, e.g. *family thing, I thought, halfway through*, labelled *word-initial pv*
4. word-internally following a consonant, e.g. *anthem, months, birthday*, labelled *word-internal pc*
5. word-internally following a vowel, e.g. *method, goths, Jonathan*, labelled *word-internal pv*
6. word-finally preceding a pause, e.g. *Kincorth#, eleventh#, mouth#*, labelled *word-final pp*
7. word-finally preceding a consonant, e.g. f*ourth year, teeth get, earth guy*, labelled *word-final pc*
8. word-finally preceding a vowel, e.g. *Kincorth Academy, goth is, both of*, labelled *word-final pv*

The wordlist data was separated according to four environments (1, 4, 5, 6 from the interview data). For the statistical analysis the three word-final contexts in the interview data were later regrouped as *word-final* because there were too few tokens in the pre-pausal and pre-vocalic positions. The same is true for the word-initial post-pausal context, which was joined with post-consonantal context.

GLMMs were fitted separately for interview and wordlist style. A full model (Speaker as a random factor and the following items fixed factors: Context, Age, Social class, Gender, Age:Social class, Age:Gender, Social class:Gender, Father's birthplace, Mother's birthplace and rating of one's own speech) was fitted for the [θ] variant in both styles. Because of the small number of tokens of both [f] and [h] in the interviews (47 and 92 respectively), no statistical models were run for these variants. In the wordlists there were enough (121) [f] tokens to at least run a reduced model, excluding all adult speakers since they do not use [f] at all as well as the two-way interactions of age, social class and gender. This was necessary because otherwise the categories would have been too small to be analysed meaningfully.

7.6.3 Findings

The overall distribution of the realisations of the variable (TH) in this sample is presented in Table 7.6.1. The vast majority of tokens (77.9% in the interviews and 82% in the wordlists) representing the standard variant. As regards TH-fronting, it seems that this innovation – unlike in Glasgow and other Scottish cities – is only slowly making inroads into the city accent. It is very rare in the interviews at only 4.2%, but accounts for more than a tenth of tokens in the wordlist data already. One explanation is the stylistic restriction of [h], which usually only occurs in the conversations. There were two possible sites, *think* and *anything*, in the wordlist, but [h] only occurred one single time. This restriction does not hold for [f] (for the same process in Glasgow cf. Stuart-Smith et al. 2007: 236). Also, the overall figure for [h] is relatively small because it is restricted to just a handful of words in which it can occur. I will discuss the patterns in greater detail below. The in-between form [θ/f], which could not be assigned to either category directly, is also as of now relatively infrequent, but may point to a change towards more fronted realisations in the future. Stopped variants are found only infrequently and in some speakers without any clear pattern. The [M] category covers a range of variants; the vast majority (49 of 94) are elided forms, particularly in the word *something*, which in Scots is often pronounced [sʌmn~sʌmən] and in *with*, which is a Scots feature, but could also be due to unstressing. The other variants are mainly intermediate forms, such as [∅/f] in the word *Northfield* and voiced [ð].

Table 7.6.1: Descriptive statistics for all tokens of (TH) separated by style (in %)

Style	N	[TH]	[f]	[h]	[TH/f]	[t]	[M]
interview	1109	77.9	4.2	8.3	1.9	1.7	6.0
wordlist	1147	82.0	10.5	0.1	3.9	1.0	2.5

7.6.3.1 Interview style

As has been mentioned above, forms other than [θ] are only slowly encroaching on Aberdonian, but where other variants do occur they follow the patterns described for the Central Belt varieties. Overall, the frequency of [f] in Aberdeen is still relatively low compared to Glasgow. In their 1997 dataset Stuart-Smith & Timmins (2006: 172) find it in about 33% of all the tokens in female working-class adolescents and in about 22% in their male counterparts. It is attested neither in older working-class speakers nor in either of the middle-class groups. In their 2003 data

Table 7.6.2: Descriptive statistics for all tokens of (TH) separated by context in interview style (in %)

Context	N	[TH]	[f]	[h]	[TH/f]	[t]	[M]
word-initial pp	13	92.3	0.0	7.7	0.0	0.0	0.0
word-initial pc	290	86.2	3.8	3.1	1.0	2.4	3.4
word-initial pv	287	84.7	2.1	9.1	1.0	1.0	2.1
word-internal pc	116	60.3	2.6	12.1	0.9	3.4	20.7
word-internal pv	174	68.4	2.3	24.1	1.7	1.1	2.3
word-final pp	36	80.6	11.1	0.0	2.8	0.0	5.6
word-final pc	135	71.9	11.1	0.0	5.2	1.5	10.4
word-final pv	58	75.9	6.9	0.0	5.2	1.7	10.3

(Stuart-Smith & Timmins 2006: 173), which only focuses on working-class children aged 10/11, 12/13 and 14/15, they find a real-time increase in the use of [f] and conclude that this is at the expense of the standard variant, but not [h]. In Aberdeen, it accounts for only 4.2% of all interview tokens.

The variant [h], widespread in the urban Scots of the Central Belt, is not a traditional variant in the North East and was probably brought to Aberdeen by the migrants in the 1970s and 1980s. Strongly stigmatised and restricted to a handful of words it is very likely to have been levelled away quite quickly in the initial stages of dialect contact, but the picture is not so simple. Table 7.6.2 shows variation by context. The dental variant is clearly prevailing word-initially and word-finally and is the majority variant in all contexts. The current distribution for [h] suggests that it is only a minority variant in Aberdeen in all respects. But even in the conversations, in none of the words which allow [h] does it occur as a majority variant (Table 7.6.3) and is furthermore mainly restricted to word-internal intervocalic positions and the sequence *I think*. Yet, in words in which it can occur, it

Table 7.6.3: Distribution of main variants of (TH) in possible environments for [h] in interview style (in %)

Word/Variant (in%)	N	[θ]	N	[f]	N	[h]
anything	28	66.7		0.0	13	31.0
everything	31	54.4	1	1.8	23	40.4
everything's	1	100.0		0.0		0.0
nothing	17	73.9	1	4.3	5	21.7
rethink	1	100.0		0.0		0.0
thing	83	95.4		0.0		0.0
things	79	88.8		0.0	2	2.2
thingy	2	100.0		0.0		0.0
think	174	79.1	3	1.4	31	14.1
thinking	6	60.0	1	10.0	2	20.0
thinks	6	75.0	2	25.0		0.0

Table 7.6.4: Descriptive statistics for all tokens of (TH) separated by age in interview style (in %)

Age group	N	[TH]	[f]	[h]	[TH/f]	[t]	[M]
adult	320	83.1	0.0	8.4	0.3	1.6	6.6
teen	404	72.8	3.7	13.6	2.2	0.5	7.2
young	385	79.0	8.3	2.6	2.9	3.1	4.2

blocks [f] quite effectively. This is supported by the fact that the labiodental variant at present mainly occurs word-finally. In the 33 words that have word-initial /θ/ in the interview data, there are only 17 [f] tokens overall and these occur in only nine words. Five tokens alone are found for *three*.

Of the social factors, age (Table 7.6.4) is once more a very good indicator of an apparent-time change in progress. Adult speakers completely avoid labiodentals, but even the teenage speakers, despite having the lowest amount of [θ], have not yet picked up [f] to any greater extent (3.7%). It is actually the youngest speakers who are leading the change towards fronting. This resembles the pattern described by Stuart-Smith & Timmins (2006: 173) for Glasgow, but we need to bear in mind that only values for WC speakers were reported there. The results Robinson (2005: 188–190) presents for Livingston are different from the Aberdeen pattern in that in Livingston it is the teenagers who front the most.

Quite the opposite pattern is found for [h]. This variant accounts for 8.4% in the adult data and 13.6% in the teenagers, but is virtually absent from the youngest speaker groups, where it occurs in only 10 of 385 tokens. This pattern is very different from the Glasgow data, in which [h] is fairly evenly distributed across all age groups and both genders in WC children and teenagers (Stuart-Smith & Timmins 2006: 173). For Livingston, Robinson (2005: 188–190) reports far more 'traditional'[41] variants in the 15 year-olds than in the 11 year-olds with an additional gender effect, with boys using them much more frequently than girls. [f] could be an immature form that – possibly due to a greater tolerance on behalf of parents and/or teachers – has not been corrected in the way that this used to happen. Since

Table 7.6.5: Descriptive statistics for all tokens of (TH) separated by social class in interview style (in %)

Social class	N	[TH]	[f]	[h]	[TH/f]	[t]	[M]
middle-class	589	83.0	1.7	5.4	1.2	2.7	5.9
working-class	520	72.1	7.1	11.5	2.7	0.6	6.0

[41] This subsumes [h], partially glottalised and zero variants.

Table 7.6.6: Descriptive statistics for all tokens of (TH) separated by social class in interview style (in %)

Gender	N	[TH]	[f]	[h]	[TH/f]	[t]	[M]
female	595	80.0	3.4	6.6	1.8	2.4	5.9
male	514	75.5	5.3	10.3	1.9	1.0	6.0

fronting is not a feature of any of the main dialects spoken by the migrants who came to Aberdeen in the 1970s and 1980s (perhaps with the exception of speakers from the English South-East, but these would have been predominantly MC), it is certainly a much more recent phenomenon. It may have spread from Glasgow over the past few years, but in that case we would also rather expect teenagers to have picked it up, just as they did for [h]. We will return to this in the discussion below.

The results for social class (Table 7.6.5) confirm the assumption that both [f] and [h] are variants that tend to be associated with WC speakers. Fronting occurs in less than 2% of the MC speakers, but accounts for 7.1% in their WC counterparts. A similar, though not quite such an extreme, result is found for [h]. Here, WC speakers are about twice as likely to use this variant overall.

The effects of gender are less pronounced (Table 7.6.6), but we note that the nonstandard forms are slightly more common in males. In Table 7.6.7, which shows the distribution according to the interaction of age group and social class, we see that [θ]-loss is most advanced in the WC teenagers, whereas the other groups are roughly equal in their distribution. Fronted variants are not found at all in the adult speakers, but also are completely absent from the MC teens. The picture for the MC children is seriously skewed, though. Of the ten [f] tokens, eight belong to a single speaker (YMF4), which just confirms that it is clearly a WC phenomenon. But again, the distribution is far from uniform. Only five of the sixteen WC speakers have

Table 7.6.7: Descriptive statistics for all tokens of (TH) separated by the interaction of age and social class in interview style (in %)

Age group: Social class	N	[TH]	[f]	[h]	[TH/f]	[t]	[M]
adult:middle-class	156	83.3	0.0	9.6	0.0	1.3	5.8
adult:working-class	164	82.9	0.0	7.3	0.6	1.8	7.3
teen:middle-class	215	83.7	0.0	7.0	1.4	0.9	7.0
teen:working-class	189	60.3	7.9	21.2	3.2	0.0	7.4
young:middle-class	218	82.1	4.6	0.9	1.8	5.5	5.0
young:working-class	167	74.9	13.2	4.8	4.2	0.0	3.0

some [f] tokens and only two speakers use it to any great extent. The glottal variant shows a wider spread and is attested in over half of all the speakers. It is most widespread in the WC teenagers where it accounts for over a fifth of all tokens. It is completely absent from the WC adult females and virtually not found in the young MC groups. We note that it is once more AWM1, who is a very ‘keen’ user of the Glasgow variant, with 32% of his tokens being [h].

The effects of rating one’s own speech are only minimal and while there is some variation as regards parents’ birthplaces, this can be tracked down to individual speakers.

A GLMM could only be run for [θ], the results of which are presented in Table 7.6.8 for the fixed factors. This variant is extremely strongly favoured, with an intercept of 2.25 log-odds. Two factors contribute significantly, phonological context ($p < .001$) and mother’s birthplace ($p < .05$), but not – as one might expect – the more general social factors or interactions of age and social class. Therefore, the by-speaker effects are relatively strong at 0.94 (0.79) log-odds sd.

When /θ/ occurs word-initially there are intermediate positive effects. Small positive effects of 0.31 log-odds are found for the word-final prevocalic position and with minimal negative effects in the two other word-final positions, in which [f] is currently making inroads. Both word-internal contexts decrease the likelihood of [θ], in which [h] is most likely to occur. The strong effect for the post-

Table 7.6.8: GLMM results for (TH):[θ] in interview style

Fixed factors	Log-odds	N	Proportion	Centred factor weight
Context, $p < .001$				
word-initial pc/pp	0.76	303	0.87	0.68
word-initial pv	0.55	287	0.85	0.63
word-final pv	0.31	58	0.76	0.58
word-final pc/pp	-0.15	171	0.74	0.46
word-internal pv	-0.41	174	0.68	0.40
word-internal pc	-1.06	116	0.60	0.26
Mother’s birthplace, $p < .05$				
England	0.88	54	0.93	0.71
Scotland	0.19	128	0.90	0.55
North-East	-1.07	927	0.75	0.26

Speaker effects: 0.94 (0.79); deviance: 1019.20, df: 9, intercept: 2.25, grand mean: 0.78, centred input probability: 0.91

consonantal context is not so much due to one of the innovative variants gaining ground, but rather because of the large number of [M] variants, which is mostly due to the elision and/or replacement of [θ] by other sounds in the word *something*. While there is significant variation according to the birthplace of the speaker's mother, we need to be careful with our interpretation. Having an English-born mother has a strong positive effect on the realisation as a dental, but only two speakers in the sample fall into this group. Incidentally, they are both MC teenagers and thus belong to the group which is overall most conservative anyway. What is confusing and cannot be explained on the basis of the results for these factors, is that TMF1, who falls into this group together with TMM2, is still in the promoters group for the individual log-odds. Speakers with a mother born elsewhere in Scotland slightly favour [θ] as well. The other speakers are considerably less likely to use a dental with strong negative log-odds of -1.07. However, this still means that by and large it is strongly preferred.

Table 7.6.9: GLMM results for (TH):[θ] – individual by-speaker variation in interview style

Speaker	Log-odds	N	Proportion	Centred factor weight	Category
AMF3	1.40	26	1.00	0.81	Conserver
YWF2	1.03	25	0.92	0.75	Traditionalists
AWF3	1.02	26	0.96	0.74	
YWM1	0.91	19	0.95	0.72	
TMM1	0.88	30	0.90	0.72	
YMM1	0.87	26	1.00	0.71	
YMF3	0.77	22	0.91	0.69	Conformers
AMF2	0.68	25	0.92	0.67	
YWF4	0.66	25	0.92	0.67	
TMM2	0.66	25	1.00	0.67	
TWM3	0.48	21	0.86	0.63	
YWF3	0.48	20	0.90	0.63	
TMF4	0.46	25	0.84	0.62	
YMM2	0.45	24	0.88	0.62	
AWF2	0.43	36	0.89	0.62	
TWF1	0.31	25	0.84	0.59	
AWF1	0.24	28	0.79	0.57	
TMF2	0.22	29	0.79	0.57	
AMM3	0.18	27	0.85	0.56	
AWM2	0.18	25	0.80	0.56	
YMM3	0.16	26	0.92	0.55	
YMF2	0.14	26	0.85	0.55	
TWM4	0.06	21	0.81	0.53	

AWM3	-0.01	24	0.83	0.51	
YMM4	-0.07	25	0.92	0.49	
AMF1	-0.07	26	0.89	0.49	
TMF3	-0.08	26	0.81	0.49	
TWF2	-0.09	26	0.77	0.49	
TMM4	-0.29	26	0.73	0.44	
YWM3	-0.37	15	0.67	0.42	
TWF4	-0.40	26	0.65	0.41	
AMM1	-0.43	31	0.68	0.41	
AWM1	-0.43	25	0.68	0.41	
AMM2	-0.53	21	0.67	0.38	
YWF1	-0.61	25	0.64	0.36	
YMF1	-0.61	39	0.67	0.36	
TMF1	-0.82	29	0.86	0.32	
YMF4	-0.91	30	0.57	0.30	Promoters
YWM4	-1.09	13	0.46	0.26	
TWF3	-1.24	30	0.40	0.23	
TMM3	-1.26	25	0.76	0.23	
YWM2	-1.49	25	0.44	0.19	Innovators
TWM2	-1.81	13	0.15	0.15	
TWM1	-2.06	27	0.26	0.12	

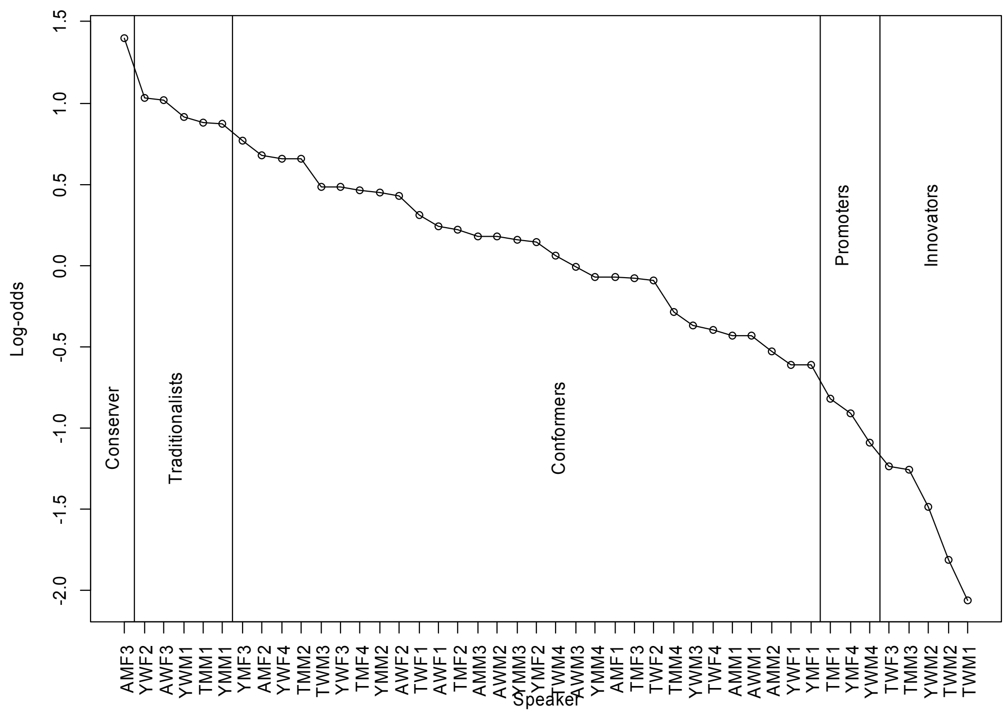

Figure 7.6.1: Innovation plot for (TH):[θ] in interview style

Turning to the by-speaker effects (Table 7.6.9 and Figure 7.6.1), we first note how large the difference is between the more extreme positions of the continuum. AMF3 is one of only three speakers in the sample (together with YMM1 and TMM2) who uses the standard variant unanimously. With very strong positive log-odds of 1.4 she is the only conserver.

At the other end we find two WC teenage males (TWM2 and TWM1). They both have very high negative log-odds of over -1.8 and use the dental fricative in only 15% and 26% respectively of their tokens. This sets them apart very clearly even from the rest of the innovators group and their values in the range of -1.24 to -1.49.

Table 7.6.10: Number of tokens of variants (TH) separated by word for TWM1 and TWM2 in interview style (raw values)

Speaker	TWM1					TWM2			
Variant	**[TH]**	**[f]**	**[h]**	**[TH/f]**	**[M]**	**[TH]**	**[f]**	**[h]**	**[M]**
anything			2					3	
earth	1								
everything			3		1			2	
goth		1							
goths	1	1		1		2			
Keith		1							
Kincorth	1			1					
month		1					1		
nothing							1		
things	1								
think	2	2						1	
thinking		1	2						
thinks		2							
through	1								
with					1				3

Their [θ]-avoiding strategies are quite different as can be seen in Table 7.6.10, which shows the distribution of the variants of (TH) for the two speakers. Unfortunately, TWM2 produced only very few words with this variable, so that the interpretation must not be overrated[42]. What both have in common is the usage of the [h] variant in the words *anything* and *everything*, so they are in the context that highly favours this variant in traditional Scots. However, in *nothing* TWM2 produces a labiodental. TWM1 has adopted [f] variably in word-final position (with the exception of *with*, in which the final sound is usually elided in Scots). What is more interesting, though, is the variability in this speaker in those words (*things, think,*

[42] Mixed-effects models are very helpful in dealing with unbalanced data (cf. Johnson (2009: 378)), in this case it is not only the small number of tokens (13), but also there are only seven different words of which four favour [h] variants. Furthermore, there are three tokens of *with* realised with an elision.

thinking, thinks) which are potential [h] words. Only in *thinking* does he use the glottal, but he also has [f] in one token. In *things* he uses the standard variant, whereas *thinks* is labiodental and *think* has both the standard and innovative non-Scottish form. The variability in this speaker is interesting in its own right and quite possibly captures the introduction of the new forms into the speech of younger WC Aberdonians. We found that [h] is much stronger word-internally in those words in which it is allowed than word-initially as in the sequence *I think*. It seems that [f] is rather taking over in this context, but at present still only variably. This clearly marks him as the innovator, at least in his peer group. Again we can speculate where it comes from. He has contacts beyond Aberdeen through his football associations, but that is rather restricted to the more rural areas, which are highly unlikely to have had an influence that would support [f] use.

The third innovator is YWM2, who also has the highest usage of the fronted variant. A problematic case is TMM3, who is grouped with the innovators because of his relatively low [θ] usage of 76%, which, however, is only 1.9 percentage points below the general mean and is due to his having a Scottish mother, a factor which in general slightly favours the standard variant. He has no [f] and only two tokens of [h], but he has elided the initial consonant completely in two of his *think* tokens. I am hesitant to group him with the innovators on the basis of his relatively low usage of the innovative forms. Since no by-speaker model could be run for either [f] or [h] – which would certainly classify him as innovative or promoting – I think it would be better to classify this speaker as a conformer. The final speaker in the innovators group is TWF3, the only female. She avoids [θ] and has a relatively high usage of glottal variants (33.3%), almost exclusively in word-internal position. Her four tokens of [f] follow the pattern described in other studies mentioned above with three tokens in word-final position and the other actually being used in *everything*, which otherwise is unanimously [h].

Three speakers fall into the promoters group. I mentioned the difficulty of classification for TMF1 above. YMF4 has a really high usage of [f] tokens and is the only MC speaker who uses it to any great extent. She has an English-born father, but he comes from Sunderland, traditionally not an area in which TH-fronting is common, particularly not in MC speakers. YWM4 avoids the standard variant and has fronted, glottal as intermediate [θ/f] realisation, but again there are only relatively few tokens for this speaker. The pattern is as expected though. [h] occurs word-internally, [f] word-finally and the standard and intermediate variant is used in initial position.

This leaves us with the traditionalists and conformers groups, of which the latter – because of the overall great homogeneity in this variable – is only of marginal interest. The former is characterised by the speakers using [θ] (almost) categorically. With the exception of YMM1 all the speakers in this group have North-Eastern mothers, which overall decreases the likelihood of the standard variant. YMM1 has parents born in England and Scotland respectively, but uses the dental fricative in all his tokens.

7.6.3.2 Wordlist style

We have seen in Table 7.6.1 above that while there are overall more [θ] realisations in the wordlist data than in the interviews, this is very much due to the absence of [h] in the wordlist style. Fronted and intermediate [θ/f] variants on the other hand are much more likely here. Again, we first turn to the distribution of variants by context (Table 7.6.11.[43]) [θ] is the clear majority variant in all phonological contexts, but [f] is found in all positions and the relatively high proportion of intermediate variants indicates a possible change towards even more fronted variants. This trend is strongest word-finally, with the word *south* being pronounced with a labiodental in a quarter of all realisations.

Of the social factors, we once more note the very strong age effect (Table 7.6.12). Adults avoid fronted and intermediate variants utterly, whereas the two younger age groups have clearly adopted [f]. It accounts for over 16% in the teenagers and 13.4% in the children. Also the [θ/f] variant is quite strong, more so in the teenagers than in the children. Again we must ask if this could be due to 'imper-

Table 7.6.11: Descriptive statistics for all tokens of (TH) separated by context in wordlist style (in %)

Context	N	[TH]	[f]	[TH/f]	[t]	[M]
word-initial	345	83.2	11.0	3.2	0.0	2.3
word-internal pc	262	86.6	7.6	1.1	0.8	3.8
word-internal pv	196	79.6	10.7	5.1	2.6	2.0
word-final	344	78.5	12.2	6.1	1.2	2.0

[43] Since there is only a single [h] token in the wordlist data, it will not be reported in the tables.

Table 7.6.12: Descriptive statistics for all tokens of (TH) separated by age in wordlist style (in %)

Age	N	[TH]	[f]	[TH/f]	[t]	[M]
adult	326	98.8	0.0	0.0	0.6	0.6
teen	424	74.5	16.0	6.4	0.2	2.8
young	397	76.1	13.4	4.5	2.0	3.8

fect' language acquisition, but as we shall see below in the discussion of the speaker effects, this does not seem to be the case. Of the 16 children, eight have some [f] realisations, but six of these eight account for only 16 tokens and are otherwise mostly [θ] users. The other two account for 37 tokens, and both of them were in the promoters and innovators group for [θ]-loss in the interviews. There is some variation as regards social class; fronted tokens at over 16% are more than three times more frequent than in the MC speakers.

Table 7.6.13: Descriptive statistics for all tokens of (TH) separated by gender in wordlist style (in %)

Gender	N	[TH]	[f]	[TH/f]	[t]	[M]
female	569	89.6	3.5	3.3	1.6	1.8
male	578	74.4	17.5	4.5	0.3	3.3

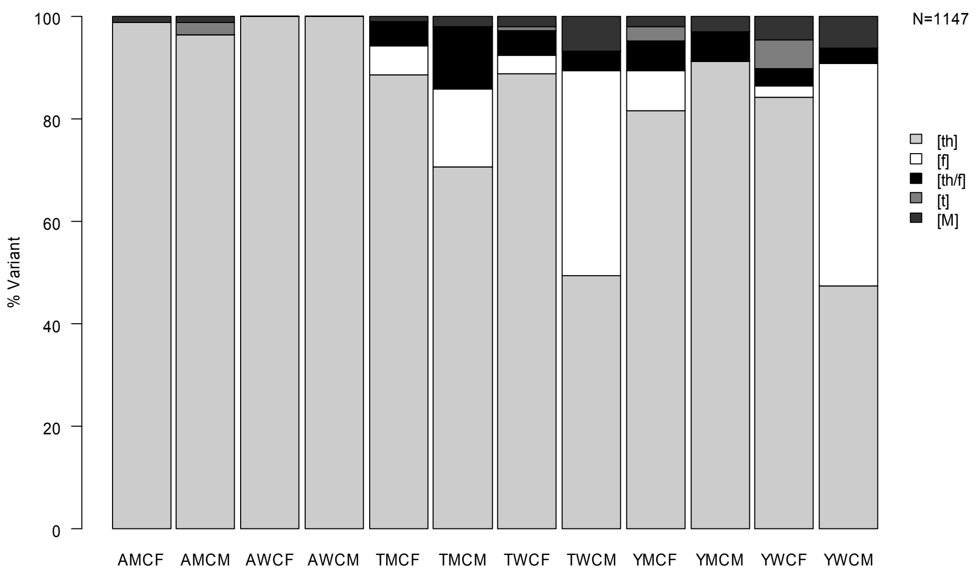

Figure 7.6.2: Distribution of variants of (TH) by the interaction of age, social class and gender in wordlist style

More striking is the clear gender difference, which is relatively rare in this study (Table 7.6.13). Females use the standard in nearly nine out of ten cases and

[f] accounts for 3.5%, about as much as the intermediate variants. Male speakers have adopted the fronted variant much more quickly. [f] accounts for over 17% and [θ/f] is found in 4.5%. This is a change towards a highly stigmatised and socially and unattractive variant, so we expect to find both working-class speakers and males to be leading this development. This is also supported by Figure 7.6.2, which shows the distribution of variants for the three-way interaction of age, social class and gender. It shows the WC boys' clear preference for fronting and once more confirms the conservatism in the MC young boys, who again have none of the innovative variants. What is more striking is the near-absence of fronting in the WC girls. The other social factors vary only relatively slightly, so that we can turn to the results of the GLMM models for [θ] and [f].

As Table 7.6.14 clearly shows, the standard variant is extremely highly favoured with an intercept of 2.66. Three factors contribute significantly here, of which age group ($p < .001$) is the most significant followed by gender and phonological context, which are both significant at the .01 level. There is a strong additional by-speaker effect of 1.12 (0.88) log-odds sd. As would be expected from the descriptive results, there is an extremely strong positive effect for adults and almost equally high strong negative effects for the other two age groups. The effects for gender are smaller, yet there is an intermediate-sized effect with males producing considerably fewer standard forms than the females. Despite its relative homogene-

Table 7.6.14: GLMM results for (TH):[θ] in wordlist style

Fixed factors	Log-odds	N	Proportion	Centred factor weight
Age, *p* < .001				
adult	2.48	326	0.99	0.92
young	-1.19	397	0.76	0.23
teen	-1.29	424	0.75	0.22
Gender, *p* < .01				
female	0.59	569	0.90	0.64
male	-0.59	578	0.74	0.36
Context, *p* < .01				
word-internal pc	0.45	262	0.87	0.61
word-initial	0.12	345	0.83	0.53
word-internal pv	-0.15	196	0.80	0.46
word-final	-0.42	344	0.79	0.40

Speaker effects: 1.12 (0.88); deviance: 796.67, df: 8, intercept: 2.66, grand mean: 0.82, centred input probability: 0.94

ity, there are significant differences in context. If /θ/ occurs word-internally after a consonant and word-initially [θ] is favoured. On the other hand, word-internal postvocalic and word-final contexts promote fronting.

The by-speaker effects for the standard variant are shown in Table 7.6.15 and the corresponding innovation plot (Figure 7.6.3). Three of the four young MC boys make up the conserver and traditionalists groups. Particularly YMM2, with individual log-odds of 1.92 and 100% [θ] usage, is very conservative, but on the basis of the values and the distribution in the plot we could also group YMM4 (log-odds: 1.2) into this category and YMM1 rather with the conformers, so that the traditionalists group would be left vacant.

Table 7.6.15: GLMM results for (TH):[θ] – individual by-speaker variation in wordlist style

Speaker	Log-odds	N	Proportion	Centred factor weight	Category
YMM2	1.92	26	1.00	0.88	Conserver
YMM4	1.20	26	0.92	0.78	Traditionalists
YMM1	0.89	25	0.88	0.72	
YWM1	0.82	23	0.87	0.71	Conformers
TWM4	0.79	26	0.85	0.70	
TMM2	0.78	26	0.85	0.70	
YMM3	0.75	27	0.85	0.69	
YWF1	0.68	23	0.96	0.68	
TWM3	0.59	26	0.81	0.66	
TWF1	0.45	27	0.93	0.63	
TMM3	0.44	27	0.78	0.62	
TMF4	0.41	26	0.92	0.62	
YMF2	0.32	25	0.92	0.60	
AWM1	0.30	29	1.00	0.59	
AMM3	0.28	27	1.00	0.59	
AWM2	0.27	26	1.00	0.58	
AWM3	0.27	26	1.00	0.58	
TMM4	0.24	26	0.73	0.57	
TMF1	0.14	27	0.89	0.55	
TMF2	0.14	27	0.89	0.55	
TWF2	0.14	27	0.89	0.55	
AMF2	0.11	28	1.00	0.54	
AMF1	0.11	27	1.00	0.54	
AWF2	0.11	26	1.00	0.54	
TWF3	0.11	26	0.89	0.54	
AWF1	0.10	27	1.00	0.54	
AWF3	0.10	27	1.00	0.54	
YWM3	-0.05	26	0.69	0.50	
TWF4	-0.12	27	0.85	0.49	

TMF3	-0.15	26	0.85	0.48	
YWF3	-0.20	21	0.86	0.47	
YMF4	-0.21	27	0.85	0.47	
YWF2	-0.46	20	0.80	0.40	
AMM1	-0.56	28	0.96	0.38	
YMF1	-0.63	27	0.78	0.36	
TMM1	-0.75	27	0.48	0.34	
YWF4	-0.75	25	0.76	0.33	
AMF3	-0.95	27	0.96	0.29	
YMF3	-1.06	26	0.69	0.27	Promoters
AMM2	-1.21	28	0.93	0.24	
YWM2	-1.61	25	0.28	0.18	
TWM2	-1.90	26	0.19	0.14	Innovators
TWM1	-2.12	27	0.15	0.11	
YWM4	-2.55	25	0.08	0.08	

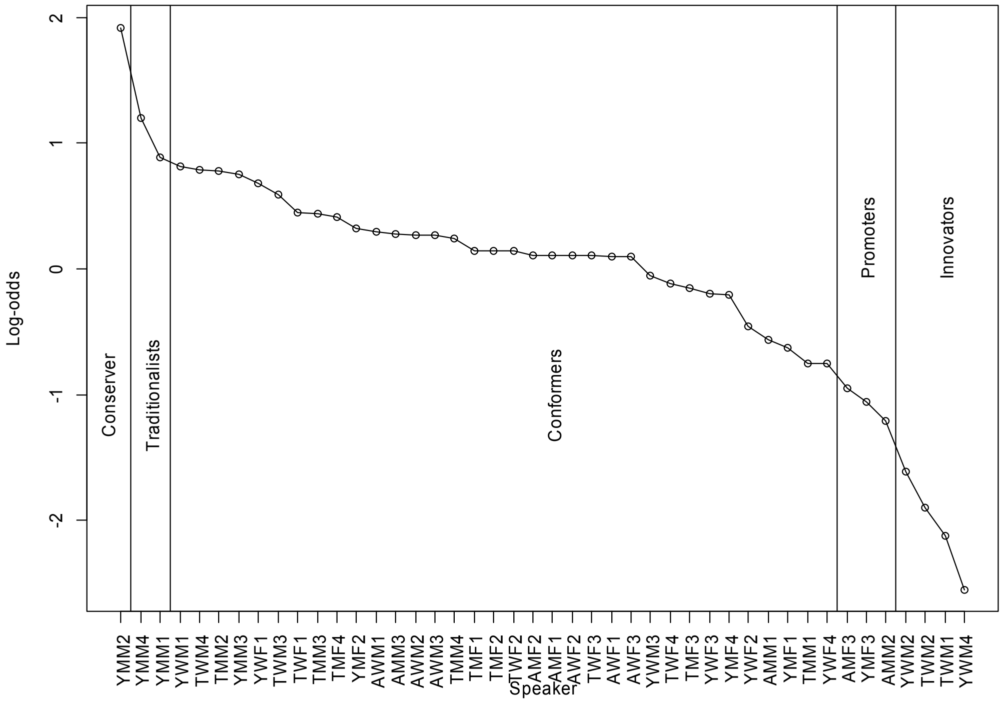

Figure 7.6.3: Innovation plot for (TH):[θ] in wordlist style

Similarly, despite their high negative log-odds, classifying AMF3 and AMM2 as promoters is difficult to justify. AMF3 has one [M] token and AMM2 uses the [t] variant twice. This is not innovation, which means that only YMF3 (-1.06) remains in the promoters group. As she is female and produces less than 70% [θ] realisations, this classification is logical. The change towards fronted variants is clearly being led by WC boys, but this not uniform. Two boys in each age group are relatively conservative (TWM3, TWM4 and YWM1 all have over 80% of standard realisations, YWM3 has about 70%), while the two others clearly avoid [θ]. The four boys (TWM1, TWM2, YWM2 and YWM4) who avoid the dental fricative are also those who came up as promoters and innovators in the interview data.

A second (reduced; see 7.6.2) GLMM was fitted for the [f] variant, of which there were a total of 121 tokens. Since no adult speaker used this variant, they were excluded from the analysis so that the data presented here only comprises the two younger age groups.

The results for the fixed factors are summarised in Table 7.6.16. The intercept of -3.66 is more than a clear indicator that the innovation is only slowly taking off in the city's accent. Two factors were found to contribute significantly here: Gender ($p < .01$) and the speaker's mother's birthplace ($p < .05$). In addition, there is strong by-speaker variation on the level of 1.43 (1.15) log-odds sd, which confirms our assumption from the interview data as well as the descriptive analysis of the word-list data that only a low number of speakers are at present promoting the diffusion of fronted variants into Aberdonian. We note further that this change is led by male speakers, who have strong positive log-odds of 1.13 and who are overall about five times as likely to produce [f] than the female speakers, whose log-odds (-1.13) indicate a strong effect in avoiding the incoming variant. The log-odds for the second significant factor (mother's birthplace) are more extreme, but we need to be careful not to overinterpret these results, which are rather an indicator of other social factors and/or by-speaker variation.

According to the model, speakers with mothers from the North-East are strongly adopting (log-odds: 1.35) the new variant, those with an English mother

Table 7.6.16: GLMM results for (TH):[f] in wordlist style (only teenagers and children)

Fixed factors	Log-odds	N	Proportion	Centred factor weight
Gender, $p < .01$				
male	1.13	414	0.24	0.76
female	-1.13	407	0.05	0.25
Mother's birthplace, $p < .05$				
North-East	1.35	663	0.17	0.79
England	0.60	53	0.06	0.65
Scotland	-1.94	105	0.03	0.13

Speaker effects: 1.43 (1.15); deviance: 469.86, df: 5, intercept: -3.66, grand mean: 0.15, centred input probability: 0.03

have an intermediate likelihood (log-odds: 0.60) and those with a non-North-Eastern Scottish mother avoid it even more with very strong negative log-odds of -1.94. Let us begin by looking at the latter. Four speakers (TMM3, YMM1, YMM3 and YMM4) fall into this group, all of whom are MC. Furthermore, three belong to the group of the young boys, the most conservative group overall in most of the variables and indeed (also see Table 7.6.17) none of them has any [f]. TMM3 has three tokens, which is quite in line with the general trend, but it still makes him an innovator because of the low values of the other boys with a Scottish mother. Similarly, there are only two speakers (TMF1 and TMM2) with an English-born mother. Again, both are MC and in addition the former is female, thus reducing the likelihood of fronted variants even more. As a matter of fact, they use [f] in two and one tokens, respectively. The other end comprises the vast majority of speakers, but again, the distribution is very heterogeneous with six speakers also using no labiodentals and others having values in excess of 75%.

Table 7.6.17: GLMM results for (TH):[f] – individual by-speaker variation in wordlist style (only teenagers and children)

Speaker	Log-odds	N	Proportion	Centred factor weight	Category
TWM4	-2.04	26	0.00	0.10	Conservers
YMM2	-2.04	26	0.00	0.10	
YWM1	-0.94	23	0.09	0.25	Conformers
TMM2	-0.90	26	0.04	0.26	
YMF1	-0.79	27	0.00	0.28	
TWF3	-0.78	26	0.00	0.28	
YWF4	-0.76	25	0.00	0.29	
TWM3	-0.73	26	0.12	0.29	
YWF1	-0.73	23	0.00	0.29	
YWF3	-0.69	21	0.00	0.30	
TMM4	-0.46	26	0.15	0.35	
YWM3	-0.46	26	0.15	0.35	
YMM3	-0.41	27	0.00	0.36	
YMM4	-0.40	26	0.00	0.37	
YMM1	-0.39	25	0.00	0.37	
TMF2	0.12	27	0.04	0.49	
TWF1	0.12	27	0.04	0.49	
TWF2	0.12	27	0.04	0.49	
TMF4	0.14	26	0.04	0.50	
YMF2	0.17	25	0.04	0.50	
TMM1	0.29	27	0.30	0.54	
TWF4	0.71	27	0.07	0.64	
TMF3	0.74	26	0.08	0.64	

YWF2	0.95	20	0.10	0.69	
YMF3	1.16	26	0.12	0.73	Promoters
TMF1	1.26	27	0.07	0.75	
YMF4	1.46	27	0.15	0.79	
TWM1	1.89	27	0.70	0.85	Innovators
YWM2	1.95	25	0.72	0.86	
TMM3	1.97	27	0.11	0.86	
YWM4	2.12	25	0.76	0.88	
TWM2	2.17	26	0.77	0.88	

The by-speaker effects are summarised in Table 7.6.17 and visualised in Figure 7.6.4. As mentioned above, the effect size is very high in comparison to that of other variables and so is the difference between the values of conservers and innovators with a range of 4 log-odds. In total there are ten speakers without any fronted tokens and given the high positive log-odds for both males and those with a North-Eastern born mother, it is no surprise to find two speakers (TWM4 and YMM2) from these groups to be in the conservers group with individual log-odds of -2.04. Of the WC boys, TWM4 is the only one to avoid the innovative variant completely in both styles. YMM2 is the only young MC boy whose mother was born in the North-East, but since otherwise he is completely in line with his fellows, I think his performance is more due to the effect of the interaction of social class and gender (which was not tested). At the innovator end, we find five boys. I discussed the

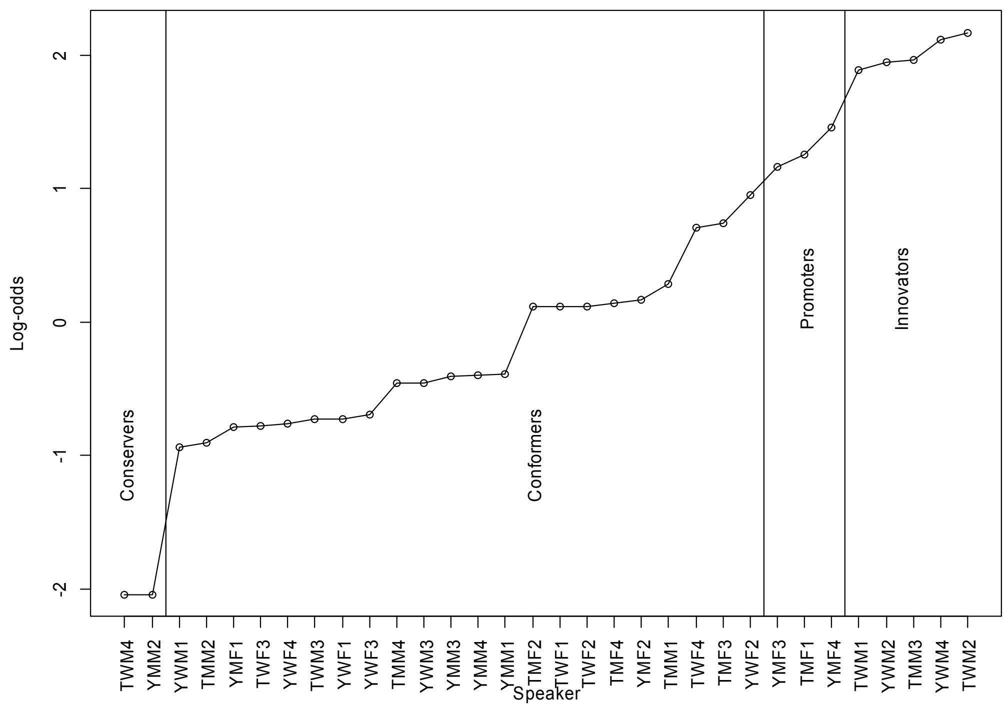

Figure 7.6.4: Innovation plot for (TH):[f] in wordlist style (only teenagers and children)

problems of this classification for TMM3 above already, but in the case of the others, this grouping is more than justified. All have [f] values of above 70%, which is more than double the amount of the next highest speaker (TMM1). All are WC and we know in the case of the two teenagers that they were classified by others from their peer group as being 'neds', a factor which seems very likely to explain the promotion of fronting.

This would also be in line with Lawson's (2009: 328) findings from his ethnographic fieldwork with WC Glaswegian boys, in which there was a robust and very clear differentiation by community of practice, with neds producing the highest values of [f] in contexts in which it was not blocked by [h]. The promoters group consists of three MC girls, for whom [f] is still clearly a minority variant but at least for YMF4 confirms the findings from the interview data in being the MC speaker with the largest amount of labiodental variants. In the conformers we find all those speakers who are well covered by the two fixed factors with the exception of TMM1.This speaker uses [f] in 29.6% of his realisations and in addition also has the largest value of intermediate [θ/f] forms at 22.2%. This means that he has shifted towards fronted variants much more strongly than any other MC speaker. On the other hand, in the interviews he does not have any fronting and only two intermediate tokens. The reasons for his clear shift in the wordlist remain unclear at present.

7.6.4 Summary and discussion

The previous sections have shown that unlike in Glasgow, variants other than [θ] are only slowly encroaching on the speech of Aberdonians. We have to differentiate between two processes that have different roots, different starting points in time and also potentially index rather different concepts. Since the glottal variant was absent in the North East prior to the migration wave and it is long-standing and highly salient non-standard feature in the urban varieties of the Central Belt, it is safe to assume that it reached Aberdeen as part of the influx of speakers from the south alongside other features such as BOOT-fronting. But since [h] is both restricted to a very small set of words, mostly derived from either *thing* or *think*, and strongly marked socially and regionally it probably was relatively slow to diffuse and became even more restricted in Aberdonian. Today it has a relatively low currency in comparison to the distribution further south and – as it seems from the results presented in 0 – has only established itself as a possible form in the words *everything* and to a lesser degree in *anything*, *something* and *nothing*, but not in *thing*, in which it is not found a single time in 83 tokens and found only twice in 79 tokens of *things*. The word-internal pattern is – though at a smaller rate – very much in line with the findings presented in Stuart-Smith & Timmins (2006: 178), but the near-complete avoidance in word-initial position, in which it only occurs as a clear minority variant in *think/ing*, is odd.

It seems thus that in the process of dialect contact there has been an overall levelling process towards the standard variant – [f] was not yet an option back then – rather than [h]. Only in *anything* and *everything* has the glottal variant taken off in the adult speakers – and here this is virtually restricted to those with family ties to Glasgow (such as AWM1) or who have spent some time there as an adult (AWM3). Still, it has been passed down to the children's generation – all but two teenagers have at least some and of the two who have no [h], one speaker's (TMM2) parents both come from London, which would if at all rather point to fronting, which thus can be well explained by this. For the other (TMM1) this is not as clear, but he is best friends with the former and the two were interviewed together. This leaves us with the children, for whom [h] does not seem to be an option anymore. For the two young speakers with the highest values of fronted tokens in the interviews we also note the absence (YMF4) or near-absence (YWM2) of any glottals. However, a problem here is that the former only had two tokens in which /θ/ occurred word-internally and the one token that YWM2 has for *anything* is in fact [h]. But then, is [f] an option for neither in the words in which [h] is possible initially. So, [h] can still serve the function of showing some affinity with Scots and, as it seems, more local values. It also seems to be urban enough to be picked up and promoted by (WC) teenagers, unlike the [f] variant for /ʍ/, which was reallocated to being 'teuchtery'.[44] It remains to be seen if, like in Glasgow, the traditional Scots form can retain the influence of [f] or if it loses its last stronghold over the next generation or two.

[44] The term 'teuchter' originally refers to a Scottish Highlander. It is now often used contemptuously by city people in reference to people from the country. In the Aberdeen context, it has been used by some of the working-class teenagers when describing people from rural Aberdeenshire.

TH-fronting is different for a number of reasons. From an internal perspective it is not restricted to any particular context and can occur in every position in the word, thus making it more likely to occur overall. Also, unlike [h], it is not a Scots feature, but has diffused from London over the last few decades in an urban-hierarchical wave-like pattern. Aberdeen is both the largest city furthest away from London and also relatively remote in comparison to the influential urban Central Belt varieties. This would explain why it is only incipient in the city's accent at present, but we cannot provide a convincing explanation as to why it comes up in the particular speakers who use it most frequently. With the exception of TMM1, who has relatives 'just outside Glasgow', and YWF2's father's family from Sunderland, none of them have family contacts beyond the North-East. This once more is line with findings from Glasgow (reported in Stuart-Smith et al. 2007: 222, passim), that these types of features are used mainly by speakers with relatively few external contacts. While it is not clear as to why TMF4 has such a relatively high frequency of [f], the interview results show that it is a WC feature. But even here, it is only in its initial stages and I have identified a couple of individuals who seem to have taken up the position of innovators, here in the sense of introducing it to the system. There is no detailed information as regards social network ties and structure in my dataset, but there are parallels to Milroy (1996: 129) who claims that labiodental variants have been introduced into the speech of WC adolescents in Derby by individuals with strong network ties and who are central to their networks.

7.7 Summary of key findings

The previous sections have presented the results of a study of language variation and change in the urban accent of Aberdeen for the individual variables studied. Here, I will briefly summarise the overall variation patterns before going to discuss the findings of this study in the context of the research aims and research questions outlined in chapter 5 in more detail in the following chapter.

Variation in the variables researched is attested mainly along three points. Firstly, there is stylistic variation. This is commonly found in sociolinguistic research and generally the more formal style triggers a more standard-like realisation. In my data, we find different patterns. The traditional Scots variants under study – the [f] realisation in (HW) (1.0%), the [h] realisation in (TH) (0.1%) and monophthongal variants of (OUT) (5.4 %) – are all effectively blocked in the formal style, since reading out a wordlist triggers a more SSE-oriented pronunciation (cf. e.g. Stuart-Smith 2003: 113). For all other variables, the stylistic constraints are first and foremost determined by age. Adult speakers have adopted some innovations in less formal situations, but clearly stick to the standards of their formative years in the wordlists. As such, they completely avoid TH-fronting (in both styles), but also vocalised forms of /l/ and postvocalic /r/ as well as [w] in (HW) are effectively blocked. Truly back variants of (BOOT) are rare by now and fronting is found even in the oldest speakers. However, the degree of fronting is strongly determined by age, but only in the adults is there still stylistic variation.

Particularly in the interviews, internal factors were usually the most powerful predictors for the distribution of variants or vowel height and frontness, respectively. This is particularly true for phonological context, in which coarticulatory effects are usually the strongest due to connected speech processes. Because there are less phonological contexts in the wordlist, most importantly the absence of the effects caused by adjacent words, internal factors are somewhat less strong in this style.

Of the social factors, it is particularly age – sometimes as part of the interaction with social class in the interviews and social class as well as gender in the wordlists – which proves to be a very powerful predictor and strongly polarises the adult speakers from the teenagers and children, who tend to be leading in the adoption of more innovative pronunciations.

The use of mixed-effects models has not reduced the amount of significant fixed factors, but it only proves that including by-speaker effects is a useful addition to the sociolinguistic toolkit. Effects of speaker were found for all variables and variants, but to varying degrees of strength. Relatively strong effects were found for (BOOT), (OUT), (HW) and (TH). Intermediate effects were attested for (L). Variants of (POSTVOCALIC R) showed both intermediate and small by-speaker effects.

8 Discussion

The current study provides a snapshot of phonological variation in the urban accent of Aberdeen about 35 years after the initial immigration wave started. At the same time, this study is the first major research project on Aberdonian, so that one of its main aims was to establish the larger –or macro – picture of the sociolinguistic situation in the city. Therefore, the approach taken here was variationist (or first wave in Eckert's 2005 terms), providing a survey of the more general trends of language variation and change as well as the effects of dialect contact and subsequent linguistic developments on the basis of major social categories, such as age, social class and gender. In turn, this means that a more fine-grained – micro – analysis using ethnographic observation techniques and an overall more qualitative approach as was, for example, employed by Lawson (2011) to uncover patterns of variation in four communities of practice (Eckert & McConnell-Ginet 1992) in WC adolescent males in Glasgow, was neither aimed for nor viable. However, in-group variation was found for some features and informal observation and comments by some speakers themselves and the way other participants perceived these speakers suggest that this kind of variation certainly exists. This could be addressed in a follow-up study (see section 9.2).

The previous chapter provided an in-depth look at the current status of sociolinguistic variation in Aberdeen on the basis of the description and discussion of six phonological variables representing 1. local features, 2. features that were part of the original dialect mix, 3. post-contact features, and 4. features spreading from London through urban accents of the United Kingdom. This chapter will pick up on these findings, will put the pieces of this puzzle together and provide a more general discussion of my findings against the background of the research propositions outlined in chapter 5. In addition, I will critically evaluate the model of assessing innovation and conservatism on the basis of mixed-effects regression models and discuss its strengths and weaknesses.

8.1 Linguistic processes and outcomes of dialect contact in Aberdeen

In section 3.5 I outlined in considerable detail that Northern Scots, including the Aberdonian variety, was considered a highly endonormatively oriented and conservative variety. In contrast with the Central Belt cities or Dundee there was only relatively little social variation and speakers from all social backgrounds were using Scots confidently and regularly. The reasons for this were seen to be the self-sufficiency of the region and its relatively isolated location compared to the influential Central Belt varieties. More recently, there have been reports that the dialect is becoming less dense as a result of the large-scale immigration and also that speakers have picked up accent features somewhat associated with the immigrant varieties (Hughes et al. 2005; Millar 2007).

Table 8.1: Summary of key findings of this study

Process	Variable/ Innovation	Trend	Origin	Comments
Levelling/ regularisation	(BOOT) – fronting	Initial levelling completed; now ongoing change towards even fronter variants	Dominant variant in both SSE and Glaswegian	Recent changes probably part of a general trend towards /u/-fronting
	(BOOT) – Merger of Scots classes	Virtually completed; some reallocation to specific words	SSE	General trend towards “bleeding” (Johnston 1997b: 466)
	(HW) – Adoption of [w]	Becoming more prominent in the younger generations	Interdialect development; possibly migrants who had no or had lost the contrast	Allows for avoidance of both [ʍ/f] in younger WC; younger MC: ‘putative’ standard(?); Large variation, ongoing
	(OUT) – Centralisation of onset and glide	Both monophthongs and long diphthongs become less frequent; change still	Interdialect development; possibly Glaswegian	Large variation

		ongoing		
Marginalisation/ loss of marked regional variants	(HW) – Loss of [f]	Reallocated to set phrases; no longer passed down successfully	North-Eastern Scots	Considered old-fashioned and rural; may resurface as identity marker
	(TH) – Adoption of [h]	Even more marginalised than in the Central Belt; probably not being passed down successfully	Central Belt Scots	Marker of Scots identity
Diffusion	(POSTVOCALIC R) – Loss of trill/ tap	Trill lost; taps being lost rapidly	Central Belt	General trend towards weakening spreading from the south
	(POSTVOCALIC R) – Use of [RA]	Becoming the most typical variant	SSE	Currently intermediate
	(POSTVOCALIC R) – Adoption of [Vr/V]	Younger speakers are beginning to lose rhoticity	Younger MC: possible contact with non-rhotic speakers	slow and different adoption than in Glasgow
	(TH) – Adoption of [f]	Slowly diffusing into the younger WC speakers	Originally London; now diffusing from the Cental Belt	first adopted by WC boys to dissociate
	(L) – Adoption of [V]	Lexical and speaker-by-speaker diffusion	Originally London; now diffusing from the Cental Belt	general 'openness' towards new features in younger generations promotes adoption

Table 8.1 summarises the key findings of this study. It groups the results based on the processes that are typically found in post-contact varieties. It confirms that the accent has changed considerably over the last few decades and is still changing today. Some of the changes, such as the loss of the trill as a variant of postvocalic /r/, are in line with more general linguistic developments in varieties of Scottish English and Scots. At the same time, though, we find a number of variation patterns that are indicative of the unique dialect contact situation in Aberdeen and are unre-

lated to changes elsewhere or proceed in a very different manner. Most of these changes are in line with current models of post-contact developments and the diffusion of sociolinguistic features more generally. Features from all varieties of the original dialect mix can be found in Aberdonian today, but the spread has not been homogeneous. In addition, we can identify several innovations that are difficult to assign to any specific variety and should be classified as interdialect developments.

Let us first look at the changes I have classified as levelling or regularisation. The adoption of a more fronted variant of (BOOT) typical of both the supralocal SSE and most influential input varieties is quite clearly a case of levelling in the sense of (Kerswill 2003: 224–225), referring to the rapid change following dialect contact and accommodation between the different speaker groups. In the beginning, there were at least three different variants – [u] and [e] typical of Northern Scots and a somewhat more central [ʉ] found in SSE and the incoming varieties. With central realisations being clearly dominant, outnumbering the other variants, and more regular, the adoption was predictable. Being one of the easier changes in Kerswill's (1996: 200) difficulty hierarchy, this also explains why even the oldest speakers have by now shifted BOOT. This change is still ongoing – as can be seen by the large standard deviations – into the direction of even fronter variants, which have already been adopted by the teenagers and younger speakers.

With regard to the [w] realisation of (HW), I have argued that neither [f] nor [ʍ] seem to have been passed down successfully to the younger generations. I have identified the influence of migrants who had already lost the contrast or did not have it in the first place and subsequent developments as the probable routes whereby the innovative variant spread in Aberdeen.

The variation patterns in the (OUT) vowel are very complex. Except for the classic Scots/SSE 'split' into monophthongal and diphthongal realisations; the previous literature is rather vague about any particular realisations (see section 7.2.1) in the North-East. I have argued that overall, there are at least two trends. The first is the marginalisation of the monophthongal variants, which may not be passed down successfully any longer. The second trend suggests that overall the elements of the diphthong are becoming more centralised. This is an interdialect development that is intermediate between the extremely short (i.e. monophthongal) realisations and the standard variant. At the same time, though, [əʉ] was a typical variant for many

WC speakers in Glasgow at the time of the migration, so that it may have diffused from there. At present, the patterns are not yet clear and there is still relatively strong variation.

There are two variants that should be considered as being strongly regionally marked. Despite being the hallmark of North-Eastern Scots, the [f] realisation for /ʍ/ has almost been lost in Aberdeen, except in set phrases such as *Fit like* and the speech of some WC speakers, for whom it may resurface as an identity marker. With regard to [h] as a variant of /θ/, a typical feature of WC Central Belt Scots, I have shown that it being so salient, it was clearly among the features transported to the North-East with the WC migrants. However, because of its distributional restrictions, it did not really take off in Aberdeen and was basically levelled away towards the standard variant in the majority of contexts and speakers.

The weakening in (POSTVOCALIC R) and TH-fronting can be classified as diffusion in the classical sense. The former is a process that began in the Central Belt and is now reaching the North-East. In the weakening of POSTVOCALIC R, the trill or tap is first replaced by an approximant, which is also the SSE variant. This process is relatively advanced in Aberdeen, again, especially in comparison to Huntly. The next step in the weakening process from approximants towards derhoticisation, is promoted by younger speakers. Fronted variants of (TH) on the other hand are a much more recent phenomenon. They have been described as spreading northwards from London as part of a set of consonant features and are relatively well established in the speech of young WC Glaswegians. Informal observations have attested it in Edinburgh and Dundee and the fact they are now slowly encroaching as a means of dissociation from MC norms into the speech of younger Aberdonians is captured by Kerswill's (2003) model of the diffusion of linguistic features.

This leaves us with the non-Scots related vocalisation of /l/. It is not a feature of the local accent and it was not common in the contributing varieties in the dialect mix. Unlike the spread of more fronted variants of (BOOT), it must therefore be a development that began only after the immigration of the 1970s. The most likely pathway is that via Glasgow, in which it has gained ground recently. However, just as for the weakening in (POSTVOCALIC R), the patterns of variation are quite different from those in the Central Belt. The reason for this can be seen in the different linguistic histories. In post-contact varieties, speakers are more open to innovations than would be the case in Glasgow with its relatively stable community.

In section 5.2.1, I also argued that, based on the features analysed in this study, and as a result of its recent history, the accent of Aberdeen is substantially different from the rural varieties of the North-East on the one hand and the other urban accents of Scotland on the other. With regard to the urban accents, this means in relation to Glasgow and Edinburgh because of the lack of data from Dundee City, which is only briefly covered by Robinson & Crawford (2001). Let us first put Aberdeen in relation to the hinterland. The city was the centre of the immigration and is, of course, the social, cultural, financial and linguistic hub of the whole North-East. By the time of the data collection it had about 207,000 inhabitants. Aberdeenshire had about 246,000 inhabitants, with the largest community of about 17,000 being Peterhead located about 50 km further north. The communities to which we can compare the Aberdeen data, Huntly (Marshall 2004) and Buckie (Smith 2005), are about 60 and 100 kilometres away and even smaller at 4,000 and 8,000. These communities are in the heart of the Doric-speaking area and geographically much more isolated and peripheral than Aberdeen.

Adopting the view that innovations spread in an urban hierarchical way, i.e. first to the centre (Aberdeen) and from there to the periphery (Buckie and Huntly) we would expect Aberdeen to be much more advanced in the adoption of new features. At the same time Aberdeen will diffuse its own innovations to the smaller towns in Aberdeenshire. This is clearly true for the variables for which we have comparative data. Marshall (2004: 84) still finds the split into [u] and [e] in the BOOT set, which has been levelled away in Aberdeen and does not contribute significantly to the regression models that were fitted to the data. Another case in point is the stereotypical [f] realisation of /ʍ/. In Aberdeen, this has been reallocated and is old-fashioned and perceived as being too Doric. [ʍ] and more recently [w] have replaced this variant nearly completely. In both Buckie and Huntly, [f] is still much more widespread and very strong at least in the older generations. In Huntly, the teenagers and (female) children are instead promoting the supraregional form that has diffused from Aberdeen. The more recent Aberdonian innovation [w], however, has not yet reached the countryside. Similarly, while Marshall refers to the weakening process in postvocalic /r/, he stresses that all speakers in his sample are fully rhotic. Aberdonians, on the other hand, have already adopted non-rhotic variants and are therefore more advanced. In addition, neither of the non-Scottish features (L-vocalisation and TH-fronting) is so far reported in any North-Eastern variety other than Aberdeen.

Aberdeen's distinctiveness in relation to the rural accents as a result of the recent developments is clear. Its relationship to the varieties of the Central Belt on the other hand is more difficult to grasp at present and an explanation would ideally take into account additional features. Based on the results of the present study, we note that Aberdeen has become more open to change and Aberdonians have adopted the central and front realisations of BOOT, typical elsewhere. At the same time the rapid loss of the formerly distinctive /ʍ/-labialisation in Aberdeen has made the variety less distinct. Other features of the Central Belt, however, have not taken off in Aberdeen. The glottal variant of /θ/ is even more marginalised and the strong polarisation by social class is much less pronounced in the North-East.

As we have seen, within the Aberdeen community the strongest predictor for the adoption of innovations is age (cf. 8.2 for a more thorough discussion). Older speakers, particularly at the Scots end, can be clearly identified as being from the North-East, though not necessarily Aberdeen. Speakers at the SSE end and with looser networks and greater mobility are generally more open to change and appear to be the driving force in the adoption of new features in this age group. The younger speakers are generally more open to innovations, but most innovative Aberdonians will not be mistaken for a Glaswegian or someone from Edinburgh. This has become clear in the way Aberdonians have adopted features from elsewhere, but also have developed innovations independent of those from the Central Belt. Furthermore, Aberdeen is peripheral to the varieties of the South and, as could be seen, features diffusing through the UK are at present very differently distributed in the various communities.

8.2 The role of age and other social factors

In section 5.2.2 I have stressed the importance of age in the adoption of innovative features or lack thereof. Since all adults were born before the immigration started and were already past the most formative years of language acquisition, it was anticipated that these speakers would overall be the most conservative, producing the largest amount of traditional variants, while at the same time only adopting features that following Kerswill (1996: 200) could be adopted over the lifespan and furthermore would be part of the original dialect mix.

The findings for the individual variables showed the expected patterns. Adults were much less likely to adopt an innovative feature. In the interview data, age was the second-most important predictor after internal factors and was very or highly significant for eight (see Table 7.1) of the fifteen features. In addition, the interaction of age and social class was significant four times. Almost unanimously there was a strong polarisation of the adult speakers from the teenagers and children. In the wordlists, age was significant eight times, the interaction of age and social class twice and age*gender three times. This confirms that these findings are very robust. Moreover, there is variation that could only be assessed using descriptive statistics because the data was too sparse for a regression model. Here as well, the adults were much more likely to choose traditional forms such as (HW):[f] and completely avoided the most recent innovation, TH-fronting.

However, this does not mean that adults did not change at all. This was illustrated, for example, by the (BOOT) variable. Even the oldest speakers produce central variants and do not seem to hold up the traditional Scots split into [u] and [e], but have adopted the supraregional majority variant. Also, with regard to (HW):[f] we note that while adults are still using these variants, in comparison to their rural counterparts, they are much more innovative. Put differently, many adults have adopted the innovative features if they are towards an already-existing supraregional variant. The lack of previous comprehensive data from Aberdeen makes it difficult, if not impossible, to assess fully whether these changes had already been ongoing, at least in MC speakers, or if they were initiated by the dialect contact situation. The younger speakers, on the other hand, have not only adopted those features, but are the driving force behind promoting these changes even further as in the case of BOOT-fronting or r-derhoticisation. At the same time they pick up and establish new elements, such as L-vocalisation, very quickly.

This goes together with a reduction in the importance of other social factors. Using mixed-effects models, in which by-speaker coefficients are calculated, as expected reduced the number of significant social factors in comparison to an ordinary regression, but there is no indication that this had a major effect on the age and its interactions, supporting the view that age is most powerful. This is particularly in relation to social class, which at least in the urban accents of the Central Belt is still a very powerful predictor, but was only found to be significant on its own once for one feature each in the interviews and wordlists. Gender effects are equally small in the interviews, but at least in the wordlists there is some significant variation between males and females. How a person rated their own speech on a scale polarising Scots and SSE was not significant at all. The father's birthplace only had significant effects on the choice of variant of /r/ in the interviews; that of the mother as regards the realisation of /θ/.

8.3 Evaluation of the model of assessing innovation and conservatism using mixed-effects regressions

Inspired by the application of Rogers' (2003) model of innovation diffusion in the context of language variation and change in the context of the diffusion of fronted variants of /θ/ and /ð/ into Glaswegian (Stuart-Smith & Timmins 2010), I developed and applied a model of innovation and conservatism based on the output of mixed-effects regressions estimated in Rbrul (Johnson 2011). Mixed-effects models perform considerably better than ordinary regressions in areas such as sociolinguistics because not only do they reduce the number of significant factors, but they also allow us to take into account e.g. by-speaker effects for social variables or by-word effects for internal variables (Johnson 2009) (see section 6.3.3 for a more detailed discussion). In the current study the individual by-speaker values are used to provide a more objective assessment of speaker innovation and conservatism compared to models which rely on an a priori classification by the researcher. Based on standard deviations from the overall by-speaker effect, the speakers were classified into five categories: conserver (-1.5 sd and larger), traditionalist (between -1 and-1.5 sd), conformer (between -1and +1 sd, promoter (between +1 and +1.5 sd) and innovator (+1.5 sd and larger) for each individual variant or feature.

Using this kind of scale allows for a more objective way of assessing an individual's contribution to promoting or inhibiting the current changes in the Aberdeen phonology since it relies neither only on percentages or raw data, nor only on qualitative data. This can be well illustrated by an example from the current study. For F2/S(F2), i.e. for vowel frontness, in interview style of the (BOOT) variable, the two speakers YMM3 and AMF1 both had the same value of 1.13 WF-ratios, but were classified at opposing ends on the innovation scale. The former belonged to the conservers, the latter formed part of the promoters group. This is because children were overall much more likely to produce fronter (Mean: 1.26 WF-ratios) and adults backer (Mean: 1.10 WF-ratios) variants. With the change being towards fronter variants overall, the adult speaker was therefore more innovative than the child, since she – in comparison to some of the other adults – had already adopted the new variant. In this respect, the innovation-scale – which of course works in the same way for all other random factors, such as word – is a very useful addition to the methodological repertoire of assessing linguistic variation and change.

Initially, it was also the aim of the present study to use these estimates to provide a more general assessment over all the features analysed. This would ideally have allowed us to classify each speaker on the innovation scale in a similar manner to the procedure used for the individual variants, formant and ED values. However, this was decided against at a later stage because of a number of problems arose in the interpretation of such data. Some of these are specific to the current dataset, while the majority will also occur more generally. In the following I will first outline the procedure that was devised originally and then show which kinds of problems were encountered and why – based on these problems – it would not be meaningful to use the aggregated data.

The first step is to make the two types of output from the analyses compatible and comparable; remember that the linear model estimated for the vocalic features provided coefficients on a metric WF-ratios scale, whereas those for the consonant variants estimated using generalised linear models are in log-odds. The best way of bypassing this problem is to convert the values from the different scales into so-called z-scores, which always have a mean of 0 and a standard deviation of 1. In order to convert the values, we use Formula 8.1, whereby X represents the individual value, $\overline{X}$ represents the mean and s symbolises the standard deviation (Field 2009: 26):

Formula 8.1: $z = \frac{X - \bar{X}}{s}$

In a second step this requires the conversion of the algebraic sign for those features in which larger values indicate conservatism, as in the [RT] realisation of

(POSTVOCALIC R) to make sure that using more innovative variants results in positive and values and more conservative variants in negative values. This is followed by adding up all the individual z-scores (15 in the current study) for each speaker and in turn applying the same classification into five innovator categories on the basis of standard deviations from the mean.

Despite the potential of this method in assessing an individual's overall linguistic performance relatively objectively for all features taken into account, at present there are a number of caveats and problems which cannot be easily overcome and therefore would distort the results and make a meaningful interpretation difficult, if not impossible. I will address these in turn.

For obvious reasons, this method requires by-speaker estimates in order to explain innovation and conservatism on top of any group patterns. There are cases, however, in which these estimates cannot be obtained. This is the case, for example, when the fixed factors on their own explain the variation and speaker does not contribute significantly in the regression model. This was not encountered in the data reported here, but test runs with other combinations of dependent and independent variables yielded such results. A problem that was encountered in the present study, though, concerns the often uneven distribution of variants in the consonant data. Some of these variants simply did not occur frequently enough to run the regressions using the full model so that we would need to rely on either reduced models excluding interactions and/or other factors or descriptive statistics in order to discover and explain any possible patterns of innovation and conservatism. This was, for example the case for the [h] and [f] variants of /θ/, which occurred only 92 and 47 times respectively in a total of 1109 (TH) tokens in the interviews. In the case of TH-fronting in the wordlist data (cf. section 7.6.3.2), which is completely absent in all adult speakers, such a model excluding this group as well the interactions was run, and significant variation was found and could be interpreted in the context of this feature. However, we cannot include these results in a larger model.

One way out is to collapse different variants to reduce the number of categories. In the present study, this was done for various realisations of (POSTVOCALIC R). The alveolar were grouped together with retroflex taps, and so were the respective approximants and the pure vowels and those with a secondary articulation. Here, we could argue that phonetic similarity allows for such a classification and still yields meaningful results. In the case of [h] and [f] for (TH) this is more difficult. Not only are they phonetically very dissimilar, but also index two very different processes of innovation, the former originating in Glasgow and being a long-standing feature of Urban Scots and the latter a more recent innovation from London.

Ideally we would also have to come up with some sort of weighting of the individual features to take into account the direction and degree of change. The diffusion of fronted variants of (BOOT) can be considered a relatively simple change towards the supraregional majority variant and would thus be less marked than adopting the innovative variants of (TH). A related point refers to the coefficients of the by-speaker effects, in which there is considerable variability, ranging from a mere 0.33 (0.2) log-odds sd in (POSTVOCALIC R): [Vr~V] to 1.29 (1.13) log-odds sd in (HW):[w] in the interviews. In F2/S(F2) for the CAT vowel, not reported in the present study, the by-speaker estimate was a mere 0.02 WF-ratios sd, which means that these effects were so minimal that they could probably not be perceived by an untrained listener.

Summing up, mixed-effects models are a highly useful statistical method for sociolinguists because not only do they considerably decrease the number of significant factors, but allow us to model by-speaker effects in a more effective manner. The coefficients of the random factor can help uncover and assess speaker-based variation and change in individual features. Applying such a methodology over a range of variables and variants, however, is not quite as straightforward and presents a number of problems that are somewhat more difficult to overcome and would require more balanced data.

9 Conclusion and prospects for future research

9.1 Conclusion

In this study I have set out to describe and discuss the accent of Aberdeen, a variety that has received only very little attention by sociolinguists. This is in stark contrast to what we know, for example, about Glaswegian, which formed the basis of one of the earliest and best-known (Macaulay 1977) sociolinguistic studies and has been investigated in ever greater detail by many scholars since. Moreover, Edinburgh and other varieties in the Central Belt and some of the more rural dialects – also in the North-East – have been studied in much greater detail than Aberdeen. Previous comments on the variety were almost exclusively based on limited datasets of a small number of speakers and/or anecdotal data that was not collected systematically and therefore could only hint at larger variation patterns in the urban accent. Also, all previous comments mainly rely on the speech of older speakers who were born and brought up before the social changes induced by the discovery and exploitation of North-Sea oil. This is very unfortunate since a study carried out in the 1970s or 1980s would have provided valuable data for comparison with my own results.

The immediate aim of the present study, therefore, was to fill this gap in the current research on phonological variation in urban Scotland by providing the first systematic and structured analysis of social variation in the accent of Aberdeen. I adopted a dialect contact framework and focussed particularly on the role of younger speakers in the recent changes that were brought about by the immigration and subsequent rapid linguistic change. This framework and particularly the work on Milton Keynes (Kerswill 1996), (Kerswill & Williams 2000) and more generally the effects of migration on language change summarised in e.g. Kerswill (2006), Britain (2010b) and Britain (2010a) provided a valuable background against which to discuss my findings.

I settled on six phonological variables being typical of variation in the North-East, the Central Belt, along the lines of the Scots-SSE continuum and features spreading through the United Kingdom from South-East England. While a complete analysis of the Aberdeen phonological system would have been ideal, the confined nature of any piece of research and reasons of viability justify the current selection and is a good compromise. Interview and wordlist data was collected from 44 Aberdonians from three different age groups and two broad social backgrounds and subsequently analysed with both auditory and acoustic methods. Using descriptive statistics and mixed-effects regression modelling, I showed that the effects of the immigration on the accent were manifold and have enhanced the development of a variety of urban Aberdonian that is very distinct from both the rural North-Eastern accents as well those of the other urban centres of Scotland.

The changes in the accent are most readily perceived by a comparison of the speech of the adults to that of the children and teenagers. Traditional variants are no longer passed down successfully or become much more restricted to very specific contexts or social groups. Variants with a wider geographical currency are adopted instead. It is striking that unlike the input varieties, Aberdeen does not have such a clear social stratification. Social class effects are considerably weaker and variation is mainly attested along the lines of age and internal factors. This relative unity may lead to the establishment of these features as the new local norm over the next generation of speakers, i.e. focusing in the terms of Le Page & Tabouret-Keller (1985) may take place.

9.2 Prospects for future research

The present study shows that research on the phonology of Aberdonian is a useful and much-needed addition to current research on varieties of Scottish English and Scots as well as dialect contact. Being the first major project on the variety, it has laid the foundation stone for other research that could be carried out in the city.

I see two major desiderata for future research in Aberdeen. This study could only cover variation patterns in six phonological variables, so that there are still a large number of features that were not treated, but were at least informally perceived to show further revealing patterns. This includes, for example, the status of the BIT vowel, which tends to be more centralised and lowered in Scots compared to SSE (cf. Table 3.3) and showed considerable social variation in Glasgow(Macaulay 1977) in the main period of immigration.

On the consonant level, future research should look particularly at the changing status of /r/, both in prevocalic and postvocalic positions and use a more fine-grained, ideally acoustic or, on an even more advanced level, ultrasound methodology, such as was successfully used to uncover social variation in speakers from the eastern Central Belt (Lawson et al. 2011). While the status of one of the 'Scottish' phonemes, /ʍ/, has been treated in detail in this study, the other, /x/, has not. My informal observation suggests that similarly to what is reported for Glasgow (Lawson & Stuart-Smith 2003), there is a rapid loss of this phoneme, but a range of realisations is currently found.

Studies of suprasegmental features and voice quality are relatively rare for varieties of Scottish English and Scots, but as Stuart-Smith (1999a: 214–221) shows, there is social class and gender variation in Glasgow. Lawson (2008) suggests a relationship between voice quality and violence in a group of working class boys. In addition, a typical Glaswegian 'ned' is characterised by nasalisation (Lawson 2011: 236–237), which was also found variably, but frequently, in my WC teenagers and children.

The second main desideratum refers to the sampling approach and means of analysis and interpretation. In the current study, one main aim was to provide an overview of sociophonetic variation in the city, for which I adopted a variationist approach. Using this approach, however, makes it difficult to uncover more fine-grained variation within the larger categories like social class or gender. In-group variation was commonly found and was often difficult to explain because we knew only relatively little about the speakers' social networks or communities of practice. Yet, even with the limited knowledge available, I was able to explain why TWM1, the WC boy who had strong ties to the more rural speakers because he was part of a football team in Aberdeenshire, behaved differently in some respect. Therefore, an ethnographic approach as was taken by Lawson (2009), Lawson (2011) and Stuart-Smith & Timmins (2010) in Glasgow or Clark (2008) in Fife would be highly desirable in a follow-up study on Aberdonian. The observations gained through this qualitative study paired with a rigorous quantitative analysis using the by-speaker estimated of mixed-effects models would be an ideal combination to uncover and explain current and further processes of linguistic variation and change in the city. In addition to that, with the focus of the present study being so strongly on the social factors contributing to the variation patterns, a more detailed analysis of variation in the internal features would be useful.

A final prospect refers to the recent developments in technology. Both the automated alignment and segmentation using tools such as LaBB-CAT (Fromont & Hay 2008) or FAVE (Rosenfelder et al. 2011) and subsequent phonetic analysis e.g. in Emu (Harrington 2010) will allow for the creation and analysis of larger speech corpora. In addition to that, new statistical tools such as the mixed-effects models used in the current study and more recent developments such as random forests (Tagliamonte & Baayen under revision) will allow taking into account larger numbers and complex interactions of contributing factors.

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A Appendix

A-1 Overview of speaker metadata

Table A-1.1 Overview of speakers and speaker metadata used in the descriptive and analytical statistics in this study

Speaker	Age	Age group	Social class	Gender	Rating of own speech	Father's birthplace	Mother's birthplace
AMF1	53	adult	middle-class	female	(rather) SSE	North-East	Scotland
AMF2	42	adult	middle-class	female	(rather) SSE	North-East	North-East
AMF3	61	adult	middle-class	female	(rather) SSE	North-East	North-East
AMM1	53	adult	middle-class	male	(rather) SSE	North-East	North-East
AMM2	63	adult	middle-class	male	(rather) SSE	North-East	North-East
AMM3	50	adult	middle-class	male	(rather) SSE	North-East	North-East
AWF1	38	adult	working-class	female	(rather) SSE	North-East	North-East
AWF2	41	adult	working-class	female	(rather) SSE	North-East	North-East
AWF3	65	adult	working-class	female	(rather) SSE	North-East	North-East
AWM1	38	adult	working-class	male	(rather) SSE	North-East	North-East
AWM2	53	adult	working-class	male	(rather) SSE	North-East	North-East
AWM3	46	adult	working-class	male	(rather) SSE	North-East	North-East
TMF1	15	teen	middle-class	female	in-between	Scotland	England
TMF2	15	teen	middle-class	female	(rather) SSE	Scotland	North-East
TMF3	14	teen	middle-class	female	(rather) SSE	North-East	North-East
TMF4	14	teen	middle-class	female	(rather) SSE	North-East	North-East
TMM1	15	teen	middle-class	male	(rather) SSE	North-East	North-East
TMM2	15	teen	middle-class	male	(rather) SSE	England	England

TMM3	14	teen	middle-class	male	in-between	North-East	Scotland
TMM4	15	teen	middle-class	male	in-between	North-East	North-East
TWF1	14	teen	working-class	female	in-between	North-East	North-East
TWF2	14	teen	working-class	female	in-between	North-East	North-East
TWF3	15	teen	working-class	female	(rather) local	North-East	North-East
TWF4	15	teen	working-class	female	in-between	North-East	North-East
TWM1	15	teen	working-class	male	in-between	North-East	North-East
TWM2	15	teen	working-class	male	(rather) local	Scotland	North-East
TWM3	16	teen	working-class	male	(rather) local	North-East	North-East
TWM4	15	teen	working-class	male	(rather) local	North-East	North-East
YMF1	10	young	middle-class	female	(rather) local	Scotland	North-East
YMF2	9	young	middle-class	female	(rather) local	North-East	North-East
YMF3	10	young	middle-class	female	(rather) SSE	North-East	North-East
YMF4	10	young	middle-class	female	(rather) SSE	England	North-East
YMM1	9	young	middle-class	male	in-between	England	Scotland
YMM2	10	young	middle-class	male	(rather) local	Scotland	North-East
YMM3	10	young	middle-class	male	(rather) SSE	Scotland	Scotland
YMM4	10	young	middle-class	male	in-between	North-East	Scotland
YWF1	9	young	working-class	female	in-between	North-East	North-East
YWF2	10	young	working-class	female	in-between	North-East	North-East
YWF3	9	young	working-class	female	(rather) local	Scotland	North-East
YWF4	9	young	working-class	female	(rather) local	North-East	North-East
YWM1	9	young	working-class	male	in-between	North-East	North-East
YWM2	10	young	working-class	male	in-between	North-East	North-East

YWM3	10	young	working-class	male	(rather) local	North-East	North-East
YWM4	10	young	working-class	male	(rather) SSE	North-East	North-East

A-2 Wordlist

daughter – about – lengthy – field – pill – fourth – anything – all – birthday – whine – bottle – thriller – clachan – better – card – pure – mouth – caught – beaten – cow – whether – innocent – month – faithful – pattern – fall – settle – south – allow – think – bought – throw – butter – what – football – author – threat – depth – call – hard – three – catalogue – healthy – third – seal – witch – trouble – hill – how – weather – car – will – impact – people – issue – thousand – hidden – further – kilt – care – loch – method – feel – who – milk – which – now – wheel – out – father – faith – smooth – tell – that – anthem – breath – whiff – path – dreich – though – battle – forthcoming – bear – thunder – wealthy – bother – house – cathedral – meal – where – this – wine – in – them