Sociophonetic variation in Stoke-on-Trent's pottery industry

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Abstract

This thesis presents a sociophonetic analysis of two dialect variables in twenty-six speakers from Stoke-on-Trent; specifically, speakers who worked in the city's pottery industry. The recordings used come from an oral history archive, and much of the analysis presented considers the impact of the social and spatial structures of the pottery industry on dialect variation. The analysis presented also combines quantitative and qualitative methodologies in order to examine both broader patterns of dialect variation in the selected speakers, and how the same variables may be used in the construction of meaning-in-interaction. Finally, I consider the impact of using oral history data in this kind of sociophonetic analysis.

I use literature on the social structures of the industry and the content of the recordings themselves to model an internal hierarchy for the industry, which I then examine alongside auditory and acoustic data from two linguistic variables: /h/-dropping, and the (i) vowel. /h/-dropping is particularly sensitive to industrial role, with speakers in mass production roles more likely to drop /h/ and those in administrative, managerial and design roles less likely to. I demonstrate how this links to the established social meanings of /h/-dropping as a historical dialect feature of English. The (i) vowel is less sensitive to this internal hierarchy quantitatively, but I describe how its realisation is particularly conditional on linguistic factors.

Both variables are also examined qualitatively in discourse moments, and according to topic. /h/-dropping (and retention) appears to be associated with meaning on micro-, meso- and macro-social levels, allowing me to design an indexical field (Eckert, 2008) of its potential social meanings in this dataset. Variation in the (i) vowel appears to be less motivated by topic, but I demonstrate that some speakers do use more extreme acoustic tokens in particularly expressive talk.

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Acknowledgements

I used to hate Stoke-on-Trent. Growing up there, I thought it was boring, insular, grotty, and I couldn't wait to get away. When I discovered linguistics, I realised barely anything had been done on Stoke-on-Trent's local accent (which baffled me), so I started to work on it. Ten years later, not only have I completed three theses on various aspects of the local variety, doing so has enabled a complete turnaround in my attitude to the city. In the BBC's 2009 adaptation of Austen's *Emma*, Mr Knightley says of Miss Bates, "she deserves your compassion, not your contempt", and that's stuck with me. Stoke-on-Trent has had an enormous reversal of fortunes and yet, its residents' devotion to their art and heritage remains steadfast (and so it should, because nothing is comparable to Potteries ware), as does their warmth and humility. I've frequently described my thesis as "my big, tragic love letter to Stoke", and I hope that comes across to anyone who reads it. I owe the city for bringing me up and giving me a purpose.

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Map of locations 1

Map of Stoke-on-Trent's location in Staffordshire, and the UK

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Map of locations 2

Map of locations within and around the City of Stoke-on-Trent and the county of Staffordshire

Chapter One

Introduction

This thesis examines sociophonetic variation in the pottery industry of Stoke-on-Trent, using oral history interview data. I quantitatively analyse the speech of 26 interviewees for their use of /h/-dropping and the local variant [i:] in unstressed vowel positions, examining statistically significant social and linguistic predictors of variation. I also qualitatively examine the same variables in moments of interaction for specific speakers, investigating the effect of topic, affect and persona on variation and developing potential indexical fields of social meaning (Eckert, 2008) for the variables. In doing so, I attend to the locally-significant hierarchies of the pottery industry– using a schema developed from previous literature and the content of the interviews themselves – and demonstrate that, for the /h/-dropping variable, broad social meanings associated with /h/ absence and retention (Mugglestone, 2007) are reanalysed to differentiate employee types and relations in this specific industrial context. Additionally, while the same employee types and relations appear to be relevant to variation in unstressed vowels, linguistic factors are the best predictors of a change in acoustic vowel quality, although speakers with atypical working-class roles appear to use acoustically extreme tokens of the vowel to do more social and expressive work in interaction.

The methods and findings of this thesis contribute to the fields of dialectology and variationist sociolinguistics and increase our understanding of the relationship between language and social meaning. Stoke-on-Trent is an under-researched region linguistically, and this thesis examines two local dialect features and their social and linguistic patterning. The findings build on research by, for example, Gordon et al. (2004), Zhang (2005) and Devlin

(2014) in stating the importance of local employment and industries to language variation, and demonstrate how internal structures and hierarchies may be used to enact class-based linguistic distinctions on a local level. Furthermore, following work including (but by no means limited to) Eckert (2000), Podesva (2008), Kirkham (2013) and Moore and Carter (2015), this thesis pairs quantitative variationist analysis with qualitative examination of variables in context, demonstrating how social meaning is used and created in interaction and accrues over longer stretches, developing recognisable local and global social categories. Finally, this thesis exemplifies the way in which oral history data may be used to undertake the range of variationist analyses described.

Accordingly, this thesis has three main research questions:

1. What social and linguistic factors are the best predictors of variation in the dialect features studied? Why might this be?
2. How does examination of the variables in specific discourse moments illuminate the social meanings they are used for and to create, and how does this expand understanding of the quantitative patterns?
3. What impact does the use of oral history data have on the methodologies employed and results obtained from this project?

In Chapter Two, I provide a brief history of Stoke-on-Trent, the pottery industry, and the changing fortunes of both, and describe the internal social structures of the pottery industry. The chapter also covers the history of variationist, perceptual, and folk dialectology related to the region, and examines its geographical, linguistic and socioeconomic position in the UK. Finally, I examine literature related to similar marginal, post-industrial regions of the UK, as well as literature related to language variation in occupational contexts, in order to situate my analysis of Stoke-on-Trent English among similar regions and theories.

Chapter Three centres on the oral history archive dataset used in this thesis. Firstly, I examine oral history methodologies, practices and critiques, before detailing linguistic research which has used oral history data and the methodological implications of this. I then explain the archive used for this thesis in detail, with particular focus on how it was narrowed down to a workable dataset.

In Chapter Four, I present the broad method of analysis, and its theoretical and practical underpinning. I briefly outline a pilot study using (and ultimately rejecting) forced alignment software, and detail the pertinent statistical and ethical procedures.

Chapters Five and Six present the quantitative analysis and results of the two variables: /h/-dropping in Chapter Five, and the (i) vowel in Chapter Six. Both chapters begin with a review of the relevant literature associated with each variable, followed by a methodology specific to each. I then present the raw-data and statistical analysis of each variable, showing patterns in the linguistic and social factors, before summarising the results obtained.

In Chapter Seven, I conduct an exploratory qualitative analysis of the variables in extracts from the speakers' interviews, examining the potential social meaning of the variables in relation to how they vary depending on speaker style and topic of talk. Finally, in Chapter Eight, I bring together all the results presented in the thesis and examine their contribution to the wider fields of dialectology and sociolinguistics, as well as critically examining the methodological choices made in this project and exploring areas for future research. I also evaluate the impact of using oral history data to undertake this kind of linguistic analysis.

Chapter Two

Background

2.1 Overview

This chapter contextualises the project historically, detailing the history of the region of Stoke-on-Trent and its pottery industry, and situates it within the fields of sociolinguistics and dialectology. The chapter begins with a brief history of Stoke-on-Trent and the pottery industry from the 18th Century to the present day (§2.2), followed by an explanation of the process of pottery making and the social structures of the pottery industry (§2.3). This is followed by a summary of previous linguistic research on or related to Stoke-on-Trent English and its position in the UK (§2.4). Finally, I summarise relevant and related research on variation in similar marginal, post-industrial locations (§2.5), and work relating to language variation and industry (§2.6).

2.2 Stoke-on-Trent and The Potteries: a brief history

Stoke-on-Trent is situated in North Staffordshire, in the north-west Midlands of the United Kingdom (see Map 1). It is the largest city in the county of Staffordshire, and the northernmost unitary authority in the West Midlands region. Stoke-on-Trent is the 19th most populous built-up area[1] in the UK (ONS, 2013), with a current population of around 250,000.

The city of Stoke-on-Trent is a conurbation of six towns, which were federated in 1910 and granted city status in 1925 (see §2.2.3 for further discussion of this). The six towns are Tunstall, the most northerly; Burslem slightly south of this; Hanley, which is both central to the city geographically and the designated city centre; Stoke and Fenton to the south of this, and

[1] For the 2011 census, the country was divided into built-up areas, defined as "land which is 'irreversibly urban in character', meaning that they are characteristic of a town or city" (ONS, 2013).

Longton to the south-west. The city is approximately 12 miles north-to-south, covering an area of around 36 square miles. The nearby borough of Newcastle-under-Lyme rejected the opportunity to join the federation in 1910, and combined with nearby Kidsgrove, Newcastle-under-Lyme and the city form the ONS' built-up-area of Stoke-on-Trent (see Figure 1).

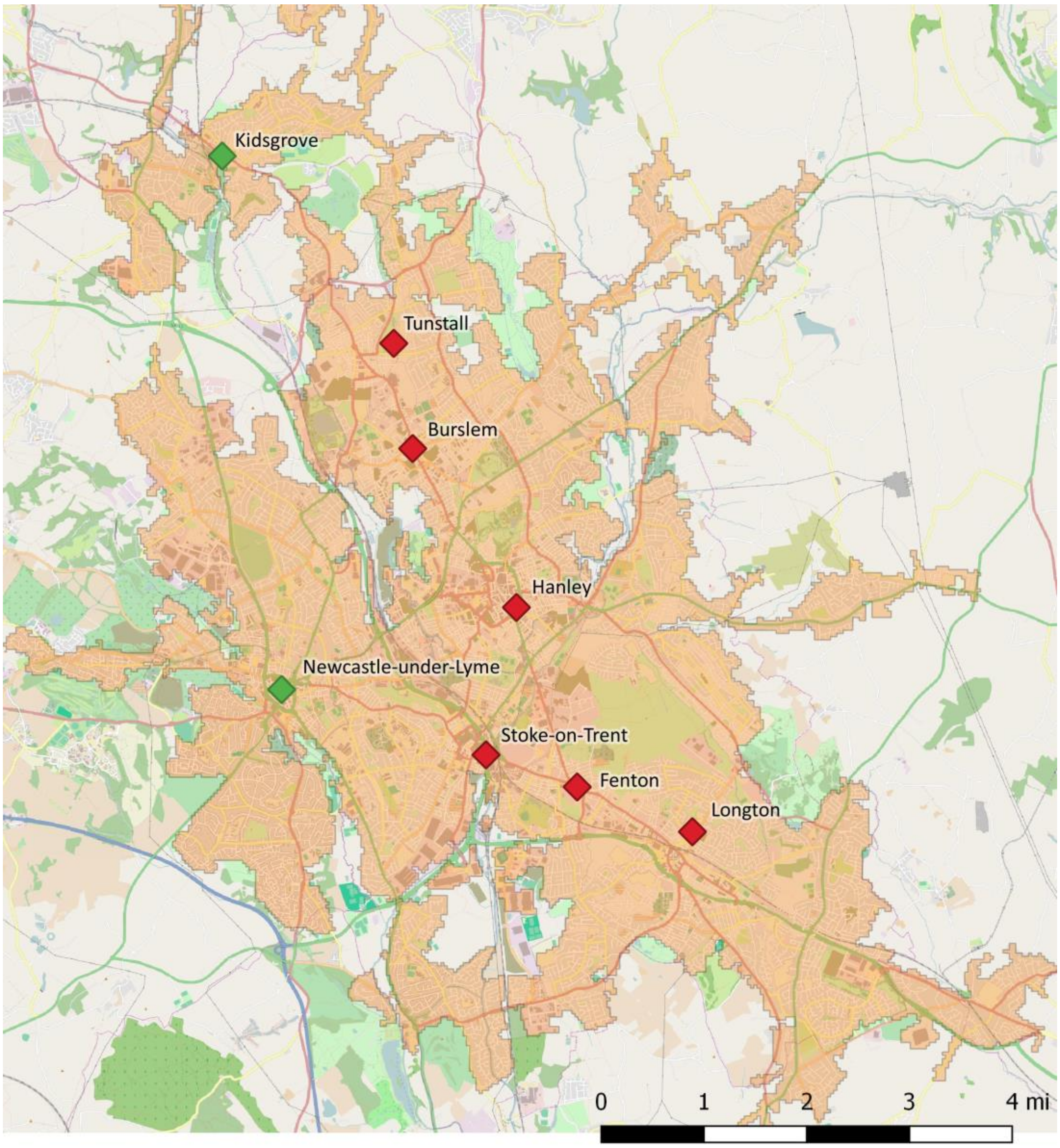


Figure 1: Map of the ONS' built-up-area of Stoke-on-Trent, including the six towns (marked in red) and the neighbouring boroughs of Newcastle-under-Lyme and Kidsgrove (marked in green)

For the remainder of this thesis, 'Stoke-on-Trent' will refer to the city proper, the conurbation of six towns, to the exclusion of Newcastle-under-Lyme and Kidsgrove. This includes discussion of the region pre-1910, where Stoke-on-Trent is used to collectively refer to the six towns pre-federation.

The population of Stoke-on-Trent has grown by a factor of 10 since the turn of the 19th Century, and has been steady at around 250,000 since 1911, with a swell to 275,000 between 1931 and 1961. The changing population and administrative status of Stoke-on-Trent is demonstrated in Table 1.

Table 1: Population totals and changes in Stoke-on-Trent, 1801-2011

Year	**Population**	**Change**	**Status**	**Source**[2]
1801	25,270[3]	--	6 towns	VoB, 2014
1811	35,685	+10,415	6 towns	VoB, 2014
1821	45,204	+9,519	6 towns	VoB, 2014
1831	56,804	+13,880	6 towns	VoB, 2014
1841	74,556	+18,472	6 towns	VoB, 2014
1851	91,433	+16,877	6 towns	VoB, 2014
1861	101,012	+9,579	6 towns	VoB, 2014
1871	110,591	+9,579	6 towns	VoB, 2014
1881	120,170	+9,579	6 towns	VoB, 2014
1891	138,636	+18,466	6 towns	VoB, 2014
1901	188,241	+49,605	6 towns	VoB, 2014
1911	255,600	+67,359	City	VoB, 2014
1921	264,158	+8,558	City	VoB, 2014
1931	273,020	+8,862	City	VoB, 2014
1941	273,034	+14	City	VoB, 2014
1951	273,047	+13	City	VoB, 2014
1961	269,530	-3,517	City	VoB, 2014
1971	265,258	-4,272	City	ONS, 2011
1981	248,787	-16,471	Non-met District	ONS, 2011
1991	238,574	-10,213	Non-met District	ONS, 2011
2001	240,636	+2,062	Unitary Authority	ONS, 2011
2011	249,008	+8,372	Unitary Authority	ONS, 2011

Stoke-on-Trent, like many British cities, has an industrial legacy. Stoke-on-Trent was once known for being

[2] VoB stands for Vision of Britain, compiled by GB Historical GIS and University of Portsmouth (2009).
[3] Before 1910, data has been "redistricted" by the Vision of Britain researchers (GB Historical GIS and University of Portsmouth, 2009).

"the world's leading centre of pottery manufacture" (Imrie, 1991, p. 436), with its ceramics reputation dominant enough to earn it the moniker The Potteries, a name still favoured by many (eg. Birks 2013b; Morland 1978; Sekers 1981). However, political and economic changes in the second half of the 20th Century have resulted in the vast depletion of this industry, with Stoke-on-Trent now the 15th most economically deprived region in the country (Department of Communities and Local Government, 2011).

This thesis investigates the language used by the people who worked in the pottery industry that made Stoke-on-Trent famous. The transformation of the city's pottery industry from backyard production to mechanised manufacture took place during the 18th Century, so a detailed description of the city's history begins here, in §2.2.1. I move on to the 19th Century in §2.2.2, before dedicating §2.2.3 to the issues surrounding the federation of the six towns into the city of Stoke-on-Trent. This section concludes with coverage of the 20th Century and the city's industrial decline in §2.2.4, and the present state of the city in §2.2.5.

2.2.1 The 18th Century and the birth of industrialised pottery

As in many British towns (particularly in the North), mining was a vital source of income and employment in Stoke-on-Trent. Geologically, the city is underpinned by large, high-quality coal reserves, with a coal seam accessible at several junctures. Taylor (2009, p.6) states that "[t]here is evidence of mining for coal [in Stoke-on-Trent] from at least the second century AD", and until 1998 there were operational coal pits throughout the city.

Stoke-on-Trent also benefits from plentiful red clay deposits. Pottery-making was common in villages across the country before the Industrial Revolution (Rice, 2010, p. 27), and "the Potters of Staffordshire have always made pottery as a commercial undertaking" (Sekers, 1981, p. 10). Burslem in particular attracted attention for its wares as early as 1686 (Plot, 1686; Thomas, 1971), and by 1710 was "a prominent pottery centre, probably the largest in Great Britain", having "acquired a name for skill and craftsmanship" (Sekers, 1981, p. 3). For this reason, Burslem is still known as the 'mother town' of the Potteries (Parker, 2000, p. 260).

By the turn of the 18th Century, Stoke-on-Trent's natural resources had led to a fledgling industry developing, and this combination of locally available and easily extractable clay and plentiful coal to fire it meant that Stoke-on-Trent was a prime location for small-scale potting to be industrialised. It takes "eight times as much coal as clay to make a pot" (Rice, 2010, p. 28) and as Taylor (2009, p. 6) states, "[c]oal was the major reason behind the pottery industry being located in this northern part of the midlands" as opposed to somewhere like Cornwall, which had higher-quality clay but no local coal (Rice, 2010, p. 33).

Around 1710-15, it is estimated that approximately 500 people worked in local pottery factories, known locally as potteries or potbanks (the latter is the term adopted throughout this thesis). By 1835, John Boyle (then editor of the Journal of the Royal Statistical Society) calculated that this figure had risen to around 20,000 (Thomas, 1971, p. 12). During the 18th Century, Stoke-on-Trent's pottery industry vastly expanded, in part due to skilled and savvy entrepreneurs like Josiah Wedgewood (1730-1795) and Josiah Spode (1733-1797). Both local men, they set up large-scale factories and pioneered new techniques that accelerated both production and profit in the industry. While not the only local pioneers, they have been described as the local "captains of industry" (Thomas, 1971, p. 14). Rice (2010, pp. 27–42) identifies five key ways in which they revolutionised ceramics manufacture in Stoke-on-Trent:

i. Structural innovation

The factory Wedgewood founded in 1779, which he named Etruria, not only provided workshops and kilns, but also housing for hundreds of workers (including a grand estate for Wedgewood himself), as well as mills for grinding the raw materials, meaning the entire process was focussed on one site.

ii. Technical innovation

British potters had for many years been trying to imitate the porcelain produced by East Asian manufacturers. Wedgewood's experimentation led him to try incorporating Cornish clay into the recipe, and the resulting cream earthenware became internationally renowned. Later in the century (around 1797), Spode factories mastered the production of bone china, which was similarly acclaimed.

iii. Broadening of design influence

Rich and well-travelled, as many young Georgian entrepreneurs were, Wedgewood and Spode expanded the sphere of influence for pottery design by incorporating styles and techniques from across the world, which appealed to the rich and affluent of the time.

iv. Widening of markets

Before the Industrial Revolution, the majority of ceramic items were in use no more than 10 miles from where they were made. However, Wedgewood and Spode knew the importance of ensuring the rich and influential saw their designs, and both set up displays in London. Additionally, larger factories exported their wares to Europe, Asia and America, as the British who could afford luxury wares were few in number.

v. Development of reputation

Local, small-scale potters rarely name-stamped their work, unlike Wedgewood and Spode, whose produce subsequently gained name-recognition. Wedgewood also sold a service of his cream earthenware to Queen Charlotte, wife of George III, gaining both the illustrious title 'Queen's ware' and its associated cachet.

The final factor that contributed to the ceramics boom of the mid 18th Century was Stoke-on-Trent's transport links. The city sits on the river Trent, but needed better connections if the fragile ware was to be easily transported. In 1766, Josiah Wedgewood lobbied parliament for a canal in the city, and commissioned architect James Brindley to build the Trent and Mersey Canal, which joins the Trent near Derby with the Mersey near Runcorn. Completed eleven years later in 1777, this canal opened up the pottery industry (particularly Wedgewood's Etruria factory, as was his design) to ports in Liverpool and also allowed better transportation of raw materials into the factories. An extension to the canal at Cauldon was cut in 1795, connecting Stoke-on-Trent to the Peak District and its raw materials and easing the pressure on the now over-subscribed Trent and Mersey. Five of the six towns were served by the new waterways, and pottery factories were scattered throughout.

2.2.2 The 19th Century and the growth of the city

The pottery industry continued to thrive and grow during the continuing Industrial Revolution of the 19th Century. Imrie (1991, p. 436) states that

> [b]y the middle of the 19th Century, three out of every five employees in Stoke were employed in pottery manufacture, with Stoke established as the world's leading centre of pottery production…the local labour market was dominated by a highly skilled and prized work-force which was unique to the environs of Stoke-on-Trent.

Vision of Britain (GB Historical GIS and University of Portsmouth, 2009) brings together historical sources including census data, maps and local writing in order to create a searchable portrait of socioeconomic change in Britain between 1801 and 2001. Their socioeconomic class statistics for Stoke-on-Trent are demonstrated in Figure 2. Class 1 in Figure 2 is categorised as Professional Occupations and Class 5 as Unskilled Ocupations, and as the figure shows, the vast majority of Stoke-on-Trent residents between 1801 and 2001 were Class 3, representing Skilled Manual Workers, in keeping with occupation in the pottery industry (and the city's other manual industries).

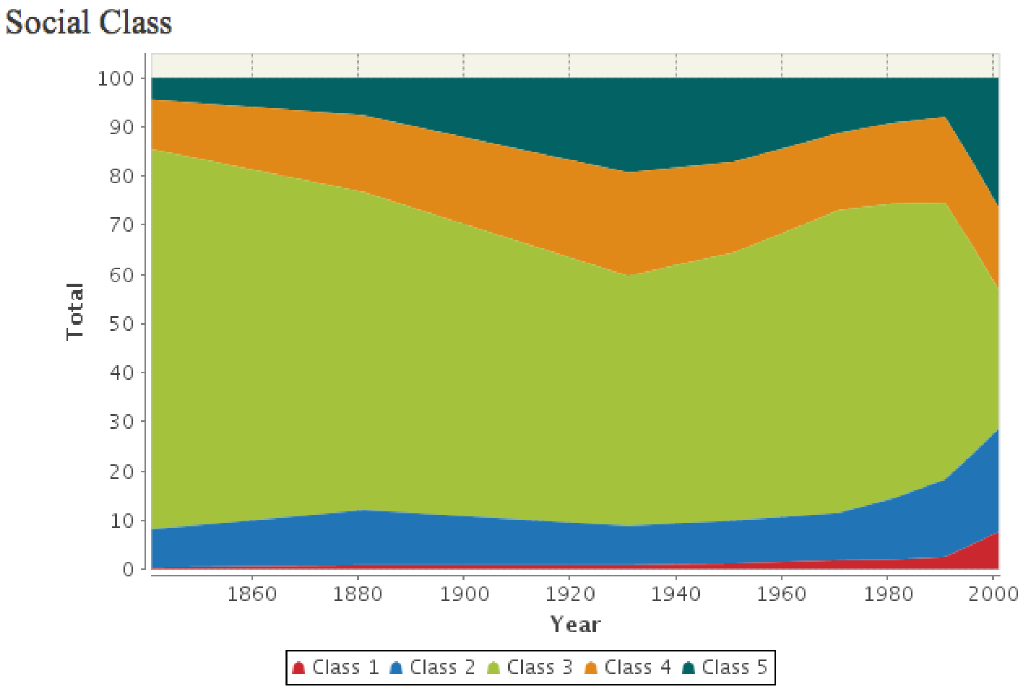


Figure 2: Social class data for Stoke-on-Trent 1801-2001 (GB Historical GIS and University of Portsmouth, 2009)

The ceramics industry continued to expand with dozens of potbanks opening throughout the century, and mining also remained a major employer in the region, fuelling the pottery industry's growth. As Figures 3a and 3b demonstrate, local employment figures (expressed as a percentage of total employment) for manufacturing and mining were above the national averages for the day (GB Historical GIS and University of Portsmouth, 2009).

Also of note is Stoke-on-Trent's high percentage of female employment:

> Stoke was a feminized economy as early as 1890 when women comprised over 40% of the work-force in the pottery industry. By 1919, the proportion of women workers in the pottery industry was 65%, and, by the mid 1920s, female employment in Stoke was nearly double that of the national average. (Imrie, 1991, p. 447)

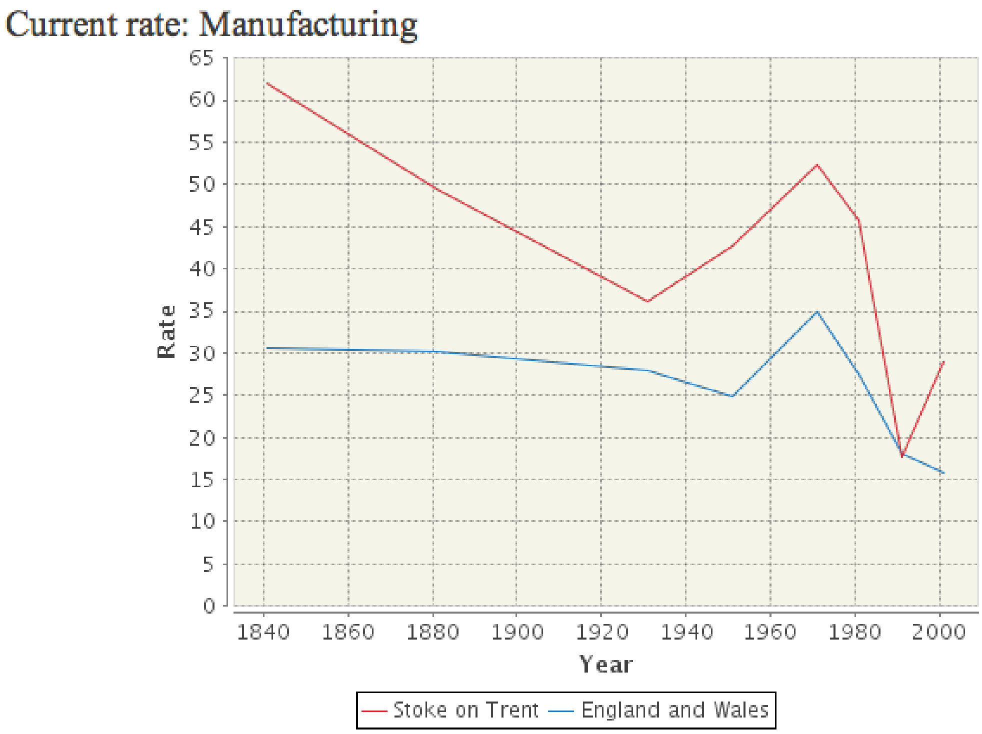
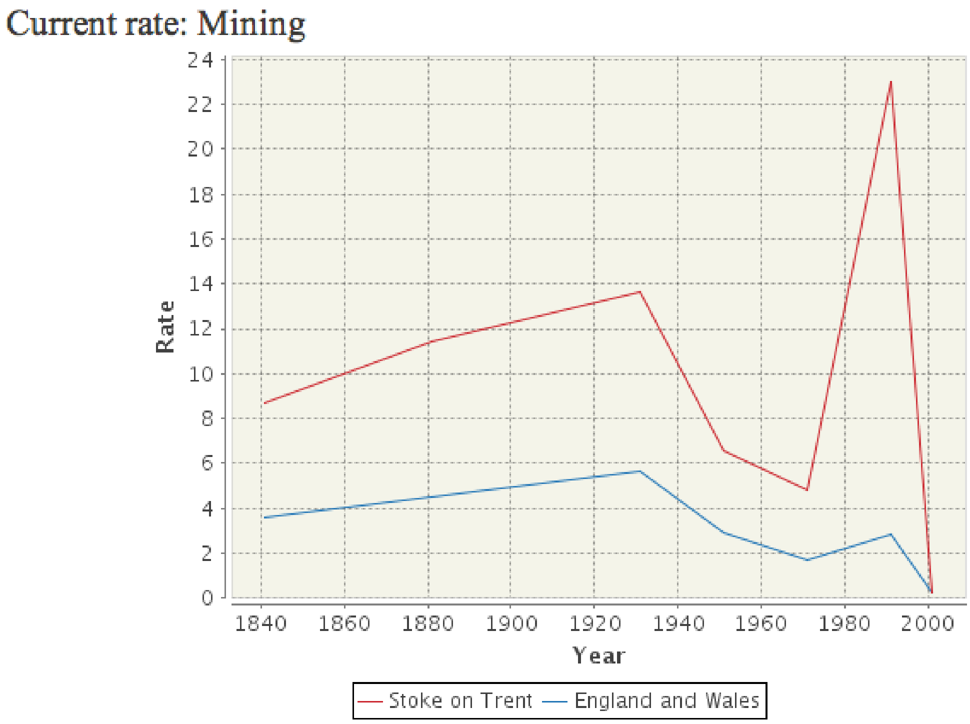


Figure 3: Employment in manufacturing [top] and mining [bottom] in Stoke-on-Trent compared to national averages (GB Historical GIS and University of Portsmouth, 2009)



While the pottery industry dominated the figures for manufacturing, the 19th Century also saw the introduction of Stoke-on-Trent's third major industry – steel manufacture. Stoke-on-Trent's rich geological crop also includes iron ore, and in 1839 Earl Granville began the process of setting up three blast furnaces near Wedgewood's Etruria, on an area of land that came to be known as Shelton Bar (Birks, 2013b). Iron was extracted from the early 1840s, and owing to the availability of coke with which to combine and make steel, another manual industry in the area was launched. It expanded rapidly and by the turn of the 20th Century local manufacturers were producing 9,000 tonnes of steel every week (Taylor, 2009, p. 8).

The city itself expanded greatly though the 19th Century, with the local population swelling by a factor of seven during the 19th Century, from 25,270 in 1801 to 188,241 in 1901 (see Table 1). Many people migrated from across the UK to the region to take up work in its major industries, and Table 2 shows the birthplace of Stoke-on-Trent residents between 1851 and 1911, using data from Friedlander and Okun (2007).

The majority of migration into the city came from the surrounding towns and villages of Staffordshire; the modern West Midlands county was not formed until 1974, and before then, Staffordshire encompassed a southerly area that included Dudley, Wolverhampton, Walsall and much of what is known today as the Black Country. Most in-migration from outside Staffordshire came from the North-West and the remaining West Midlands counties. By 1861, 3.1% of Stoke-on-Trent's total population were migrants from the North West, with Cheshire contributing 1.7% and Lancashire 1.2%. The majority of West Midlands migration came from Shropshire (2% of the total population), and 1% of the population came from Derbyshire in the East Midlands. Additionally, there was an Irish and Welsh presence in the city, representing 1.9% and 1.4% of Stoke-on-Trent's total population in 1861 respectively.

Places of birth of Stoke-on-Trent residents

	1851		1861		1901		1911	
	Raw	*%*	*Raw*	*%*	*Raw*	*%*	*Raw*	*%*
Staffordshire	48651	53	57562	57	52167	54	207277[4]	81
North East	105	0.1	229	0.2	232	0.1	657	0.3
North West	2272	2.5	3144	3.1	2113	1.1	7108	2.8
Yorkshire & The Humber	354	0.4	579	0.6	626	0.3	1827	0.7
West Midlands	2183	2.4	2982	3	1834	1	5685	2.2
East Midlands	1187	1.3	1645	1.6	891	0.5	2575	1
East of England	178	0.2	276	0.3	213	0.1	1458	0.6
South East	589	0.6	674	0.7	560	0.3	1759	0.7
South West	278	0.3	558	0.6	485	0.3	1113	0.4
Scotland	198	0.2	318	0.3	344	0.2	906	0.4
Wales	630	0.7	1422	1.4	986	0.5	1559	0.6
Ireland	1163	1.3	1872	1.9	624	0.3	1286	0.5

Table 2: Migration figures for Stoke-on-Trent in 1851, 1861, 1901 and 1911

Finally, the 19th Century saw the expansion of local railways, meaning both increased transport links for local industries and residents. Stoke-on-Trent rail station – the central point of the North Staffordshire Railway company (Birks, 2013a) – was completed in 1848, and while the canals "survived the railway's arrival" (Rice, 2010, p. 77), trains became a dominant source of transport for the city's industries, allowing them to expand further.

2.2.3 Six towns, one city: the federation of Stoke-on-Trent

The federation of Stoke-on-Trent's six towns into one administrative city was a lengthy and fraught process which spanned much of the 19th and early 20th Centuries. The six towns each had their own administrative centres and perceived unique qualities, but their shared geology and industrial economy set them apart from the remainder of rural Staffordshire, whose economy remained mainly agricultural. The following section is based on information from Jenkins (1963), which outlines the procedure in full.

[4] This anomaly is most likely due to the federation of the city in 1910.

The reform act of 1832 brought the six towns together to elect two MPs to parliament, which prompted the first discussions of federation. However, the towns showed resistance to a setup wherein one would be dominant over the others, with Burslem in particular not willing to sacrifice its 'mother town' status. In 1889, Hanley took up its own county borough status at the expense of the same for the wider Potteries region, allegedly in resistance to Stoke becoming the centre of a proposed federation.

Unification was again proposed in 1903 but Fenton, Burslem and Stoke resisted, citing the unfair economic burdens that consolidation of the towns' finances would place on their residents. In 1905, Longton and Stoke proposed a new federation bill, which Fenton rejected, and debate continued for the next five years, with various proposals mooted and rejected until 1910, when a compromise was reached, and the six towns were federated. The federation was subsequently granted city status in 1925.

While the six-town conurbation is unique in UK local government history, it has been described as "a historic compromise" (Parker, 2000, p. 263). For many years there was no designated city centre, with investment and facilities split between towns – as Jones (1961, p. 88) states, "each town has a bit of everything". Eventually, Hanley was designated the city centre, to some resentment; as it became the focus of most financial investment (Jayne, 2004, p. 200), a battle has been observed between "a centralising modernisation of the conurbation…pitched against the nostalgic maintenance of its 'unique' nature" (Parker, 2000, p. 263). Indeed, the modern city of Stoke-on-Trent has been described as "a 'city' in name only – with no significant agglomerated functional regional economic, administrative and cultural core" (Jayne, 2000, p. 21).

2.2.4 The 20th Century and the rise and fall of Stoke-on-Trent

The early 20th Century saw continued expansion of the pottery industry – the graph in Figure 4 shows the changing employment rates from 1715 through and beyond the 20th Century. The industry reached peak employment of

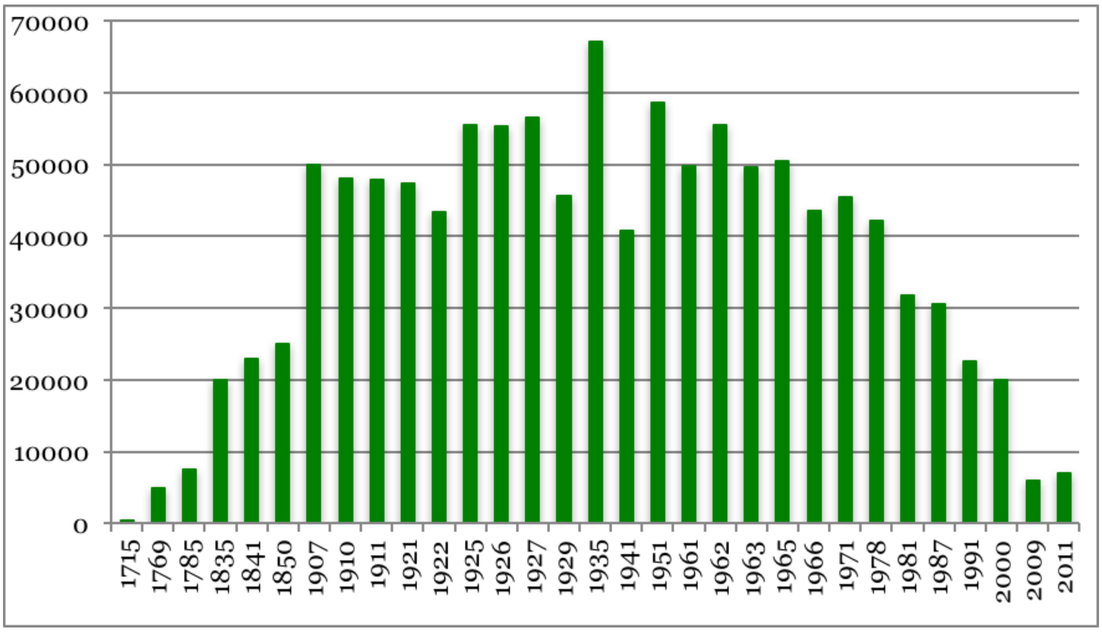


Figure 4: Changing employment in the pottery industry, 1715-2011 - The data is collected from various sources: 1715-1850 from Thomas (1971); 1907-1910 & 1925-1941 from Hand (1925); 1911-1922 from the UK Census (via Hand, 1925); 1951 & 1966 from Moyes (1972); 1961, 1962 & 1965 from Ministry of Labour (1968); 1963 from Gay & Smyth (1974); 1971-1987 from Imrie (1991); 1991-2011 from Rice (2010)

around 67,000 in the 1930s and figures remain steadily high across the 20th Century until the very end, plummeting through the 80s and 90s to reach a low of 6,000 in 2009, representing just 4% of local employment. The demise of the pottery industry in Stoke-on-Trent was not caused by one event or issue, instead by a combination of political, economic and technological factors that are summarised in i-iv below.

i. Outsourcing and automation

As in other manual industries, improved mobility through better transport and communication links meant international competition for production. Stoke-on-Trent had highly skilled workers, but other countries could offer more competitive rates of pay. The directors of Wedgewood and Doulton sent technicians from Stoke-on-Trent to south-east Asia to train workers there, and subsequently shrunk their workforce by 80% through the early 20th Century. The same percentage of Spode's manufacturing was moved to Indonesia, while Portmeirion outsourced to Portugal. Priorities changed from upholding local economies to increasing profit (Rice, 2010, p. 58).

Additionally, as technology advanced, several jobs in the pottery industry could be mechanised, saving money and often increasing turnover. The pottery industry was often a little late to employ mechanised techniques compared to other manual industries, meaning that all-manual labour was a feature of ceramics manufacture until the mid 19th Century. However, despite resistance from potters, factories became highly mechanised, and many of the manual tasks disappeared by the mid-20th Century (Sekers, 1981, p. 29). Women were disproportionately hit by mechanisation in the industry, as the roles they commonly held (those of glazing and decoration) were the most commonly automated, so the industry became very defeminized (Imrie, 1991, p. 447).

ii. The Clean Air Act

The city inherited the nickname 'Smoke-on-Trent' owing to the near-constant blanket of smoke that blackened the air and coated people's houses (not unlike the nearby Black Country). Following London's Great Smog in 1952, the government issued the Clean Air Act of 1956. Stoke-on-Trent was designated a 'smoke control area' under the act, and it became "an offence to emit smoke from a chimney of a building, from a furnace or from any fixed boiler if located in a designated smoke control area" (Stoke-on-Trent City Council, 2012). This meant that many of the coal-fired bottle kilns in the region could not continue production, and factories had to switch to electric or gas kilns. There used to be over 2,000 operational bottle kilns in Stoke-on-Trent (Rice, 2010, p. 57), but following the Clean Air Act this number dropped dramatically. Now none remain in operation and the majority have been demolished.

iii. Lack of diversification

Ceramics (followed by coal and steel) was the dominant industry in Stoke-on-Trent for three centuries, as the name The Potteries suggests, and Rice (2010, p. 27 suggests that "without pots Stoke is nothing". However, over-reliance on manual industry, and on the pottery industry specifically, is one of the key factors in the city's downfall, as explained by Imrie (1991, pp. 436–444). The period immediately following World War II saw a twenty-year period of economic growth in capitalist countries. However, growth in Stoke-on-Trent was restricted to its three main industries, and "nobody worrie[d]…about diversifying the Potteries" (Jones, 1961, p. 98) and developing new sources of income. This meant that the decline in traditional sectors (see iv. & v.) hit Stoke-on-Trent particularly hard, decimating the local economy.

Reasons for this lack of diversification include the city's failed attempts to secure financial assistance from central government, despite persistent campaigning. Paradoxically, Stoke-on-Trent was passed over for government investment because of its low levels of unemployment and deprivation, levels which escalated (partially) due to this lack of investment. Additionally, Rodger (1972) presents evidence that the Board of Trade denied applications from other industries (motoring manufacture, for instance) who wanted to base themselves in Stoke-on-Trent, instead approving those from the pottery and mining trades, focusing investment on industries which were declining, and would soon collapse.

iv. The collapse of the pottery industry

Imrie (1991, pp. 438–441) details the complex issues surrounding the "crash" of the pottery industry, which he pinpoints to 1979. Productivity, output and profits all fell through the 1970s, with a 42% drop in pre-tax profits for the pottery industry between 1978 and 1982. A drop in sales of 37% during the same period echoed a wider struggle in British manufacturing, which saw the collapse of British export markets, caused in part by a 17% rise in exchange rates, part of Conservative fiscal policy in 1979. With 80% of British-made ceramics being exported overseas during the late 1970s, this issued a crippling hit to the pottery industry, with no solid domestic market to fall back on. By the 1980s "these external factors had combined to send the industry into recession, with labour bearing the brunt of major restructuring and redundancy programmes" (Imrie, 1991, p. 441).

Ceramics was not the only industry to suffer during the recession of the 1970s and 80s, as Imrie elucidates (1991, pp. 441–444). British manufacturing more generally, including mining and steel works, saw a sharp decline. In 1956, coal mining had a 10.7% share of Stoke-on-Trent's economy, but by the late 1980s this had fallen to 3%, with 13,854 job losses. Steel, too, fared badly, with closures at Milton and Shelton costing 4605 jobs by 1980.

Imrie (1991, p. 442) proposes that the decline of the mining and steel industries was the result of political and economic decision-making post-1960. State focus on a "narrow criteria of profit and loss, irrespective of the costs to the regions and the nation, either in terms of unemployment or social dislocation" saw Stoke-on-Trent considered collateral damage in the quest for increased capital. The steel industry's general decline was countered with a policy of rationalisation, with funding and attention focussed on a small number of major plants, at the expense of (among others) Shelton Bar steelworks. This process was echoed in the coal industry, with employment plummeting as attention was focussed on a small number of pits in an attempt to cope with falling demand. Imrie (1991, p. 443) concludes:

> Ultimately, Stoke has suffered a form of deindustrialisation premised on narrow expansionary plans, which operate on criteria of profit and loss. While redundancy and job losses have been less publicised than the larger coalfields in Britain, the growth and revival of coal internationally appears to be occurring to the cost and detriment of jobs in places like Stoke.

On a national scale, economic struggles, political legislation, complexities of the import-export markets and the development of automated technologies led to a recession and the decline of manual industry. Combined with an over-reliance on very few sources of income and employment, this created something of a perfect storm for Stoke-on-Trent, leading to plummeting employment figures and widespread deprivation.

During the recession of the 1980s, unemployment in Stoke-on-Trent soared, with the 5908 registered unemployed in 1980 almost trebling to 15,253 in 1982. Those who worked in the pottery industry were hit particularly hard, including Wedgewood, Spode and Royal Doulton, whose workforces shrank to a shadow of their previous numbers, with many smaller companies disappearing altogether. In 1980, 28.2% of registered unemployed had previously worked in the potbanks, this figure rising to 34% by 1982. As the industry was heavily feminized, women suffered disproportionally from job losses, with 52% of all women unemployed in 1982 having worked in the pottery industry, as opposed to 26% of men (all figures from Imrie, 1991, p.447).

2.2.5 Stoke-on-Trent in the 21st Century

Stoke-on-Trent has never been an affluent city, and its manual industries maintained "highly dichotomous relationships between bosses and workers" and "an identifiable lack of middle-class representation" (Jayne, 2004, p. 201), something that is said to persist today (www.stokesentinel.co.uk, 2014). The industry itself, and its subsequent collapse, have shaped the present city of Stoke-on-Trent in a number of ways, both positive and negative.

i. Deprivation and unemployment

The collapse of local economy in the 1980s has resulted in continuing decline and a high degree of deprivation in the city, which is now the 15th poorest region in the country (Department of Communities and Local Government, 2011). Of the cities surveyed by Dorling (2010), Stoke-on-Trent ranked 46 out of 56 for quality of life (see §2.4.4.1 for details). In 2001, 11% of adults held a university degree (compared to a national high of 41%), house prices were the fourth lowest in the country, and 29% of residents were living below the poverty line.

Unemployment remains high in the region; in 2017, 5.9% of the economically active population of Stoke-on-Trent were unemployed, compared to a national average of 4.4% (ONS, 2013). The city's lack of employment diversity has made the situation more difficult for its swathes of skilled new unemployed:

> The structural shift in Stoke's economy is problematic insofar as no direct replacement employment has emerged to offset the decline in the pottery industry, and that which has emerged, i.e. service industries, is barely adequate in terms of the types or numbers of jobs created (Imrie, 1991, p. 449).

ii. Health and wellbeing

The city's health has been affected by its ceramic legacy. The pottery industry was not a healthy one in which to work, with potters "spending long hours working in cramped conditions, often with noxious substances and inhaling the smoke of the kilns" (Taylor, 2009, p. 8). Many potters suffered from silicosis, or Potter's Rot, from inhaling flint and other particles. Before the outlawing of lead glazes in 1948, for glaze dippers (who submerged fired ware in buckets of glaze) lead poisoning was almost inevitable, and the general industrial smog affected everyone in the city. The city remains a particularly unhealthy one, with life expectancy at 75.4 years for males and 79.9 years for females, 2.9 and 2.4 years lower than the national averages respectively, and Stoke-on-Trent is "significantly worse than [the] England average" in 23 out of 32 categories of wellbeing, according to the Department of Health (2011).

iii. Politics and the far Right

As a city built on industry, Stoke-on-Trent's three parliamentary constituencies (Stoke-on-Trent North, South and Central) have been reliable Labour seats since the party's inception, often isolated in a surrounding Conservative area, and the city council has been described as "staunchly "old" Labour" (Jayne, 2004, p. 201). In more recent years, far-Right parties such as the UK Independence Party (UKIP) and the British National Party (BNP) have attempted to make Stoke-on-Trent a core location in their political aspirations, manipulating three core facets of the city's history and identity.

Firstly, while there has long been a presence of Black and Minority Ethnic (BME) residents in the city (11% in 2011), and while the city has not seen a particularly steep rise in net immigration, the in-migration of workers and asylum seekers "combined with out-migration of white communities [has] contributed to the BME population in Stoke proportionally more than doubling" from 1991 to 2011 (Burnett, 2011, p. 4). Secondly, it has been argued that, like other working-class, "old" Labour cities, Stoke-on-Trent has suffered from disenfranchisement by centrist New Labour, whose focus shifted from working to middle class interests (Burnett, 2011, p. 5). Thirdly, Burnett (2011, p. 6) has argued that a general rightward shift in mainstream politics in the 21st Century has incorporated an anti-immigration rhetoric which has legitimised more extreme far Right anti-immigration parties.

Capitalising on these insecurities, the BNP started campaigning in Stoke-on-Trent in 2001. By 2003 they were Labour's main opposition locally, and in 2008 they held 9 council seats, and launched their national campaign from the city. The BNP's presence was wiped out by Labour in the elections of 2011, but fellow far-Right party UKIP have also sought representation in Stoke-on-Trent, with party leader Paul Nuttall contesting – and losing – the Stoke-on-Trent Central by-election in 2017. Racially-motivated violence in Stoke-on-Trent has risen sharply since the beginning of the 21st century (Burnett, 2011), and focus groups in the region have uncovered outwardly racists beliefs among some locals, "echoing the anti-immigrant discourses" found in local and mainstream politics by linking the city's socioeconomic struggles to perceived high rates of immigration (Burnett, 2011, p. 6).

iv. Revitalisation

In contrast to its former fortunes, in the late noughties and early 2010s the city has received some investment and attention that has reinvigorated its status, and the status of its pottery industry. While not coming close to its industrial heyday, the local pottery industry persists and has seen some recent growth. The decision by artisan pottery designer Emma Bridgewater to locate her new factory in Stoke-on-Trent has brought attention back to a dwindling industry, with the production of popular wares as well as factory tours and a ceramics café making it a popular tourist destination. The BBC's Great Pottery Throw Down was filmed at Middleport pottery in 2016 and 2017, with judge Keith Brymer-Jones also planning to open a new factory in the city (www.stokesentinel.co.uk, 2017a).

Additionally, Stoke-on-Trent's position as a city with a strong workforce, cheap infrastructure and good transport links to Manchester, Birmingham and the rest of the country has seen it become the subject of various regeneration and investment bids (with varying success). The city was shortlisted for the title of European City of Culture 2021, and despite a large grassroots campaign, was unfortunately unsuccessful. However, campaigners have aspirations that this will bring further attention and investment.

2.3 The social life of the pottery industry

While the economic and employment figures for the pottery industry are well-documented, several accounts of life in the pottery industry have detailed the everyday experiences of the employees and the social relationships they maintained. Additionally, the content of the oral history interviews themselves (see §3.4 for details) illuminate the social lives of pottery workers and the hierarchies within which they operated. Detail from both these types of source informs this section.

Jones (1961) was a novelist and journalist who spent some weeks living in Stoke-on-Trent, working in a potbank and talking to locals in order to research a pseudo-ethnographic account of life in the region in the mid-20th Century – the same period in which my informants (see §3.4) worked. The "strongest impression" in Jones' account is of "the unity and consistency of life" (Jones, 1961, p. 9) throughout the city and its residents. Imrie explains that three fifths of locals worked in the pottery industry (1991, p. 436), and Jones (1961, p. 97) adds that

> It is not merely a question of the number of workers actually employed in making pottery. When you examine the things used in the industry – the presses and jollies, the moulds, the nylon cloths, the paints – you find in practically every case the label "made in Stoke-on-Trent".

Jones comments on the consistency of life not only between workers, but in a single worker's life: "In general, the aim of a pottery worker is to do the same job at the same firm from the time he leaves school until he is no longer capable of working" (Jones, 1961, p. 18). There are exceptions, he states, for the most low- and highly-skilled workers, who may have a more nomadic working life (for the former) or a more independent one, based on reputation (for the latter). Indeed, the majority of speakers from the oral history archive consistently worked in one factory for as much of their life as they were able (discounting periods of military service, or factories closing). Speaker Firing_SJ inherited the skills of his job from his father and grandfather, with job consistency stretching across generations.

Jones (1961, p. 19) asserts that "[t]he boss, in a small potbank, and the works manager even in a big one, knows every employee by his first name", suggesting that, socially, management interact with their employees with some regularity and informality. This is backed up by speaker Admin_JB from the oral history archive, who details frequent interactions with senior management, both at work and separate social engagements. However, it has also been stated that there was a "highly dichotomous relationships between bosses and workers" (Jayne, 2004, p. 201) in Stoke-on-Trent's manual industries, and speaker Design_WH asserts that the management were "separate and important", that there was a "social division" between workers and senior staff.

In the Potteries, as in many industrial cities, working life could be strenuous and poorly-paid. Jones states – from interviews with pottery workers – that conditions were very challenging in the early 20th Century in particular, with works managers severely disciplining staff for leaving their benches, talking or taking unauthorized breaks, for example:

> the old days are remembered by three powerful forces which kept the noses of the workers to the grindstone and crushed the sense of freedom. One was the direct and immediate enforcement of discipline. The second was the need to earn every possible penny in a day because there might be no work the next day. The third was the ultimate sanction of the sack (Jones, 1961, p. 123).

The potbanks of the early 20th Century improved upon their predecessors with better "facilities for eating, sanitation, lighting, heating and clothing" (Baker, 1991, p. 101), meaning better working conditions for employees. Nevertheless, several oral history interviewees talk of the lack of heating and electric lighting throughout their careers, though when asked about workplace accidents, few have any to recount.

Gay & Smyth (1974, p. 209) suggest that the "widely held belief that the pottery industry in Stoke-on-Trent pays particularly low wages…is completely untrue". However, both Jones and Owen (1970) suggest otherwise, citing generally low wages across all roles. However, wages are not always easy to calculate; as the majority of manual workers from the oral history archive corroborate, it was common in most manual roles in the pottery industry for apprentices to start on a low weekly wage but to progress to 'piecework' when one's skills were developed. This meant payment per piece completed, and while this often increased a worker's take-home pay, it also meant they were directly responsible for each piece completed, and breakages and non-completion impacted their wages. However, certain roles – such as designers, according to speaker Design_WH – were better compensated, occasionally incorporating a sales bonus.

While the industry was broadly manual, working class and low-paid, wages differed between different roles in the industry, as did the skill-level required, the working environment and the esteem in which the worker was held. The following sections detail the different roles within the pottery industry, how these were organised on the factory floor and how this hierarchy likely affected daily interactions.

2.3.1 The socio-spatial structure of the potbank

Potbanks were divided spaces in several ways. Firstly, while the industry was heavily feminised, "the supremacy of the male was an established law" according to Jones (1961, p. 128). He states that the men's jobs were more central and the women's more ancillary, and that men occupied the upper echelons of the available roles. Women's roles were more focussed on decoration and administration than the construction of the ware itself, though there was some overlap, and Jones (1961, p. 116) states that "in the good old days, potters and decorators were at daggers drawn…Whichever you were, it was out of the question to have a friend who was the other". While he states the rivalry had abated by the time of his observations in the 1960s, the division between the genders and sections was still apparent to him.

This division was likely enforced and reinforced by the spatial structure of the potbank itself. Potbanks have "always tried to do all [their] work from start to finish on [their] own premises" (Jones, 1961, p. 10), taking a piece of ware from conception and design, through construction of the raw materials, production itself, firing, decoration and eventual packing and shipment. Because of the different stages involved in pottery production, and the specific skills required in each, potbanks were divided into discrete areas of activity. Speaker Admin_EF adds that these sections were "blocked off from" one another.

Large traditional potbanks were usually arranged "so that production began at the rear and finished at the front of the premises", although "the complex sequence in the making process ruled out any purely linear arrangement" (Baker, 1991, p. 49). Jones (1961, p. 12) adds that

> Because there is no internal plan, there is no convenience except by luck. One stage of production is seldom close to the next, or on the same level. To find your way about is a puzzle.

Nevertheless, layouts usually resulted in the more manual, dirtier jobs taking place at the back of the factory, while the "elite of the workers" were accommodated at the front, in more comfortable premises (Baker, 1991, p. 49).

Across these discrete areas, "each person was trained in a particular skill and stayed in that department" (Baker, 1991, p. 25) and workers were "strictly segregated" (Baker, 1991, p. 51). As well as focussing and streamlining the production process, motivations for segregation in 19th Century potteries included increased control and discipline, preservation of trade secrets, fear of moral corruption and the discouragement of unionisation (Baker, 1991, pp. 25, 51). While these fears eased in the 20th Century, the structures of the potbanks did not change a great deal – firms tended to take over existing buildings rather than constructing new ones, and "where additions were made, they offered no radical change, and improvement was in refinement rather than fundamental design" (Baker, 1991, p. 100). As such, throughout the history of the pottery industry in Stoke-on-Trent, "[b]oth internally and externally, the social hierarchy of the pottery workers and of the outside world was reflected in the buildings which they respectively worked in and visited" (Baker, 1991, p. 49).

2.3.2 The stages and departments of pottery production

Stoke-on-Trent's pottery industry produced a huge variety of ceramic ware, and factories would usually focus on one or just a few types of ware. Types of ceramics included: decorative ware, such as figurines; tableware, divided into flatware (plates, bowls, trays, etc.) and hollowware (cups, jugs, teapots, etc.); tiles, bricks and other construction ware; and sanitary ware, such as baths, toilets and large medical items. The discrete stages of pottery production and the departments in which pottery employees worked were broadly consistent across potbanks, and are outlined below, following Sekers (1981)[5].

[5] To avoid repetition, all roles are assumed to be typically filled by men unless stated otherwise.

i. Design

The level of design input needed depended on the complexity of the ware to be produced, but almost all pottery production begins with a modeller. From a specification put forward by a client or manager, he designs a single piece to go into mass production. This design may be artistic (designing a figurine of a horse, for example), mathematical (designing a teapot that holds exactly two pints, for example), or a combination of both. As such the role required a high level of skill, and modellers were usually (local) art school graduates. Modellers usually worked in their own studio towards the front of the potbank, often alone, though with frequent meetings and interaction with senior staff, and were paid comparatively well.

The modelled piece is used by the mouldmaker to create the moulds for mass production, originally from plaster of Paris, sometimes moving to rubber in later years. Moulds were in constant production, as each had a lifespan of usability, and were dated and replaced when necessary. Mouldmaker was a less-skilled role than modeller, and the mouldmakers usually worked closer to the factory floor, where the remainder of production took place.

ii. Production

Mass production is into two broad strands. The first, slip-casting, requires liquid clay, or slip, to be poured into moulds, set and removed, before being left to dry ready for firing. This involves the slip maker, who mixes the liquid clay to the correct specifications, and the caster, who pours it into the moulds and separates them once set. Slip-casting is the usual method of production for mass-produced hollowware.

The second method of production is press moulding, which requires solid clay to be pressed onto moulds of various shapes, usually to make flatware. Flatware is produced through jigging (placing the clay on the outside of a mould and flattening it) or jollying (placing the clay on the inside of a mould and shaping it), often using machinery. These jobs are conducted by press moulders or plate-makers, also categorised as jiggers or jolliers respectively.

Other roles involved in production included fettler, a person who smoothed the rough edges from ware that had been slip-casted, and (cup)-handler, a person who shaped and attached handles to ware when needed. These roles often went to female employers, while casting, jollying and jigging was overwhelmingly done by men. Apprentice production staff were usually paid a small wage before moving onto piecework after their training.

iii. Firing

Ware may be fired once or several times between glazes, and timings and temperatures need to be perfect in order to ensure batches are not damaged and unsellable. As such, “nowhere was the traditional skill of the potter more essential for the success of the manufacturing company than in firing” (Sekers, 1981, p. 24).

The fireman, the most senior person in this section, oversees the entire firing process, dictates the temperatures of the firings and stocking of the ovens, and decides when the doors should be sealed and opened. It is a role with huge responsibility as, with hundreds of pieces being fired at once, “by far the greatest risk of financial loss on a potbank occurred during firing” (Sekers, 1981, p. 24). The role is highly-respected, the fireman is “by far the highest-paid employee” (Sekers, 1981, p. 25), and it is said that the skill of a fireman enables them to conduct their role “by experience and eye alone” (Sekers, 1981, p. 24).

The fireman is assisted by placers, who follow strict rules to ensure the ware is placed in different parts of the kiln depending on the heat it requires. Ovenmen or kilnmen more generally also assisted in this process, filling saggars (large clay basins) with ware to be fired, which were in turn made by saggar-makers, and their assistants, bottom-knockers. Roles in the firing of pottery were some of the most “arduous” (Sekers, 1981, p. 25), requiring constant heavy lifting, and dangerous, with the changes in temperature having long-term effects on the kilnmens’ health.

iv. Decoration

Decoration is the main area of pottery production that employs women, covering a diverse range of roles. Some men are employed in the most skilled decoration roles, but the department is overwhelmingly female. Base decoration can be applied under the glaze, and is usually done by transferrers, who coat a warm, engraved metal plate with the glaze, lay fine tissue over the top and press them together, before transferring the tissue pattern onto the ware.

Other decoration is done after the first glazing (see below). A free-hand paintress or enameller uses enamel colours to decorate the ware to specification, while gilders or goldstampers applied delicate gold decorations to the products. Women were also employed as flower makers to add embossed floral decoration to vases, for example. Roles varied in skill and pay, and most girls would start on simpler designs while they trained, moving up to piecework as they progressed, with very experienced decorators progressing to supervisory level.

v. Glazing

Wares are usually coated in glaze before each firing. A dipper is responsible for coating tableware and figurines wares in glaze before they are placed in saggars and fired, while a sprayer is employed for larger items, such as sanitary ware. Dipping was usually a poorly-paid and repetitive job, and as explained in §2.2.5, lead-poisoning was a virtual inevitability for dippers (Sekers, 1981, p. 29).

These categories encompass the main manual departments in the potbank, from my research, but there may be other jobs not mentioned or more specific roles within the departments mentioned, depending on the potbank. Outside these categories, three more roles involved with daily potbank operations (though not directly with the production of ware itself) may be added: salesperson, manager and administrator/clerk. Salespeople travelled locally and nationally to sell the produce. Managers could be the potbank owners, or a more intermediate role such as a works manager, the latter of which usually spent more time on the factory floor than the former. Works managers often worked their way up through the roles on the factory floor, whereas senior managers tended to inherit their position through familial ties. Administrators were almost exclusively female, and handled the wages, sales and other financial and HR matters of a potbank. Managers and administrators usually worked away from the factory floor but maintained consistent contact with the employees there.

As well as shaping the region socially, economically and architecturally, the pottery industry is strongly linked to the local dialect. Respondents to Leach & Montgomery's (2013) survey suggested the dialect is the "essence of the Potteries heritage", and even that "the potteries accent is dying the same death as the industry that spawned it". The following section explores the local variety of English in academic, folk and perceptual dialectology, and examines its similarity to other varieties.

2.4 Stoke-on-Trent in dialectology

Previous linguistic work on Stoke-on-Trent is scattered and scant, with some small linguistic studies, some broad references to the variety in country-wide surveys, some perceptual and attitudinal work and some folk dialectology. This section brings together this previous work, summarising observations about Stoke-on-Trent English already available and situating the variety among other UK English dialects. §2.4.1 covers academic linguistic work on Stoke-on-Trent English, §2.4.2 details folk linguistic commentary and §2.4.3 covers perceptual dialectology in the region. The section ends with a discussion of Stoke-on-Trent's place in the country linguistically, and relationship with neighbouring cities and varieties, in §2.4.4.

2.4.1 Linguistic work on Stoke-on-Trent

Montgomery (2003) tracks some of the earliest documents dedicated to dialect words and phrases from the region surrounding Stoke-on-Trent, such as Poole's (1880) *An attempt towards a Glossary of the archaic and* *provincial words of the county of Stafford* and Nicholls' (1934) *Dialect words and phrases used in the Staffordshire Potteries*. Both were written by non-academics and lack a "scientific or analytical basis" (Montgomery, 2003, p. 9), instead attempting semi-phonetic representations of dialect words using traditional orthography.

Staffordshire was covered in the Survey of English Dialects (Orton and Barry, 1969), though the Staffordshire surveyed represents the county before the 1974 Local Government Act, when it still encompassed much of modern day West Midlands and Warwickshire. Gibson's (1955) thesis comprises the fieldwork for the Staffordshire section of the SED, and details the areas of study, eleven villages in all. Four of these – Mow Cop, Barlaston, Alton and Wanslow – are close to the modern-day region of Stoke-on-Trent, being 9, 5, 15 and 19 miles away from the city respectively. A further four (Ellenhall, Hoar Cross, Lapley and Ridware) are scattered around Stafford, with three (Eldingale, Wigginton and Hinley) much further south, towards Dudley and Walsall (see Map 2).

The 11 rural villages surveyed had a stable population of around 500 which "may be counted upon to have a well-marked, firmly-established consistent phonological system" (Gibson, 1955, p. 15). The more industrialised regions of Stoke-on-Trent and the Black Country were deliberately excluded from the SED fieldwork. Gibson (1955, p. xxxiii) observes that "[l]inguistically, the Potteries and the Black Country can be considered as two separate areas, both being comparatively unrelated to the rural areas surrounding them", and states that both varieties are idiosyncratic enough to warrant their own study of a similar size. However, between 1938 and 1940, Josiah Wedgewood V moved the Wedgewood factory to Barlaston, and Gibson does note that in Barlaston and Mow Cop specifically, the "influence of the surrounding Potteries has been strongly felt" (1955, p. 16), both industrially and linguistically.

Linguistic work has been done on other regions of Staffordshire, outside of the city of Stoke-on-Trent. Heath (1980) conducted a sociolinguistic investigation of the dialect of Cannock, a town approximately 30 miles south of Stoke-on-Trent, carrying out interviews with 80 informants and auditory phonetic analysis of a wide range of lexical sets. Hill (1985) interviewed 14 locals from Leek, a town 12 miles north-east of Stoke-on-Trent and auditorily analysed their accent features. While there are no other studies of linguistic variation in the region between these and very recent work (see below), the variety in Stoke-on-Trent is consistently mentioned, if briefly, in texts relating to UK dialects more broadly.

Wells' (1982a, p. 350) separates the accents of England into northern and southern varieties, further subdividing his linguistic north into the midlands, middle north and far north. Stoke-on-Trent is highlighted as part of a "north-western transitional area" between midlands and middle-north varieties, alongside Derby. Beyond this, Wells (1982a, p. 364) notes that Stoke-on-Trent "lacks the London-Birmingham diphthong shift", meaning it retains narrow diphthongs [eɪ], [aɪ] and [əʊ] in FACE, PRICE and GOAT, with the latter having [ɔʊ] before /l/. Additionally, Wells (1982a, p. 366) states that the velar nasal plus found in the North West, including Birmingham (Clark and Asprey, 2013), Manchester (Hughes et al., 2012) and Liverpool (Watson, 2007), has a broader use in a region "which includes the Potteries of north Staffordshire". In this region, it can be produced before word-internal obstruents and after unstressed vowels, meaning that "from a taxonomic-phonemic point of view...Stoke-on-Trent has no phoneme /ŋ/" (Wells, 1982a, p. 366).

Trudgill (1999a) briefly references Stoke-on-Trent in his discussion of traditional and modern dialects of England. Trudgill's (1999a, p. 35) traditional dialect divisions place Staffordshire under the categories of South > Central > Western Central > Staffordshire, the latter category including parts of Cheshire, Shropshire, Derbyshire, Warwickshire and Worcestershire in one traditional dialect region. This region, he states, pronounces his eight diagnostic regional features *long*, *night*, *blind*, *land*, *arm*, *hill*, *seven* and *bat* as [lɒŋ], [naɪt], [blaɪnd], [lɒnd], [a:m], [ɪl], [sevn] and [bat] (Trudgill, 1999a, p. 33).

However, Trudgill singles out the Potteries as having an "interesting system of Traditional Dialect vowel sounds which make the dialect distinctively different from the areas around it" (1999a, p. 42). His descriptions of this system are in Table 3, with transcriptions added.

Trudgill (1999, p. 42)	**Transcriptions (my own)**
bait is pronounced like *beat*	[eɪ] → [i:]
beat is pronounced like *bait*	[i:] → [eɪ]
bought is pronounced like *boat*	[ɔ:] → [ɔʊ]
boat is pronounced like *boot*	[ɔʊ] → [u:]
boot is pronounced like *bout*	[u:] → [aʊ]
bout is pronounced like *bite*	[aʊ] → [aɪ]
bite is pronounced like 'baht'	[aɪ] → [a:]

Table 3: Trudgill's (1999a: 42) descriptions of the traditional Potteries dialects, with transcriptions added

Trudgill's modern dialect divisions instead place Stoke-on-Trent under the categories of North > Central > West Central > Northwest Midlands alongside the varieties of Derby, Chester and Manchester. His diagnostic sentence *very few cars made it up the long hill* is, in this region, pronounced as /veri fju: ka:z meɪd ɪt ʊp ðə lɒŋg ɪl/ (Trudgill, 1999a, p. 68). Once again the region of Stoke-on-Trent is singled out as "rather distinctive, retaining some of the characteristics of the older Traditional Dialect" (Trudgill, 1999a, p. 74), though specific features are not mentioned.

Studies which investigate the Stoke-on-Trent accent in the linguistic detail found in Gibson (1955) don't reappear until the 21st Century. Montgomery (2003) conducted SRN surveys (Llamas, 1999), questionnaires and interviews with eight Stoke-on-Trent residents and documented a selection of phonological, lexical and grammatical features. He observed that, with the exception of two middle class speakers, respondents did not observe a FOOT/STRUT split; speakers used an [u:] in words with orthographic *–ook* spellings (*book*, *shook*, etc.); and there was variation between [ɪ] and [i:] in the word *it*, with middle class speakers using more of the former and working class speakers more of the latter (Montgomery, 2003, pp. 19–25). Leach (2012) investigated the latter variable further, documenting the linguistic and social factors influencing variation between [ɪ] and [i:] in horsES words in Stoke-on-Trent (see §6.2.3 for more detail).

2.4.2 Folk dialectology in Stoke-on-Trent

As in many regions of the UK, Stoke-on-Trent has a tradition of folk dialectology, and local radio stations and newspapers have been the main platforms for this. From 1963 to 1993, local paper *The Sentinel* published humorous articles written by Wilfred Bloor (under the pseudonym A. Scott) in a semi-phonetic approximation of the Stoke-on-Trent dialect, featuring the eponymous character of *Jabez*. The articles proved so popular that book collections and recordings of the stories were made and sold (Scott, 2015).

Figure 5: May Un Mar Lady (Follows, 1986)

Jabez was accompanied and then succeeded by a daily comic strip entitled *May un Mar Lady*, which ran in *The Sentinel* (the local newspaper) for 20 years and is still republished today. The strip, written by Dave Follows, depicts a local married couple, and their interactions are again written in a semi-phonetic representation of the local dialect (see Figure 5).

In 1969 BBC Radio Stoke started airing stories from *Owd Grandad Piggott*, a humorous fictional pottery worker and the brainchild of Alan Povey, who based him on his own grandfather. The stories were told in Potteries dialect – both in writing and in performance – and are now available to buy on iTunes.

Additionally, several Stoke-on-Trent dialect 'guidebooks' have been published, notably Povey & Ridler's (1973) *Arfur Tow Crate in Staffy Cher* and Leigh's (2011) *North Staffs Dialect: Ow Ter Toke Raight*. Both books have been reissued several times, and include a glossary of dialect words and phrases in semi-phonetic spellings. Povey and Ridler's book also includes cartoons with dialectal speech bubbles, while Leigh's tells local myths and fables in dialect. The legacy of these books and comics persists today in

Figure 6: Example tweet from @Pottrays, written in semi-phonetic dialect spelling

@Pottrays[6], a humorous Twitter account that writes about local and national events, once again in a semi-phonetic approximation of the local dialect.

Finally, a local film production company created a short documentary entitled May un Mar Language (Inspired Film and Video, 2008), which included interviews with the children of Follows and Povey, as well as local residents and accent specialists who talked about the features of the dialect, and what it means to locals.

2.4.3 Perceptual dialectology in Stoke-on-Trent

The two main strands of perceptual dialectology involve subjective assessment of dialects by non-linguists and tests of dialect recognition by non-linguists, and Stoke-on-Trent has been the subject of both types. Part of Montgomery's (2003) small survey of Stoke-on-Trent speakers involved examining their answers to Identity Questionnaires (IdQ), which allowed him to assess each speaker on an Identification Score Index (IdSI), a measure of their affinity with the region. His 4 older speakers all scored more highly than the younger speakers, suggesting a stronger attachment to the region. In contrast, in his interviews, some of the younger speakers expressed the opinion that Stoke-on-Trent was "a really horrible place", and "dull and held back from the past", and all four younger speakers expressed a dislike for the local accent, an opinion absent in the four older speakers (Montgomery, 2003, p. 29).

Leach & Montgomery (2013) conducted an online survey of local residents. The first part of the survey asked speakers to state whether they thought they used specific local accent features, including a FOOT/STRUT split, the tense horsES vowel (this is expanded further in §6.2), the use of [u:] in *–ook* and the use of /z/ at the end of *bus*. Translating these responses into accent index scores and comparing them by postcode area within the city, Leach & Montgomery (2013) found a correlation between a higher accent index, a stronger perception of having a local accent, and areas of lower economic

[6] www.twitter.com/pottrays

activity within the city. However, there was not a consistent correlation between a respondent's accent index and the perception of the strength of their own accent.

The second part of the survey elicited opinions of the local area, the local accent and those who have a local accent. The accent itself was frequently described as "uneducated", "thick", "common" and "chavvy", and the region as "poor", "neglected", "rough" and "forgotten". However, respondents also frequently commented that the accent felt "friendly", "warm" and "welcoming", and talked of their love for the region's industrial history and "salt of the earth" people (Leach and Montgomery, 2013).

Respondents were also asked to give a name to the local accent, and in the results a clear age divide was apparent. The majority of speakers under 45 years of age called it a "Stokie" accent, whereas the over 45s overwhelmingly preferred "Potteries". This appears to mirror a shift in perception of the accent and region over the last century – the decline of the Pottery industry (see §2.2.4) has seen it de-centred from the city's identity, with younger respondents more focussed on the city itself rather than its industrial output. This kind of shift in identity due to a place's changing fortunes echoes that found in, for example, Middlesbrough (Beal et al., 2012; Llamas, 2000).

Some respondents noted a distinction between an older, more pleasant Potteries accent and a younger, "common" Stokie accent, suggesting the perceptual divide may be mirrored in production:

> I think it can sometime sound unpleasant when VERY strong... particularly in younger people for some reason! HATE hearing people shouting in Stokie, but softly spoken friendly potters dialect is warm, passionate and comforting (being the dialect I have grown up around)

> I think the accent sounds nice in the older generation, but the younger generation have altered the accent and it does not sound the same

> I think people my age have generally got a Stoke accent rather than potteries. Older people have a potteries accent (sometimes use the dialect words 'get thee coot on' etc) I myself have a stoke accent but do think I can sound 'common'

Whether this distinction is observable in linguistic production is yet to be quantified, though Leach (2012) did find a distinction in the articulation and distribution of a tense horsES vowel in older (30+) and younger (16/17) speakers, though her sample only included two speakers in each category.

Commentary regarding loss of the local dialect in Stoke-on-Trent has been consistent through the 20th Century. Kennet (1963, p. 31) describes the North Staffordshire dialect as “pure”, and states that “short of closing down the BBC, prohibiting the sale of records and increasing the petrol tax by 200%, I do not see how we can hope to prevent the disappearance” of the local dialect. Of course, discourse surrounding young people changing, losing or ruining the local accent is common across UK Englishes, and has been since the 19th Century. As Beal (2018, p. 168) says “[i]n terms of heritage, dialects are like crumbling castles: not practical for everyday use, but in desperate need of shoring up in order to preserve the nation’s sense of its own history and identity”.

Several studies have explored the perceptual confusion between Stoke-on-Trent English and other nearby varieties. Stoke-on-Trent English is frequently mistaken for Liverpool English, a confusion that is the subject of much commentary among locals (MyTunstall, 2013). Pumford (2014) administered a perception test using carrier sentences read by Liverpudlian and Stoke-on-Trent English speakers, and asked speakers to guess where the speaker was from, rate their speech on scales of pleasantness and correctness, and highlight any “prominent” features (Pumford, 2014, p. 12). Some Stoke-on-Trent samples were misidentified as Liverpudlian, but not vice versa, and the Liverpudlian speakers were overwhelmingly more accurately identified. She notes that respondents highlighted plosive lenition, fronted NURSE vowels and an ‘elongated’ PRICE vowel in both accents, suggesting these features are shared by both varieties and may contribute to confusion between them (Pumford, 2014, p. 23).

Leach, Watson and Gnevsheva (2016) conducted an online perception survey that asked 198 respondents to decide whether a speaker was from Liverpool, Manchester, Stoke-on-Trent, Crewe or Macclesfield (the latter two being small towns in the north-west Midlands). Liverpool was once again overwhelmingly more accurately identified (66.6%), followed by comparable levels for Manchester and Stoke-on-Trent (37.6% and 35.6%) and lower levels for Macclesfield and Crewe (26.6% and 21.4%). These results show support for Montgomery's (2007) cultural prominence effect, which suggests that varieties with, or from places with, a higher cultural prominence are more successfully recognised. A logistic regression model fitted to the responses highlighted that the further a respondent resided from the speaker's origin, the less likely they were to correctly identify a clip, providing further evidence for Montgomery's (2007) proximity effect. However, the proximity effect was only significant for Stoke-on-Trent, Macclesfield and Crewe, suggesting the cultural prominence effect outweighed the effect of proximity for Manchester and Liverpool (Leach et al., 2016, p. 204).

However, there were complicating factors. For Stoke-on-Trent in particular, the proximity effect failed to reach significance when Stoke-on-Trent resident respondents (as opposed to those who live nearby) were removed, suggesting extended residence *within* a place of interest should be examined separately (Leach et al., 2016, p. 206). Additionally, different sentences (and the variables therein) prompted different levels of accuracy in identification. The presence of plosive lenition in certain sentences made them more likely to be correctly identified as Liverpudlian, and the presence of [uː] in *took* and *book* had the same effect for Stoke-on-Trent (Leach et al., 2016, p. 208).

2.4.4 Stoke-on-Trent's position in the UK

According to ONS official boundaries, Stoke-on-Trent is in the Midlands – the West Midlands specifically. Montgomery and Moore (2017, p. 2) state that "there is ample evidence that the ways in which places are defined institutionally have consequences on language use and perceptions of language variation", and Stoke-on-Trent's geographical and administrative placement in the Midlands impacts upon its linguistic identity in ways explored in this section. However, Stoke's close proximity to the ONS' administrative North[7] and large nearby cities, as well as the reduction of nuanced geographical distinctions of the UK into a (quantifiable, perceptual or imaginary) north-south divide complicates its identity. This section summarises Stoke-on-Trent's geographical, linguistic and socio-political place in the country.

2.4.4.1 Stoke-on-Trent and the Midlands

The national conceptualisation of a north-south divide in England, and the fluid nature of the various administrative, political, perceptual and linguistic north-south divides (see Montgomery, 2007 for a detailed discussion), results in a "perceptual no-man's land" (Upton, 2012, p. 258) in the Midlands, which is often linguistically considered a "junction between contrasting varieties" (Upton, 2012, p. 262). However, Asprey (2015) and Braber and Flynn (2015) present evidence for the West and East Midlands respectively to be considered discrete dialect areas in their own right.

Stoke-on-Trent receives *Midlands Today* regional news programming, grouping it in the same area as Birmingham and the West Midlands. Similarities between Stoke-on-Trent English and other Midlands varieties have also been suggested. Scollins and Titford (2000) document the English of Derbyshire and the East Midlands, focussing on the English spoken in Ikleston specifically. However, they state that the variety stretches beyond Derbyshire into Nottinghamshire, Leicestershire and Staffordshire. Additionally, Weiling, Shackleton and Nerbonne (2013) use SED data and dialectometric methods to identify regions of the UK whose accent features cluster. Their calculations identified

[7] Tunstall, the northernmost of the six towns of Stoke-on-Trent, is only 10 miles away from Congleton and 12 miles from Crewe, both major towns in Cheshire, in the administrative North.

> an irregularly shaped region of twenty two localities centred on Staffordshire and Derbyshire [which] is associated with nine unusual variants that, on closer examination, include five of the eight variants that Trudgill (1999) associates together as characteristics of a [Traditional] regional 'Potteries' dialect: [ti:l] for tail, [bɛʊt] for boot, [dain] for down, [ʃɛip] for sheep, and [koɵt] for caught. (Wieling et al., 2013, p. 35)

In Leach & Montgomery's (2013) survey, only one speaker (unprompted) described Stoke-on-Trent English as a Midlands variety. However, the debate about Stoke's position in the country frequently reappears in local press, with two locals recently asserting "it is part of the West Midlands and it always has been" and "Stoke-on-Trent is in the Midlands. It is simple. I cannot see how it could be anywhere else" (www.stokesentinel.co.uk, 2017b).

2.4.4.2 Stoke-on-Trent and the North

In the same article (www.stokesentinel.co.uk, 2017b) debating Stoke's position in the country, other locals allied more with the North and other cities therein. This attitude was echoed by a higher proportion of speakers in Leach & Montgomery's (2013) survey, some of whom described Stoke-on-Trent and its accent as "quintessentially" and "definitely" Northern, specifically distinguishing it from the Midlands:

> I think the accent is percieved [sic] as Northern, despite it being a Midlands area
>
> Sound is more northern than midland
>
> People always recognise the accent as a 'northern' as opposed to Midland accent

Dorling (2010) developed a quantitative method for identifying a north-south divide, scoring 56 English cities according to 75 social and economic measures in order to give each one an individual "state of the cities index" (Dorling, 2010, p. 15). The categories included measures of poverty, health, education, employment, housing and wealth, and from these calculations Dorling was able to rank the 56 cities and draw a socioeconomic north-south divide, which is demonstrated in Figure 7. His divide is, in fact, a north-east/south-west divide, originating just south of Grimsby and ending at the Severn estuary just above Gloucester.

Dorling's divide places Stoke-on-Trent the North (as indicated on Figure 7), and ranks the city 46th out of 56 overall, with a particularly high number of residents on Jobseekers Allowance and living in poverty, and particularly low house prices and life expectancy (Dorling, 2010, p. 16). This concurs with its

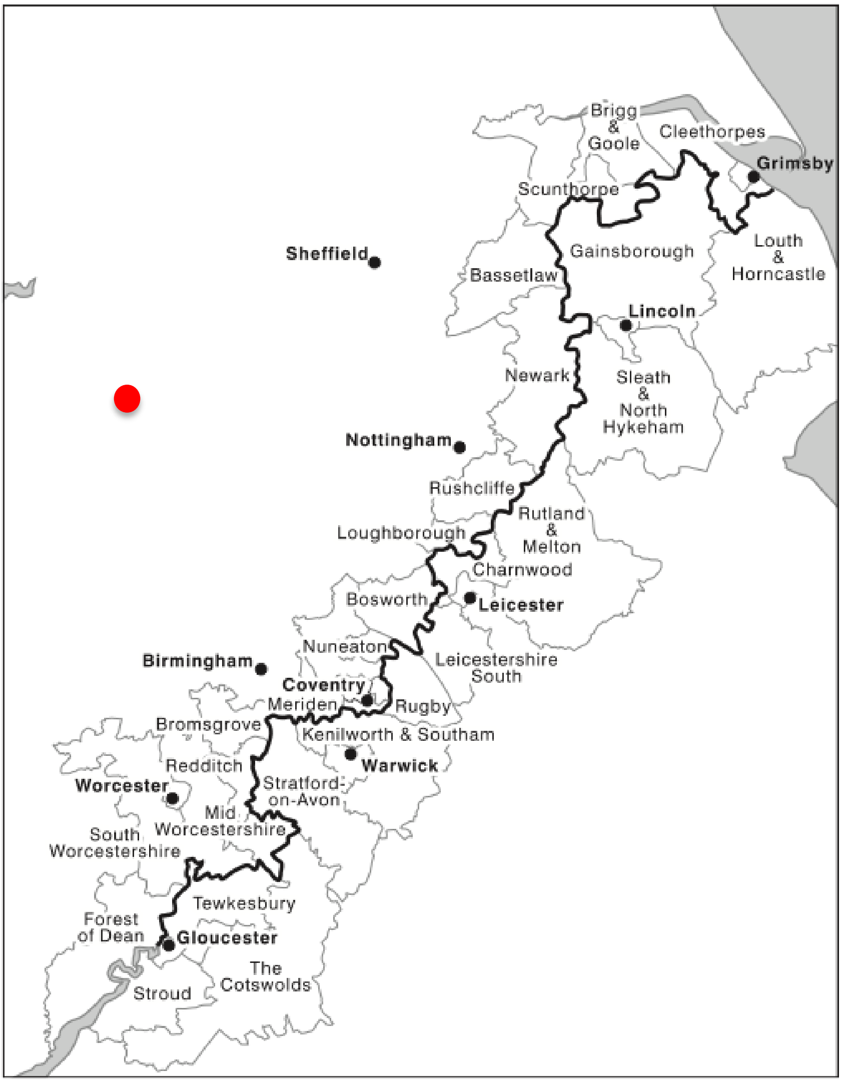


Figure 7: Dorling's (2010) map of the North-South divide, with the approximate location of Stoke-on-Trent added in red

ranking as the 15th most deprived region in the UK (Department of Communities and Local Government, 2011). If the north-south divide were based purely on prosperity, Stoke-on-Trent would be firmly in the North.

Stoke-on-Trent's industrial history is also something shared with many northern locations: its iconic and dominant pottery industry mirrors that of the cotton mills of Manchester or the fishing boats of Grimsby, and it shares a mining history with vast swathes of the north, including Yorkshire and the North East. Wales (2006, p. 26) states that "the iconography of the North [is] strongly associated with mine, mill and factory, with poverty and working class", and stereotypes of the industrial North as "alien and uncivilised", brutish, unrefined and unintelligent – as well as friendly, warm and down to earth – have persisted over centuries. These landscapes and stereotypes can be readily applied to Stoke-on-Trent, and one respondent in Leach & Montgomery (2013) summarises the areas thusly:

> A typical northern industrial area, forgotten by industrialists with a hard working, multi-skilled, yet unwanted workforce. A poor area economically but rich in cultural diversity and awash with character, history and a noticeable friendliness from its inhabitants. One of the greenest cities in the UK, considering it's [sic] industrial past. A beacon for creativity and a former hub for sub-cultures (northern soul, rave etc)

Linguistically, of course, there are not distinct Northern and Southern English varieties, but Wells does highlight the "two most important characteristics setting northern local accents apart from southern ones" - the FOOT-STRUT and BATH-TRAP splits. The retention of Middle English [ʊ] in STRUT and FOOT words is evident in "all broad local accents of the north of England", and research on Stoke-on-Trent (Montgomery, 2003) suggests Stoke-on-Trent retains this feature. However, in Montgomery's upper middle class speakers and in middle class speakers in Cannock (an area that is further south and less urban) an opposition was observed (Heath, 1980), suggesting it may be used as a marker of social class. Stoke-on-Trent does consistently retain a short [a] in both BATH and TRAP words, so by the broadest and most salient Northern English features, Stoke-on-Trent English is linguistically northern.

2.4.4.3 Stoke-on-Trent as a 'hybrid' variety

As previously mentioned, Wells (1982a, p. 350) identifies Stoke-on-Trent as a "transitional area" between his linguistic midlands and middle north. This is echoed in some of the commentary in Leach & Montgomery (2013), with respondents describing the local accent as "a transitional accent where the Midlands meet the North" and "hybrid midlands and northern". It was also particular common for survey respondents to highlight Stoke-on-Trent English's similarity to other accents from nearby cities, whether from their own observations or reporting the observations of others. 28% of speakers made comparisons with other English varieties, with 26% mentioning Liverpudlian, 12% mentioning Brummie and 7% mentioning Mancunian.

Section 2.4.3 demonstrated that a common result of perceptual dialectology work on Stoke-on-Trent English was listeners confusing it with or misidentifying it as Liverpudlian English. This was echoed by survey responses (Leach and Montgomery, 2013): locals noted that the accent was "similar to Liverpool", "slightly scouse" and "like a toned down Liverpudlian accent". However, many of the references to Liverpool English took the form of "people say I sound like a Scouser", "people sometimes mistake it for Liverpudlian" and "ive [sic] been told its [sic] a watered down version of a scouce [sic]", with 10 people in total stating that *other* people likened the accent to Liverpudlian.

When Mancunian and Brummie (Birmingham) varieties of English were referenced by survey respondents in Leach & Montgomery (2013), it was alongside references to Liverpudlian. The idea of Stoke-on-Trent English being a combination of these varieties was frequently mentioned, with respondents suggesting it is a "mixture between Birmingham & Manchester accents, or sounds Scouse" or "hybrid of Birmingham, scouse and

Manchester". The perception of Stoke-on-Trent English as a Liverpudlian/Brummie hybrid was the most common observation:

> A colleague once described me as 'scummy' - half scouser, half brummie. I think that was the best description (if a little derogatory!) I've ever heard!
>
> Cross between Brum and Scouse
>
> I think there are two types of Stoke accent. Fast - like mine, which can sound a bit Scouse, and slow - like my sister's which can sound more Brummie (thick!)
>
> Most people refer to us as being a hybrid accent between Liverpudlian and Birmingham
>
> has the sing-song nature of Birmingham and the harshness of Liverpool
>
> People can mistake it for Brummy or Scouse
>
> There's the 'bewk, lewk, cewk' that Scousers have (but we don't have their nasal thing); and there's some Brummie in there too
>
> its [sic] very inbetween Birmingham and Liverpool
>
> if its [sic] slower we can sound kinda brummie if its faster we can sound like scousers
>
> Somewhere between Scouse and Brummy

As mentioned by Leach, Watson & Gnevsheva (2016) and Pumford (2014), the accents of Stoke-on-Trent and Liverpool share variable use of [uː] in *–ook* words (more dominant in the former), voiceless plosive lenition (more dominant in the latter) and a fronted [ɛː] vowel in NURSE (merged with SQUARE in the latter). The tense horsES vowel found in Stoke-on-Trent English (Leach, 2012) has also been attested in the West Midlands (Clark and Asprey, 2013), and Stoke-on-Trent has velar nasal plus, found variably in

Manchester, Birmingham and Liverpool (Bailey, 2017; Braber and Asprey, 2017; Watson, 2007).

An overall similarity between Stoke-on-Trent, Manchester, Birmingham and Liverpool Englishes was also observed by McMahon and Maguire (2013). Their findings come from the Sound Comparisons project (McMahon et al., 2007), which developed a method of quantitatively measuring the phonetic similarity of varieties of English using a wide variety of features, in order to elicit a "genuinely objective position on the relative salience of a specific feature in the accent landscape of English" (McMahon and Maguire, 2013: 422) . The output for the Sound Comparisons method is a visual grid created using NeighborNet, which demonstrates the multilateral networked relationships between varieties of English (McMahon and Maguire, 2013). The output maps varieties' similarity to others via the length of the pathways between them in the network web. As Figure 8 demonstrates, of the varieties sampled, those closest in proximity on the map (and therefore most similar phonetically) to Stoke-on-Trent English are Manchester, Liverpool and Black Country English (the variety closest to that of Birmingham). Specifically,

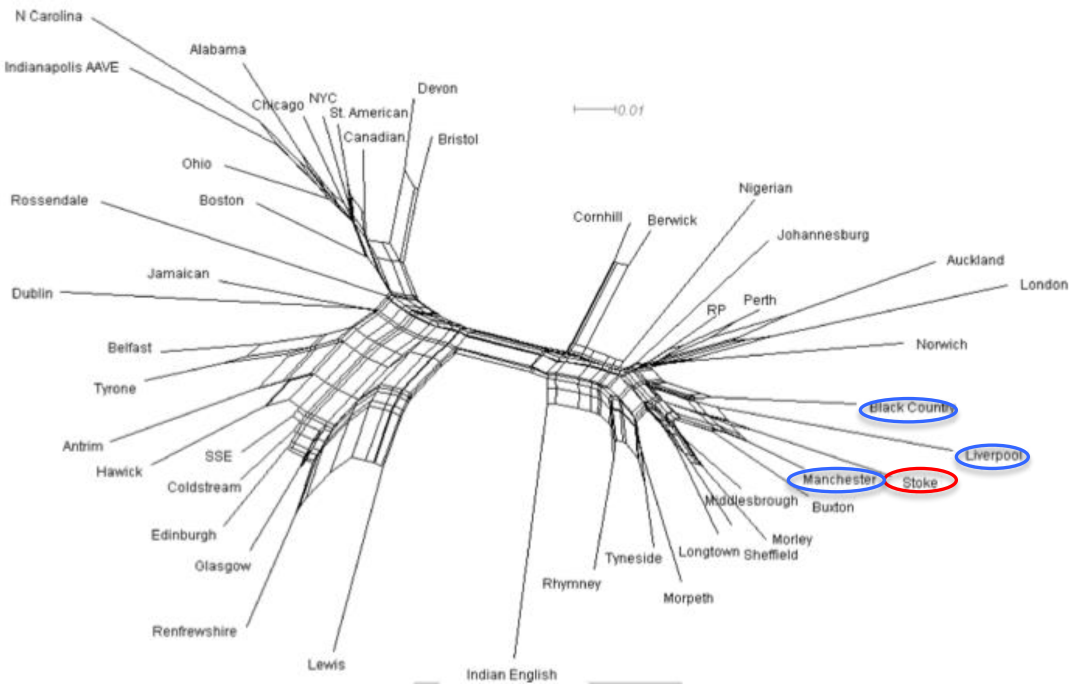


Figure 8: NeighbourNet output for all modern English Typical varieties (McMahon & Maguire, 2013, pp. 426) with added annotation

"Liverpool and Stoke were more closely related to each other than to most other varieties" (Maguire, 2014, personal communication).

There is, therefore, consistent evidence of a perceptual similarity between Stoke-on-Trent English and the varieties found in Manchester, Birmingham and Liverpool, and some evidence that this perceptual similarity is based on phonetic evidence.

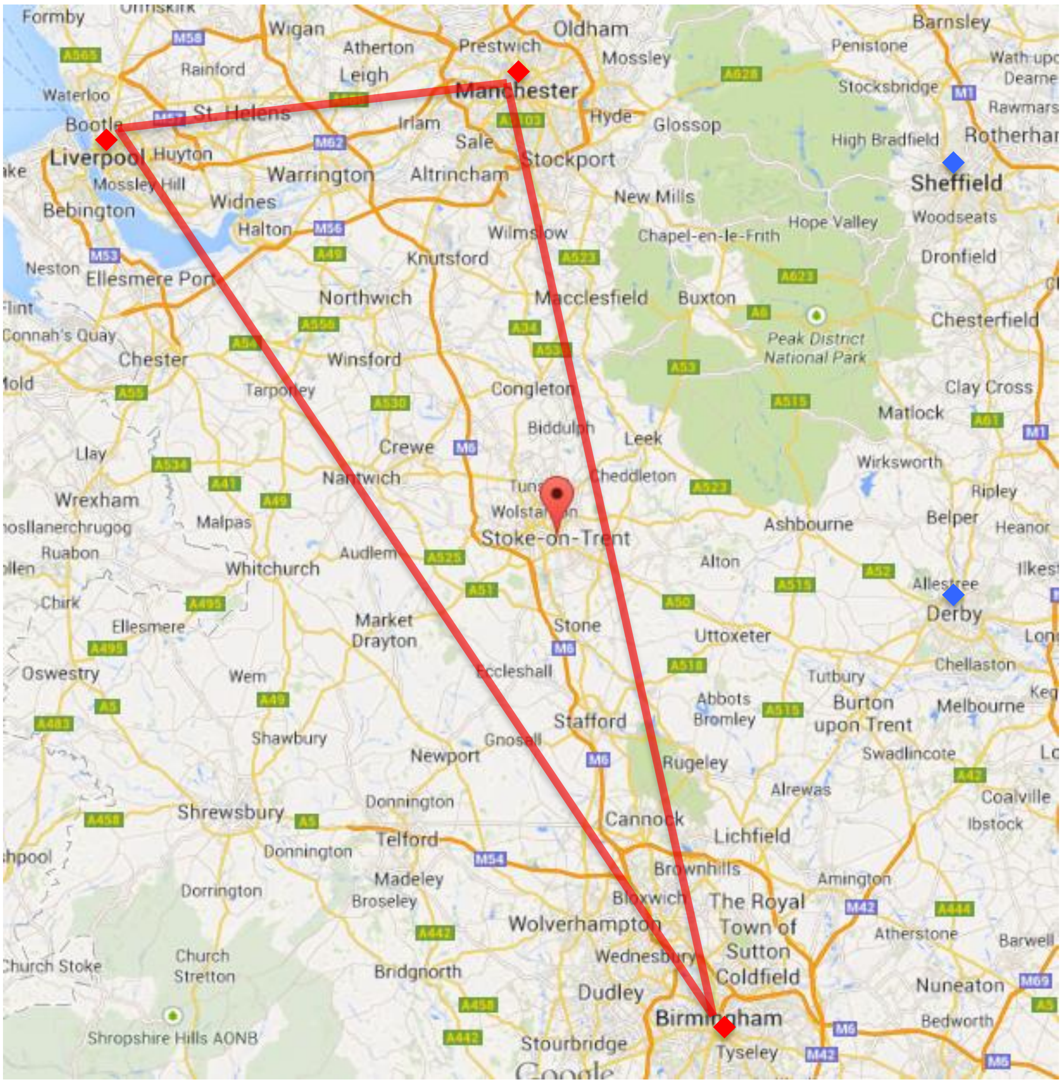


Figure 9: Map demonstrating the locations of Manchester, Liverpool and Birmingham in relation to Stoke-on-Trent

Geographically Stoke-on-Trent marks the central point in a triangulation of these cities (see Figure 9). Stoke-on-Trent lies 44.9 miles north of Birmingham, 44.2 miles south of Manchester, and 56.9 miles south-east of

Liverpool. The M6, M62 and M6 toll provide direct road links to all three cities, meaning that Birmingham is reachable in approximately 70 minutes, Manchester in 60 minutes and Liverpool in 68 minutes by car. Additionally, frequent direct trains run to both Manchester and Birmingham, the former taking 42 minutes and the latter 51. Train travel to Liverpool requires a change at Crewe station, but it is reachable in just over an hour. Stoke-on-Trent has historical ties to these areas too, particularly through the Trent and Mersey canal (see §2.2.1).

Movement between Stoke-on-Trent and these surrounding cities is common for commuting and particularly leisure activities. In contemporary sociolinguistic studies, examination of static (linguistic) communities is often complemented with examination of mobile communities, both in the sense of long-term migrations or everyday mobilities between places for work or leisure, such as in Llamas et al. (2017). Consistent mobility of contemporary speakers between Stoke-on-Trent and Manchester, Birmingham and Liverpool may encourage diffusion of dialect variables across these regions for certain social groups (Britain, 2016), meaning contemporary Stoke-on-Trent English is likely a less static variety than in previous generations.

For example, the ascension of Stoke City FC to the footballing Premier League in 2007 meant increased travel to and from the city more broadly, including visits to teams in these three cities. Additionally, while Stoke-on-Trent's city centre, Hanley, has its own local entertainment, music venues, cinemas, theatres and restaurants, the city is struggling to create a new image "which is less reliant on the old stereotypes of pottery, dereliction and cultural lack" (Edensor, 2000, p.10) and in recent years, the economic decline has had a negative effect on Stoke-on-Trent's high street (Stoke-on-Trent City Council, 2014). This decline is magnified by the "comparable success of neighbours Manchester and Birmingham" (Jayne, 2000, p.20), and many residents opt to spend time in these two easily-reachable cities, which offer more diverse and high-end leisure activities (Jayne, 2000, p.24). Stoke-on-Trent has been described as "an ill-defined city of in-betweens, a city caught between modernity/postmodernity and tradition, the past and the future, old and new industries, traditional and contemporary leisure practices and between Birmingham and Manchester" (Edensor, 2000, p. 11).

Montgomery (2007, p. 3) states that "although political and official boundaries are important, boundaries recognised and understood by the people are of greatest significance". Stoke-on-Trent may be considered Midlands, Northern or an amalgam to various people for various reasons, and the city's changing fortunes may be contributing to a shifting identity. However, central to identity work in the city is its pottery industry, both as a historical foundation and identifier, and as a legacy from which it may be unable to, or reluctant to, recover.

2.5 Language in marginal, post-industrial Britain

While Stoke's socioeconomic trajectory and relationship with the pottery industry is unique, its position as a post-industrial town of changing status and fortune and marginal geographical positioning is shared by many others in the UK. In such places, dialect can be of particular importance regarding local identity. Beal (2018, p. 177), describing the three post-industrial regions of Newcastle-upon-Tyne, Pittsburgh and Nord-Pas de Calais, states that

> [f]or natives of these places, whether at home or away, the enregistered urban dialects have acquired value as nostalgic reminders of blue-collar industrial heritage. For newcomers and tourists, the association of this heritage with positive blue-collar values such as friendliness and *joie de vivre* proves an attraction.

Because of links between industrial heritage and dialect that pervade post-industrial regions of the UK, several have been sociolinguistically studied and their similarity to Stoke-on-Trent's sociohistorical and linguistic status is considered here.

Perhaps the situation most comparable to that of Stoke-on-Trent is that of Middlesbrough, as explored by Llamas (2000). Situated on the mouth of the

River Tees, Middlesbrough has shifted in administrative control several times over the last 50 years, from being part of North Yorkshire, to part of a Teeside conurbation, to a larger Cleveland region, to an independent borough under the ceremonial county of North Yorkshire once again. The town has also increased in size and prominence, with increased administrative and perceptual ties to the North East region more broadly (Llamas, 2000, p. 127).

In studying glottalisation of voiceless plosives, Llamas notes competing patterns of dialect levelling and increase in use of local variants. For /p/, male speakers of all ages preferred glottalised variants, while female speakers preferred fully released variants, and used more glottaled variants too. However, the youngest female speakers showed a marked increase in the glottalised variant, suggesting increasing convergence with North-Eastern forms (Llamas, 2000, p. 133). For /t/, older male speakers preferred a glottalised variant while older female speakers preferred a fully released variant. However, young speakers of both genders vastly preferred a glottaled variant, suggesting levelling towards a national youth variant (Llamas, 2000, p. 134). For /k/, variation was not as marked, though male speakers had more of a split between glottalised and fully released variants, while female speakers overwhelmingly preferred fully released variants.

Llamas also enquired about speakers' relationship with their region, and how they would label it and themselves. Older speakers favoured a 'Yorkshire' label and expressed nostalgic ties to that region; middle-aged speakers suggested 'Teeside', although often expressed weak identity ties, suggesting they felt like "no-man's land"; and younger speakers mostly chose a 'Middlesbrough' label, rejecting comparisons with the rest of the North-East in favour of aligning themselves with the growing profile of their own town (Llamas, 2000, pp. 139–140). For the younger speakers, the idea and label of 'Yorkshire' has become irrelevant, just as the label of The Potteries has perhaps become for younger Stoke-on-Trent residents (Leach and Montgomery, 2013; see §2.4.3). Some of the patterns of linguistic variation Llamas observed would suggest a growing allegiance with the North East, such as the increased glottalisation of /p/ in younger speakers. However, the speakers' comments themselves suggest this label too is rejected (comparisons between the Middlesbrough accent and Geordie, for example, were met with hostility), in favour of a Middlesbrough identity, similar to the assertions from Dyer's (2002) young Corby speakers and Burland's (2017) young Royston speakers.

Dyer's (2002) findings in Corby are comparable to Llamas'. A town in the East Midlands that was expanded by Scottish steel labourers in the early 20th Century, Dyer finds some residual Scottish influences in even the youngest Corby generation (such as a monophthongal [o] in the GOAT vowels of young males), while other Scottish features (such as the LOT/THOUGHT merger) have levelled to the English English system (Dyer, 2002, p. 107). The linguistic situation in Corby shows a combination of levelling to supralocal features and phonological resistance of traditional Scottish features, making the Corby dialect distinct from its neighbours (Dyer, 2002, p. 109). Younger speakers in Corby don't see these residual Scottish features as linked to a Scottish heritage, as older generations do, but instead a marker of contemporary, local Corby identity (Dyer, 2002, p. 112).

Burland (2017) studied Royston in Yorkshire, on the border of Barnsley (South Yorkshire) and Wakefield (West Yorkshire). Like Corby, the town experienced heavy in-migration from the Black Country and south Staffordshire in the early 20th Century, with incomers seeking employment in Royston's local mines. This Staffordshire influence is reflected in Royston locals' use of diphthongal FACE and GOAT vowels, consistently resisting levelling to monophthongal pan-northern forms found in neighbouring Barnsley and Wakefield. Speakers from three generations consistently produce diphthongal variants, showing phonological resistance even in the youngest speakers. While the older speakers attested this variation to historical, industrial ties with Staffordshire, the younger speakers appear to have reanalysed this feature as a marker of local Royston identity, as distinct from nearby regions (Burland, 2017, p. 250).

Similarly, Hornsby (2018) studies Aylesham in Kent, a village built to house workers in a new colliery which was comprised of a majority of migrants, mostly from South Wales and the North-East (which, in this case, encompasses Yorkshire, Lincolnshire, Durham and Northumberland). As such, the village represents a smaller-scale new-town situation akin to Milton Keynes (Kerswill, 2003), where a varied input has undergone a process of koinéisation. The resulting local dialect differs from its neighbours through persistent use of a short [a] in BATH words, some Definite Article Reduction (usually mainly observed in Yorkshire), and a resistance to pan-South-Eastern innovations such as l-vocalisation and TH-fronting. Its geographical and social isolation and strong network ties have seemingly contributed to its resistance to levelling (Hornsby, 2018).

One of the similarities between the regions highlighted here, and Stoke-on-Trent, is their links to industry. Royston and Aylesham developed because of new mines, Corby because of a new steel plant and Middlesbrough because of ironworks. However, these studies do not always relate language variation specifically to the unique industrial setups of these places, and §2.6 examines studies which have explored this direct link between occupation and language use.

2.6 Language and occupation

Social class has been an observed predictor of language variation in sociolinguistic studies since the 1960s (e.g. Labov, 1966). However, social class scales have been criticised for their lack of nuance, anglocentric metrics and ignorance of the fact that “the nature of social stratification may vary from one community to another” (Rickford, 1986, p. 215). In a community that may be considered homogenous by broader social class metrics, or may not fit correctly into them, one way of examining language variation is to consider a community’s occupational roles, and the interactions, prestige and values the holders of these roles maintain.

Rickford's (1986) study of Cane Walk, Guyana, observes a "local stratification system" into which the villagers had been divided, and divide themselves. The Estate Class (EC) workers are employed in manual labour on the sugar estate, and "occupy the bottom rung of the estate hierarchy" (Rickford, 1986, p. 217), whereas the Non-Estate Class (NEC) include non-manual sugar estate workers (drivers and foremen), as well as local shop-owners and clerks, with little connection to everyday labour on the sugar estate. Rickford found that NEC speakers used much higher levels of standard English pronouns (around 83%) than the EC speakers (around 18%), who used far more creole variants (Rickford, 1986, p. 217). Despite the fact that both classes of speakers associated standard English variants with high status jobs, suggesting it is a variety to which to aspire, Rickford observed that the classes didn't evaluate standard variants in the same way. The NEC speakers associated standard language with rising up the social hierarchy, but for the EC speakers, for whom upward mobility was rarely possible, rejection of the standard as "just another aspect of ruling class ideology" encouraged them to use more creole features as "a revolutionary act". While EC speakers have the competency to use standard variants, they choose not to accommodate towards what they see as an oppressive ruling class (Rickford, 1986, p. 218).

Gal (1978) observes another atypical class situation in Oberwart, Austria, where native Hungarian-speaking agricultural workers ('peasants') have been joined en-masse by German-speaking migrants who are mainly employed in commerce and administration (Gal, 1978, pp. 1–2). Gal studied the use of German, Hungarian or both by bilingual speakers in various social situations, finding a three-way interaction between language choice, speaker age and 'peasantness' of social network. The more peasants a person had in their social networks, the more situations in which they were likely to use Hungarian, and the more workers a person had in their social networks, the more likely they were to use more German. Concurrently, older speakers used more Hungarian and younger speakers more German, so the youngest speakers with the more worker-networks used most German, and the older speakers with the most peasant-networks used the most Hungarian (Gal, 1978, p. 9) . As such, the indexical link between Hungarian and 'peasantness' and German and commerce is reflected in language choice.

These patterns held for all social and age groups apart from the youngest females, for whom social network was no longer significant: all young women use German most of all, regardless of the peasants or workers with whom they frequently interact (Gal, 1978, p. 10). Gal states that the young females' direct rejection of the peasant lifestyle, and their indirect rejection of peasant men as suitable husbands, encourages their increased use of German, as they reject the Hungarian-associated peasant life and look to improve their social standing by marrying a (likely German-speaking) non-peasant (Gal, 1978, p. 14).

Differing social expectations and aspirations were also found to be important predictors of variation by Zhang (2005), who illuminates the different variants used by employees of state- and foreign-owned businesses in Beijing. State employees used more local Beijing features (including rhotacization, lenition of retroflex consonants and interdental release of dental sibilants), while foreign employees used far less of these, and far more of a tone pattern which sees a full tone used in the place of a neutral tone in a weakly stressed syllable (Zhang, 2005, p. 450). The local features are associated with Beijing itself, and several local stereotypes, such as the 'Beijing smooth operator' and 'alley saunterer', while the tone pattern is associated with non-Beijing (namely, Taiwan and Hong-Kong) Mandarin (Zhang, 2005, pp. 441–444).

Zhang argues that the two groups operate in different linguistic marketplaces. For the state-owned employees, speaking the near-standard Beijing Mandarin allows them to operate in a state-internal marketplace (Zhang, 2005, p. 453). In contrast, the employees of foreign companies operate in a 'transnational Chinese linguistic market' (Zhang, 2005, p. 454) and appear to be using non-local and transnational forms of Mandarin to construct a cosmopolitan, 'yuppie' identity which carries symbolic capital in this transnational market.

Additionally, Zhang notes that female yuppies in particular avoided the local variants most overall, suggesting this could be a reflection of womens' place in a newer, capitalist economy. In state-owned businesses, there was little difference in the roles occupied by men and women, a lingering effect of Maoist 'state feminism' (Zhang, 2005, p. 448). However, the foreign-owned businesses operate in a more Western, capitalist framework, and Zhang observes that more women were to be found in 'decorative', outward-facing roles (such as secretaries and customer relations) in these companies. This may influence their particularly low use of local variants in these employment roles (Zhang, 2005, p. 448). This is in line with the observations of Sankoff and Laberge (1978), who suggest that the employment opportunities open to women often expect, demand or encourage a higher use of standard language variants.

Occupation role (whether current or previous) has also been shown to influence a topic-shift effect on linguistic variables. Devlin (2014) investigates phonological variation and change in four villages in East Durham, combining production and perception data to illuminate issues of local and industrial identity. All four villages have a shared and strong history of mining, and while the older speakers referenced links between the mines and the local dialect(s), younger speakers did not, though they did note the historical importance of mining to the area (Devlin, 2014, pp. 233–4).

For the older speakers, highly localised variants of the MOUTH, FACE and GOAT vowels were significantly (10-15%) more frequent in topics related to mining than other, non-local topics (Devlin, 2014, p. 233). For the FACE and GOAT vowels specifically, this topic-shift effect was specific to older speakers who were ex-mine workers in particular, but in MOUTH vowels the effect was observed in all older speakers (Devlin, 2014, p. 241). Devlin accounts for this in an Exemplar Theoretical account, suggesting "these traditional pronunciations might be preserved or stored in speaker memories to be reactivated with the trigger of a traditional conversation topic" (Devlin, 2014, p. 239), with further work showing some lexical effects, with mining-specific vocabulary demonstrating a higher shift towards local variants than non-mining homophones, e.g. yard vs Yard (Devlin, 2016).

2.7 Summary

Having established the centrality of the pottery industry to Stoke-on-Trent's social, economic and personal history (and its present day), this chapter went on to discuss linguistic work that not only covers the city itself, but similar post-industrial regions, and communities where occupation has a large influence on language variation. The analysis presented in this thesis unites all these fields in examining sociophonetic variation according to occupation in Stoke-on-Trent's pottery industry, using an oral history archive. This dataset is explained in full in the next chapter.

Chapter three

The oral history archive

3.1 Overview

The dataset for analysis in this thesis is an oral history archive to which I was granted access by Stoke-on-Trent Museums (SoTM). This section presents a brief history of oral history as an academic resource (§3.2), followed by an overview of its use in linguistics (§3.3). This is followed by an overview and analysis of the oral history archive used for this project, its implications on the methodology, and how the archive was narrowed to create the dataset analysed here (§3.4).

3.2 What is oral history?

It is important to make an early distinction between oral history as a cultural practice and oral history as a methodology within the historical discipline. Many cultures across the world have traditions of oral history, wherein the history, folklore and genealogy of a particular group of people are passed down orally, often including songs, poetry or other performance. In Western societies [8], oral history has been mostly replaced with a documentary tradition, where written documents stand as a final authority on most matters, and are a "guarantee of transmission to the future" (Thomson, 2000, p. 30). The main types of information transmitted via oral history in Western societies are now "personal reminiscences and private family traditions", and oral history in its traditional, narrative sense is mainly used by "beleaguered out-groups" and other "social groups of low prestige" (Thomson, 2000, p.

[8] Western societies are not homogenous in their treatment and use of oral history, but this label refers here to mainly white, hegemonic societies.

30). This is not the case in many non-Western societies, where oral history remains one of, if not the only, method of disseminating the history of a people (Thomson, 2000, pp. 26–27). For example, Haley (1973) documents his personal experience of oral history traditions from his relatives, several of whom were ex-slaves, and how the details he heard from them were eventually joined up with those of the Kinte-Kundah community in Gambia via a *griot*, a “walking, living archive[s] of oral history” (Haley, 1973, p. 20) for a particular clan, a role which was passed down through generations.

Oral history in its academic sense is a methodology which involves a researcher or fieldworker (whether a historian, or often a librarian, archivist or museum worker) collecting narratives from a particular group of people, often centring on a particular topic. The following sections explain the development of this methodology in more detail, and assess its strengths and weaknesses and what it contributes to history and other academic disciplines.

3.2.1 The development of an oral history methodology

Thomson (2000, p. 25) states that “oral history is as old as history itself. It was the *first* kind of history”. In literate societies, for thousands of years the spoken and written word have operated alongside one another, with the spoken word frequently valued above the written. For instance, in matters of law or religious sanction, the speaking aloud of testimony or pledges was required to ratify a written counterpart (Thomson, 2000, p. 32). Historians too relied upon and trusted the spoken word, and until the 18th Century, working adeptly with oral sources, often from eyewitnesses to particular events, was “one of the marks of the great historian” (Thomson, 2000, p. 25).

However, by the late 19th and early 20th Century, history as a discipline had shifted towards a more documentary methodology (Thomson, 2000, p. 52), for several reasons. Firstly, with historical study over the previous decades resulting in many secondary sources covering a wide range of topics, the need to collect or utilise primary oral sources was diminished (Thomson, 2000, p. 51).

Secondly, the 19th and 20th Century saw an increase in class consciousness and class divisions, and history as an academic discipline narrowed and closed off, becoming the domain of the wealthy and educated. With fewer historians from "humble backgrounds", the discipline lacked researchers with the "political commitment or the personality" to continue collecting oral sources from the masses (Thomson, 2000, p. 51).

Thirdly, the development of history as an academic field required a rigorous and robust methodology. The favoured methodology emerged from German scholarship of the 19th Century, and combined "the negative scepticism of the Enlightenment" with the "archival dreams of the Romantics" into an ideology that lifted the written document to almost sacred status (Thomson, 2000, pp. 52–53). Previous historians were criticised for their failure to cite written sources, and oral sources were often deemed unreliable, reduced to fable or conjecture (Thomson, 2000, p. 52-3). A historical methodology that focussed on systematic analysis of written documents could be "claimed as an expert specialism" (Thomson, 2000, p. 56), unlike the interdisciplinary use of oral sources, and enabled historians to be formally trained. Additionally, according to Thomson (2000, p. 56),

> for the increasing number of historians who preferred being shut up in their studies to mixing with either the society of the rich and powerful or with ordinary people, documentary research was an invaluable social protection. By cutting themselves off they could also pretend to an objective neutrality, and thence even come to believe that isolation from the social world was a positive professional virtue.

This documentary methodology had spread to Great Britain by the early 20th Century, in line with the expanding university system; by this point, Western academic history was dominated by the study of written sources (Thomson, 2000, pp. 55–57).

However, since around the 1960s, oral history has undergone a global renaissance within the discipline. Britain's Oral History Society was founded in 1973, and the International Journal of Oral History followed in the US in 1980. This revival is a result of several effects:

i. The changing status of the document

A longstanding criticism of the documentary methodology was its belief in the objectivity of the written word and the "dominant prejudice which sees factual credibility as a monopoly of the written source" (Portelli, 1979, p. 37). The field began to shift towards critically analysing the mechanics of documenting itself, noting several reasons why the written document has just as much fallibility as oral sources.

For example, written documents are frequently the result of "the uncontrolled transmission of unidentified oral sources", and as such are subject to the same biases and criticisms often levelled at oral sources (Portelli, 1979, p. 37). Moreover, just as written sources may be based on oral ones, oral sources may be reinforced by the speaker's knowledge and experience of written sources on a topic; "if many written sources are based on orality, modern orality itself is saturated with writing" (Portelli, 1979, p. 37).

A frequent criticism of oral sources is that they undergo "the distortion of faulty memory" if they are recalled and recorded after the events being described (Portelli, 1979, p. 37). Documentary sources are also frequently written after an event, often after considerable stretches of time, and are subject to the same effects. Indeed, the fact that oral histories are often frequently recounted and are imbued with personal importance may make them less subject to fading over time.

Thomson explains (2000, p. 59) that there is often no record of what was included in and omitted from a written source, and institutional documents may not be relied upon to tell a whole story verbatim. Moreover, politicians and institutions themselves became increasingly aware that a document could eventually be seen by the public, and therefore its narrative must be the one they desired, leading to choice documentation and heavy editing, again affecting the document's integrity as a historical source (Thomson, 2000, pp. 59–60).

ii. Technological advancement

The rapid advancement of recording technology over the late 20th and early 21st Century allowed for easier and quicker collection of oral history material (Thomson, 2000, p. 61), making it a more viable and attractive project for funders. Oral history sources produced by both academic historians and libraries, archives and museums were also more easily disseminated due to technological advancements, sparking the interest of laypeople and reinforcing the enthusiasm for oral history in general, feeding back into the discipline.

iii. Reactionary and post-conflict social movements

Oral history methodologies proved both useful and popular in exploring Western social movements of the 20th Century (women's suffrage, the civil rights movement, LGBT+ causes, etc.). "Politically committed social historians" used oral history to gather the stories of oppressed peoples and their experiences of social movements, creating a "history from below" and incorporating voices previously not central in historical study (Perks and Thomson, 2006, p. 2). Additionally, across the world, national political upheaval and conflict also encouraged the uptake of oral history methodologies, to preserve the narratives of those involved. Thomson (2000) highlights the use of oral history in documenting Chinese and Russian citizens' reactions to Communist governments (2000, p. 67), Jewish narratives of widespread fascism and the Holocaust (2000, p. 68), and African nations' stories of pre- and post-Colonial life, including South African apartheid (2000, p. 68). Europe's oral history work grew through the 20th Century too, with Poland, Scandinavia and the UK developing rich studies in autobiography, folklore and dialect studies (Thomson, 2000, pp. 71–74).

3.2.2 Methodological issues in oral history work

Oral history has contributed to a revitalisation and reorganisation of the discipline. Thomson explains that there has long been a systematic imbalance in historical studies, and until the 20th Century "the focus of history was essentially political", resulting in the events of everyday people's lives being "given little attention except in times of crisis" (Thomson, 2000, p. 3). Even on local levels, documentation focussed on the parish, church records and censuses, with little attention given to documentation of the day-to-day minutiae of real life. Even if such things were recorded, their longevity was unlikely, as "the more personal, local and unofficial a document, the less likely it was to survive" (Thomson, 2000, p. 4). Oral historians thus contribute to a democratisation of history, and "a more realistic reconstruction of the past", with oral history allowing "the original multiplicity of standpoints to be recreated", reinstating everyday people's place in historical narratives (Thomson, 2000, p. 6).

Oral history also brings other benefits to the discipline. It is by its nature collaborative and co-constructed, making it accessible outside of academia (Thomson, 2000, p. 9), and with writing being a more demanding skill, the orality of the method also makes it accessible to more people. Collecting rich and detailed oral history interviews from people in marginalised communities in particular can counter the view that non-standard and ethnic minority speech is ineloquent (Thomson, 2000, p. 21), and the act of providing oral history interviews can often be utilised in the treatment of dementia, depression and other cognitive conditions (Thomson, 2000, p. 20). Finally, Thomson (2000, p. 13) states the importance of oral history in empowering the elderly in society: "too often ignored, and economically emasculated, they can be given dignity, a sense of purpose in going back over their lives and handing on valuable information to a younger generation."

Despite these benefits, oral historians have faced consistent criticism in academic circles since the mid 20th Century. Grele (1975, p. 38), writing in the mid 1970s, highlights the "scepticism about and doubt and distrust of oral history among professional historians". While the ethos was vocally praised, oral history remained absent from syllabuses, and underfunded and under-accepted as a premise for PhD study, suggesting "what the profession is saying is that oral history is not a respected practice of history" (Grele, 1975, p. 39). Reasons for this included the following:

i. Lack of rigorous methodology

Like any methodology in its infancy, oral history had issues in its early processes. Several of these are outlined by Grele (1975, p. 40): oral history interviews varied in quality, and were conducted without training, rigour or preparation; many oral historians were the only ones to access, and thus validate, their recorded primary sources; and many projects skipped to the interview section without thorough grounding in background (written) sources. This lack of robust and justified methodology allowed oral history to be "snubbed by the profession" (Grele, 1975, p. 39). It was through engagement with other professions that the methods of oral history projects became more thoughtful and grounded in scholarship. Oral historians drew on the practices of representative sampling and interviewing used in sociology; the findings of social psychology and anthropology in handling the personal interview as a source (more on this below); and the historical discipline's emphasis on thorough background research (Perks and Thomson, 2006, p. 3), developing a methodology that could stand up to criticism, and be respected and taught in academia.

ii. Fading memory and the integrity of the source

Thomson (2000, p. 6) suggests that the integration of recollections of past events by everyday people into a historical narrative creates "a more realistic reconstruction of the past". However, according to Perks and Thomson (2006, p. 3)

> at the core of criticisms of oral history in the early 1970s was the assertion that memory was distorted by physical deterioration and nostalgia in old age, by the personal biases of both interviewer and

> interviewee, and by the influence of collective and retrospective versions of the past.

That oral history sources came from the mouths of those who lived the event was offset by their unreliability in being retold years after the fact by people with personal investment in the event. Additionally, there is inevitably less control over oral sources than extant written ones, and Portelli (1979, p. 33) states that this leads to "a fear that once the floodgates of orality are opened, writing (and rationality along with it) will be swept out as if by a spontaneous uncontrollable mass of fluid, amorphous material".

This criticism was countered with the assertion that the biases, faded memories and subjectivity involved in a speaker's testimony were no less useful to the study of history than an 'objective' formal written source – the researcher just had to understand the points of view involved. Subjective oral resources are not by their nature fallible; they "are credible, but with a different credibility", and after the necessary fact-checking of the minutiae, what remains is still "psychologically true", and just as important as the facts of an event (Portelli, 1979, p. 37). The subjectivity of oral history interviews tells researchers about the *believed* history of an event, which is no less true than its reality. Portelli (1979, p. 36) puts it thusly:

> Oral sources tell us not just what people did, but what they wanted to do, what they believed they were doing, and what they now think they did. Oral sources may not add much to what we know, for instance, of the material cost of a strike to the workers involved, but they tell us a good deal about its psychological costs.

iii. Subjectivity of the interviewer

Much celebration of oral historical methodologies highlights the introduction of previously unheard voices into the academic sphere, with verbatim reports of past events a new kind of raw material for the historian's use. However, critics note the fact that "oral sources are constructed, for better or worse, by the active intervention of the historian" (Grele, 1975, p. 43) and are not as 'pure' as may be assumed.

When oral history sources are published, there is a tendency for the interviewer to be omitted, with sole focus on the responses. This implicitly suggests the interviewer had no effect on the narration, and that it would have appeared in the same form in any other context, which is not the case (Portelli, 1979, p. 39). The outcome of an oral history interview is not a respondent's monologue, but a "conversational narrative…organised and informed by the historical perspectives of both participants" (Grele, 1975, p. 44). It is important for oral history researchers to rigorously analyse the "distortions" they introduce to the narrative – the type of questions they ask, what they do not ask, their demeanour within the interview, and how this may have affected the respondent (Portelli, 1979, p. 39). More broadly, the historian must be aware of how their project as a whole has shaped the narratives they have collected – who they have chosen to interview, the aims of the project, and what that may encourage them to (dis)favour (Portelli, 1979, p. 40). Oral history is always filtered through the researcher, and this should not be ignored.

Relatedly, the relationship between the researcher and their research is also a focus of critics. Academia has long stressed the importance of objectivity in research, and it has been described as "the first canon of the historian" (Yow, 1997, p. 56). Despite there being "no such thing as objective history" (Yow, 1997, p. 56), admission of subjectivity in history research was rare pre-1980, and particularly so for oral historians, who

> on the defensive anyway, because [they] were using the testimony of living witnesses, wanted to show that [their] method was a rigorous, disinterested pursuit of truth and therefore respectable (Yow, 1997, p. 57)

From the 1980s, researchers more openly addressed the impact of subjectivity, and the positive and negative effects it can have on a project. The concept of objectivity became less about striving to cleanse research of all researcher bias, but to confront, acknowledge and think reflectively about all potential influences – objectivity became a goal, rather than an attainment, of research (Yow, 1997, p. 62). What was required to challenge the criticism was a paradigm for analysing researcher subjectivity, be it psychologically (the impact of personal values); socioculturally (the impact of macro categories such as age, gender or class); personally (a researcher's expectations for a project); or via transference (how a researcher may infuse a situation with their current life or past) (Yow, 1997, pp. 63–64).

iv. The transcript and the voice of the interviewee

For all the celebration of the orality of oral history, it is often in a written, transcribed form that historians deal with the content of interviews. This has been and continues to be met with criticism which stresses that to transcribe an interview is to interpret it, meaning it is no longer a primary source. Indeed, Preston (1982, p. 304) states that "[t]he oral text will always be poorly represented by the written one….Writing is a poor, secondary system when compared to speech", while Ochs (1979, p. 167) adds that:

> [t]he problems of selective observation are not eliminated with the use of recording equipment. They are simply *delayed* until the moment at which the researcher sits down to transcribe the material.

Firstly, spoken language differs in a variety of ways to written language, and "the spoken word can easily be mutilated when it is taken down in writing and transferred to the printed page" (Samuel, 1971, p. 389). Spoken narratives have few of the segmentations of written clauses, sentences and paragraphs, nor the formal structure of written grammar. When transcribing an oral history interview, a researcher will bring "a biased spatial organization" (Ochs, 1979, p. 169), imbuing a narrative with tone and structure it did may not have possessed in its oral form. They will also remove spoken cadences which may have added meaning, "flatten[ing] the emotional content of speech down to the supposed equanimity and objectivity of the written document" (Portelli, 1979, p. 35).

Historians and linguists alike have stressed the importance of not imposing their own order on the interview, preserving the non-standard speech patterns of the interviewee, and pursuing a transcription format which does not solely rely on standard written English (Ochs, 1979, pp. 177–182; Samuel, 1971, p. 391). However, even the adoption of a non-standard transcription system has its flaws, introducing a transcriber bias regarding what constitutes a non-standard feature, and how such a feature is represented. Such transcription may rely on stereotypes or expectations of dialect features. Preston (1982, p. 306) adds that "a distinction must be made between those items that have "shock" folk status for the collector but are ordinary for the local participants and those that have folk status for the informant and members of that speech community". Nevertheless, as the publication of oral history sources becomes more common, the orality of the sources is regained, and oral history "overcomes its disadvantages, acquiring the pliability of text, as the differences between the written text and the oral themselves begin to evanesce" (Karpf, 2014, p. 54).

Secondly, while oral history is frequently heralded as giving 'a voice to the voiceless' (Karpf, 2014, p. 50), Portelli disagrees, stating that "oral history is not where the working classes speak for themselves", as "the control of historical discourse remains firmly in the hands of the historian" (Portelli, 1979, p. 40). Through the research design, interview structure and transcription process, the interviewee cannot be said to be truly speaking for themselves; instead, they speak "*to* the historian, *with* the historian and, inasmuch as the material is published, *through* the historian" (Portelli, 1979, p. 40).

3.3 Oral history and linguistics

With modern oral history collection having a relatively recent renaissance, it is unsurprising that its uptake as a source of data for sociolinguistic study is also relatively new. Work which unites oral history sources and sociolinguistics is met with enthusiasm from both disciplines: the orality of the source, often bypassed in historical research (see §3.2, iv), is central in linguistic analysis; and oral historical sources provide opportunities for real-time analysis of historical dialect (Braber and Davies, 2016, p. 99). This section explores the use of oral history in linguistic studies and discusses the impact of these sources on methodologies involved.

3.3.1 Oral history use in linguistic studies

Oral history sources are used in many ways by linguists. Several have chosen to turn the written transcripts of oral history interviews into corpora for analysis, and Roller (2015) gives an overview of these. Outside the United Kingdom, significant projects include Poplack and Tagliamonte's (1991) study of verbal –*s* in early AAVE, which utilised recorded interviews with African American ex-slaves held at the Library of Congress. Recordings conducted by the New Zealand Broadcasting Service in the 1940s have formed part of the Origins of New Zealand English (ONZE) corpus, which has been used by Gordon et al. (2004) to explore the very beginnings of this variety. Additionally, linguists have created their own oral history sources for analysis, such as Labov et al. (2013), who used forty years' worth of interviews with Philadelphia locals to create the Philadelphia Neighbourhood Corpus, which has subsequently been used to demonstrate sound change in the region across a century.

The Frieburg English Dialect Corpus (FRED) is made up of transcribed oral history interviews from regions across Great Britain, and has been used by Szmrecsanyi (2011), for example, to investigate dialect grammar. The British Library have available, both online and in their archives, recordings from several national projects, including the Millennium Memory Bank, comprised of oral history recordings from 1998/9; BBC Voices, comprised of elicitations and narrations from 1293 speakers (usually in groups), recorded in 2004/5; and the Listening Project, collections of dyadic conversations recorded from 2012 onwards. Examples of each of these recordings were used by Roller

(2015) in exploring focus fronting and inverted word order in indirect questions in Welsh English (Roller, 2015, p. 80).

Oral history interviews are also commonly used in sociophonetic work. Braber and Davies, with research assistants, have carried out sociolinguistic investigations of the East Midlands dialect using oral history sources. The East Midlands Oral History Archive (EMOHA) is comprised of over 1000 interviews covering Leicestershire, Lincolnshire, Nottinghamshire, Derbyshire and Rutland, collected from the 1980s onwards from several smaller projects. Its scope has also been expanded with contemporary additions to the archive through the Village Voices and Pit Talk projects (Braber and Davies, 2016). The archive was used to study diachronic change in the language of the East Midlands with much of the research findings and many of the archive files hosted online[9].

Moore and Carter (2015) have used oral history interviews held by the Isles of Scilly Museum[10] to investigate diachronic change and synchronic variation in TRAP and BATH vowels (among others). Their research used the sound files to demonstrate socially-constrained variation relating to mainland vs. island schooling of the recorded Scillonians, and also used the content of the interviews to inform analysis of the impact of stance and persona on vowel variation (Moore and Carter, 2015, pp. 29–29).

Oral history can also be used alongside contemporary sociolinguistic interviews in order to compare the results of apparent-time hypotheses of language change to real-time data. Such a study has been carried out by Stuart-Smith et al. (2016) who make use of the Sounds of the City Corpus[11] – comprised of oral history sources alongside contemporary sociolinguistic interviews, excerpts of broadcast speech and recorded conversations – to explore language change in a century of Glaswegian speech. The oral historical data allowed further exploration of three hypotheses about

[9] http://www.le.ac.uk/emoha/community/dialect/findings.html
[10] Available online at http://www.dhi.ac.uk/scillyvoices
[11] http://soundsofthecity.arts.gla.ac.uk/

language change in Glasgow. The first was the lowering of BOOT and raising of COT and COAT, hypothesised in Scobbie et al. (2012) and confirmed by the historical data (Stuart-Smith et al., 2016, pp. 12–14). The second was a change in the Scottish Vowel Length Rule (SVLR) which saw it restricted to /i ʉ ai/ contexts. The SVLR was also observed to have weakened over time, with the oral history data showing a stronger presence than the contemporary data (Stuart-Smith et al., 2016, pp. 21–22). Finally, evidence of initial /l/ darkening was confirmed by the archive data, which had clearer /l/ measurements than data more recently collected (Stuart-Smith et al., 2016, pp. 25–26). The use of real-time data also allowed the researchers to conclude that these changes in Glaswegian appear to be dialect-internal and resistant to broader changes in English in the UK (Stuart-Smith et al., 2016, p. 27).

Much like Stuart-Smith et al.'s (2016) study, Hickey (2017a) brings together 21 studies which have used historical recordings, though not exclusively oral history data, to expand knowledge of present-day varieties of English. The historical data analysed in the volume sheds light on previously unattested features, such as a trilled [r] in early RP (Fabricius, 2017); combinations of features previously unseen, such as a lack of rhoticity combined with GOAT monophthongisation in Irish English (Hickey, 2017b); and features since lost, such as a retracted START and fronted STRUT vowel in Australian English (Cox and Palethorpe, 2017). Additionally, historical data allowed researchers to clearly track the development of a variable from hypothetical theories, witness the inception of a change in progress, or hypothesise further on the development of certain varieties (Hickey, 2017a, p. 3).

Other researchers have conducted linguistic interviews and recordings over periods in real (and apparent) time, effectively creating oral history that can be looked back upon in the future. One example is the Diachronic Electronic Corpus of Tyneside English (DECTE). Combining the Newcastle Electronic Corpus of Tyneside English (NECTE, itself a combination of two datasets from previous linguistic projects on Tyneside English, one from the 1960s and one from the 1990s) and NECTE2 (subsequent linguistic interviews conducted after 2007 in the same region), researchers have been able to examine linguistic variation in the North East over half a century, and create an accessible oral history resource for further academic work and engagement (Corrigan et al., 2012).

3.3.2 Methodological implications of oral history use in linguistic studies

The use of oral history data in linguistics can be hugely beneficial, not least because it cuts down the time a researcher would use to conduct interviews themselves and allows them to access people who, today, would not be suitable for interview (Roller, 2015, p. 77). As previous stated, oral history data allows for real-time tracking of language change, and the vastness of many archives facilitates projects with large scopes. Additionally, in sociolinguistic and/or dialectological work, "[c]lear recordings of extended speech on a topic the interviewee recalls from personal experience can reveal the speaker's accent and dialect in a remarkably fluent and spontaneous way" (Braber and Davies, 2016, p. 99), which may not always be the case with more formal linguistic interviews or elicitation tasks. However, the use of oral history data brings methodological issues and complications, as outlined in the remainder of this section.

i. Data quality and biographical information

By its nature, oral history data is often recorded in a period of history where recording equipment and conditions were poorer than current standards, particularly the standards required for acoustic phonetic study. Even in contemporary recordings, the researcher who conducted the interview (usually a historian, librarian or archivist, or someone with cultural interest) may have prioritised the content of the interview over the sound quality, particularly if the transcripts are to be used rather than the sound files themselves. Stuart-Smith et al. (2016) encountered this issue with recordings from the Berliner Lautarchiv (BL) collection, made in 1916/7 in Prisoner of

War camps in Germany. To compensate for the poor quality, the audio was lowpass filtered to remove high-frequency hissing and then noise-cancelled, and automated transcriptions with phoneme boundaries were adjusted to correct any errors (Stuart-Smith et al., 2016, p. 6). These measures can increase the reliability of acoustic phonetic measurements carried out on older sound data, but also may affect the integrity of results.

Some linguists get the opportunity to work with oral history archives that are rigorously documented with full biographical information of all respondents, but not all are so lucky. Recordings may be snatched or made in passing, with no opportunity to collect information about the speaker; collections may have been passed between institutions, with notes or biographical information lost in transit; or detailed biographical information may have simply not been collected, as it was not needed (Braber and Davies, 2016, pp. 100–101). Though some information can sometimes be gleaned from the interview content, for sociolinguistic projects dependent on analysis of socially stratified samples, not having detailed biographical information can be a burden.

ii. Speaker and variable selection

When designing a research project, the hypothesis and project structure often dictate the respondents that will be used. However, using an extant oral history archive often means the researcher is restricted; not only is there a finite number of speakers to choose from, "some collections show an unbalanced distribution of speakers (for example, regarding age, gender or place of living) because they were not originally designed for quantitative purposes" (Roller, 2015, p. 78). Additionally, researchers face a challenge of impartiality in selecting interviews from an archive for linguistic analysis; as Braber and Davies explain, (2016, p. 100), "there are dangers of 'cherry-picking' suitable interviewees, or extracts from interviews". Choosing a particularly 'dialectal' speaker or extract may produce unreliable evidence of generalised dialect use.

Moreover, the specific makeup of an oral history archive, or indeed the shared qualities of oral history in general, may not lend themselves to a study of particular variables. Oral history interviews are usually reminiscent and focussed on past events, and so grammatical forms associated with past tense are found more commonly, as are features associated with narrative speech styles. Studies of present tense or interrogative forms, for example, may struggle if using oral history data, and measurements using absolute frequencies of certain features may be biased because of the recording situation (Roller, 2015, p. 78). Topics covered in interviews may also be centred around the theme of the archive (a specific industry or region, for example), and the "words used will inevitably be influenced by the topic being discussed, which may or may not naturally prompt the use of dialect words" (Braber and Davies, 2016, p. 100).

iii. Ethics

As ethical standards have improved across academia as a whole, contemporary linguistic studies must meet rigorous ethical demands, including providing information sheets, consent forms, and the opportunity for participants to withdraw from the investigation and have their data destroyed at any point. This may not have been the case for oral history archives, and they may come without consent documentation for use outside the original project. This raises ethical questions about their use in contemporary linguistic studies, particularly if retrospective consent cannot be attained. Indeed, it may be the opposite case: that the archive has specific protected status, and restrictions on its use outside of its original context, which would block use in a linguistic project. Braber and Davies (2016, pp. 102–103) explain the procedures involved with using the EMOHA, including approaching the holders and demonstrating the project's ethical clearance, assuring the acknowledgement of all institutions in any future presentations and publications and the anonymity of all interviewees. Anonymity is particularly important when the archive consists of personal narratives, as the content of interviews may be just as personally revealing as biographical information. Researchers must be vigilant in preserving anonymity in accordance with the Data Protection Act, and must be aware of using sensitivity when listening to and using personal data.

iv. Interview(er) effects on speaker style

Sociolinguistic projects that deal with speech data face the inevitable issue of the Observer's Paradox, in that "the aim of linguistic research in the community must be to find out how people talk when they are not being systematically observed; yet we can only obtain this data by systematic observation" (Labov, 1972, p. 209). The focus of oral history interviews is usually not linguistic; however, in discussing region- and industry-specific life, language may be a topic which naturally arises. Even so, if the speaker's attention is diverted from the quality of their own speech by the topic, this may result in more naturalistic speech (Anderwald and Szmrecsanyi, 2009, p. 1136, cited in Roller, 2015, p. 77). However, there are further complicating issues.

As in all sociolinguistic research, "[t]he question of whether the interviewee's dialect is affected by the dialect of the interviewer is an issue worth considering" (Braber and Davies, 2016, p. 99). The formality of an interview situation has been observed to elicit more standard language forms, but the dialect, age, gender, class and other social characteristics of the interviewer may exaggerate or mitigate this effect (Braber and Davies, 2016, pp. 99–100). Matching speakers and interviewers along these social categories or recording conversations between peers may contribute to accessing natural language (Braber and Davies, 2016, p. 100), but this cannot be controlled when using an extant sound file. An interviewer with a more standard accent than the interviewee may encourage convergence towards standard forms; an interviewer with a similar regional accent may encourage convergence to, or exaggeration of, local forms; and an interviewer with a different regional accent may provoke divergent exaggeration of local forms or self-consciousness (Braber and Davies, 2016, p. 100).

There are also effects of the interview structure to consider. As mentioned, interview contexts tend to favour formal speech. However, the relative ages of the researcher and interviewee and the personal nature of the discourse may encourage a different dynamic, one which has been suggested to mirror that of a grandparent telling stories to a grandchild (Yow, 1997, p. 65). This familiar dynamic may mitigate the formality of the interview situation.

There may also be implications of a wider potential audience. Yow states that "in the oral history interview, just by virtue of the fact that you're recording testimony means that both your interviewer and narrator have in the back of their minds other audiences" (Yow, 1997, p. 66). This relates to Bell's (1984) theory of Audience Design, which suggests that speakers alter their speech according to a presumed audience, both direct (the interlocutor) and indirect (those within earshot or, in the case of being recorded, potential future listeners – see §7.2.2). Participating in an oral history project, interviewees may have some knowledge of the potential uses of their interview, and this may also affect how they speak.

v. Topic shift

Increasing amounts of sociolinguistic work have been dedicated to the effect that change of topic has on language use, and with a wide variety of topics covered in oral history interviews, the issue is pertinent in studies which utilise them. This is covered more fully in §7.2, but as an example, Moore and Carter (2017, 2015) consider language variation according to topic (alongside education history and life trajectory) on the Isles of Scilly, using data from an oral history archive. Having broadly found that mainland-educated males had a much more distinctive BATH/TRAP split than Scilly-educated males, whose vowels almost entirely overlapped, they also found that speakers were "capable of using forms which are atypical of their education type when constructing social meanings linked to locally-specific practices and alignments" (Moore and Carter, 2015, p. 4).

Moore and Carter (2017, p. 267) state that “the topics discussed in the interviews offer a window on how [their] interviewees characterise Scillonian status”. Mainland-educated males were more likely to talk about business or local political responsibilities, whereas Scilly-educated males were more likely to discuss the island’s history and their employment at sea, topics reflective of the respective men’s life trajectories and social practices. As such, Moore and Carter (2015, p. 20) suggest that a BATH/TRAP split is linked with the local persona of ‘manager’, while the more archaic, fronted vowel in both lexical sets is associated with the persona of ‘seafarer’. However, speakers demonstrate the ability to switch between vowel patterns depending on topic of talk, and use their non-dominant pattern in moments of negative evaluations of particular persons (Moore and Carter, 2015, pp. 23–29).

In sum, the use of oral historical sources in linguistics brings both methodological benefits and complications. As Braber and Davies explain (2016, p. 100), “from oral history recordings alone, we cannot control for the linguistic output, we can only analyse what happens to occur in the recordings”. The following section outlines the details of the Potteries Museum oral history archive used in this project, and its specific implications on the analysis.

3.4 The Potteries Museum oral history archive

As explained above, the dataset for analysis in this project comprises a selection of files from an oral history archive to which I was granted access by Stoke-on-Trent Museums (SoTM). I first cover the archive’s inception and construction, and how this affects its use as a linguistic source in this project, before detailing how the archive was narrowed into the dataset analysed.

3.4.1 Construction and history of the archive

The archive was collected between 2000 and 2004 by Vicky Martin of Stoke-on-Trent museums, with subsequent additions by Andy Mackay and Teresa Fuller between 2006 and 2008. I spoke to Martin to enquire about its structure and the processes of collection, and her responses form the section that follows.

SoTM were awarded 6 months of funding from the Department of Culture, Media and Sport under the Museums, Libraries and Archives Council to pilot and assess the viability of an oral history project in Stoke-on-Trent, specifically about the pottery industry. This initial funding covered the purchase of recording equipment, training of a research assistant and a proposed 10 interviews. Martin took on the research assistant role and, between October 1999 and March 2000, recorded 30 interviews, demonstrating the potential scope of the project. The project was extended for a further 12 months under the same funding strand. Following this, a restructuring of the central funding system meant that 6 months of interim support was provided by Twyfords (a local ceramics factory and producer of sanitary ware) and the Friends of the Museum service, before a further two years of funding was provided again by the Museums, Libraries and Archives Council, with the project drawing to a pause with Martin's movement to a different museum role in 2005. However, Martin continued to oversee the archive, and with the introduction of funding as part of a partnership with four other ceramics museums across Europe, the oral history project continued, with Martin and Mackay disseminating their expertise to the European institutions and continuing to record interviews until 2008. By the end of the project, Martin, Mackay and Fuller had collected 350 hours of recordings from 99 individuals.

The original bid for funding proposed a local oral history project with the aim of conducting interviews with, as far as possible, at least one person in every specific role in the industry. Later applications built in various outputs for the data; for instance, CDs were sent to local schools that contained interview data related to topics in the National Curriculum.

All participants in the project were volunteers. SoTM compiled a short list of potential interviewees, mainly those who had previously visited their museums and mentioned their involvement in the industry. Martin began sourcing informants using this list, as well as advertising for participants through local libraries and newspapers. Additionally, when there were gaps in the archive (in that a particular industrial role hadn't been interviewed) Martin used details from the Births, Deaths and Marriages section of local newspapers to locate potential participants in the phonebook. However, her most productive method of reaching potential interviewees was through word of mouth. Each interviewee was asked if they remembered anybody specific from their time in the industry, and Martin followed these lines of inquiry to find most of the archive's interviewees – many of these being familial or spousal connections.

Martin conducted an unrecorded preliminary meeting with each potential participant before any interviews were carried out. This had several purposes:

a) To decide whether the participant was appropriate to interview for the project. Some volunteers only had a few weeks of experience in the industry sixty years prior, so taking the time to interview them was not worthwhile for the project.
b) To explain the purpose of the project. Participants were told that the aim was to collect the stories of those who worked in the pottery industry and record them "for the future", and nothing more. However, Martin often had to explain that their stories were worth telling (see §3.4.2).
c) To spot any potential issues with interviewing. For instance, due to long-term health effects from their jobs in the pottery industry, some potential interviewees had throat and respiratory conditions that limited their ability to talk for extended periods.
d) To get names and contact details of peers in the industry, enlisting more potential interviewees.
e) To prepare the interviewees for their recordings by getting them thinking about events and topics, ready to recount them more fully in the interview. This included specific preparation for sensitive topics;

some of the speakers requested the avoidance of certain topics, such as World War II, or a sensitive early family life.

f) To structure the interview questions. In these initial meetings, Martin gathered brief biographies and noted potential topics for the interview.

However, the interviews were only semi-structured. Martin's technique evolved as her familiarity with the industry and skills as an interviewer increased. The early interviews were conducted with a long list of questions, often for several hours in one sitting, but this changed quickly as it was tiring for both interviewer and interviewee. Later interviews were conducted in one-hour sessions once a week over several weeks. By this point, the interview format had adjusted to a list of topics (usually gauged from the preliminary meetings) that Martin used mainly for reference, instead asking questions that led from the interviewee's responses. Martin never stopped an interviewee from talking and would guide the conversation based on their narrative, but would also revert back to topics she felt could be covered in more detail.

Individual speakers provided from one to thirteen hours of content on a range of topics, all centred around and dependent upon their personal life history. All interviews were conducted in the residences or places of work of the interviewee, to maximise their comfort. Interviews were video recorded on a tripod-mounted Sony VX1000 (and, later, VX2000) camera (set to Auto mode), with audio recorded using a lapel microphone attached to the clothes of the interviewee. Interviews were recorded onto MiniDV tapes and were later digitised by me, using the original camera connected to a computer.

The recordings and all related documentation are stored securely at one of SoTM's sites (The Potteries Museum and Art Gallery), where all digitisation and use of the documentation was completed. All speakers were talked through and signed a clearance form during their preliminary meeting and all information was handled in accordance with the Data Protection Act of 1998 (see §4.5 for further details).

3.4.2 Implications of the archive on the project

i. Observer's Paradox

Section 3.3.2 outlined the implications of Labov's (1972) Observer's Paradox when using oral history data for linguistic research, and this project warrants the same considerations. While the speakers were not being interviewed for linguistic purposes, the formal interview setup and presence of recording equipment, as well as the knowledge that the recordings would be used in future, may have affected the speakers' use of vernacular variants. According to Martin, "people will certainly relax into it and after a while they forget the camera is there, but at the start you can find that they were thinking more carefully about what they say".

ii. Interviewee-interviewer relationship

Martin is a Stoke-on-Trent native and has a recognisable local accent, yet certain interviewees noted how un-local her accent sounded. The convergence of speech style towards, or divergence away from, that of the interviewee has been noted since Giles (1973), and it may be the case that speakers converged to or diverged from Martin's variety, depending on their assessment of it. However, the use of Martin's interviews alone (to the exclusion of those from Mackay and Fuller) controls for any differences in accommodation, removing one independent variable from the analysis.

The relationship between Martin as an academic outsider and the interviewees may also have also affected the language used. There is a difference in formal education and employment between Martin and the interviewees; while Martin holds a university degree and works in a white collar arts industry, most archive participants left school at a young age, and worked their whole lives in a manual, working class industry. This again might encourage a shift in speech style, perhaps towards a standard, due to the perceived power imbalance between the interlocutors.

However, Martin did consciously make an effort to mitigate these effects, and to ensure that the participants were at ease during their interviews. Martin states that, during the preliminary meetings with participants, she stressed the importance of their contribution and her position as the less knowledgeable party, telling them "you're educating me" and "building their confidence so they knew they were the authority". In the case of the early interviews this reflected the reality but even as Martin's knowledge of the industry improved, she made the same assurances of her novice position in order to ensure the speaker regained some power in the exchange that they may have felt they did not hold. Martin notes that the power dynamic for most interviewees was that of a grandparent/grandchild (as observed by Yow, 1997, p. 65), and the interviews mirrored the nostalgic narration of life stories often involved in that relationship.

iii. Topic shift

The interview topics were broad and far-reaching, particularly for speakers who contributed many hours of recordings. Interviews frequently started with discussion of a speaker's early childhood, their childhood home, neighbourhood, family and schooling, often also covering health, recreational activities, special occasions (weddings, Christmas, etc.), religious practices and anything else the speaker brought up. Interviews tended to continue chronologically through the speakers' teenage years at school and their progression into the world of work. Work topics, being particularly important to the archive's purpose, were thoroughly covered. Aspects usually covered were childhood impressions of the industry, the first day on the job, wages, food, conditions, social activities and fellow colleagues, management, and detailed descriptions of the materials and processes involved in that speaker's specific job. Many speakers naturally brought up the topic of World War Two, which would have been particularly pertinent during their early years.

Interview topics were remarkably consistent throughout all interviews, and while speakers were encouraged to branch out into anything they deemed fit, the aforementioned topics were a feature of almost all interviews (though some speakers who only provided one hour of talk may not have covered all of them). Gordon et al. (2004) and Devlin (2014) previously found that salient local industrial topics are linked to the realisation of certain vernacular variants (see §7.2 for details). As such, I sought to examine work vs. non-work topics in the oral history interviews. Additionally, Hay & Foulkes (2016) examined the effects of generalised (broad recollections of the past) vs. specific (details of historical incidents) topics, observing that vernacular tokens were more frequently realised in specific topics. This suggested that vernacular exemplars are stored in association with historical topics (Hay and Foulkes, 2016, p. 32, explained further in §7.2.3), which is also something considered throughout the analysis presented in this thesis.

Martin states that some interviewees were able to talk freely and calmly about sensitive and deeply personal subjects. Others asked for subjects to be completely avoided, before, as the interview progressed, opening up to their discussion. There are no instances of deliberate provocation of emotional responses in the interviews, and before particular topics (previously highlighted in the preliminary meetings between Martin and the interviewees) the recording was paused and the speaker had time to prepare and/or withdraw. With this knowledge, I decided to make note of any particularly emotional content, to see if this may be relevant to later analysis.

iv. Size and scale

The oral history archive comprises 350 hours of recordings, a figure too big for analysis in a project of this size, considering the kind of detailed analysis pursued. The next section details how the specific dataset for this project was constructed as a subset of the original archive, and the impact the structure and makeup of the archive had on the selection of speakers for analysis.

3.4.3 Selection of speakers from the archive

The first consideration for reduction of the archive to a suitable dataset was consent given by the participant, with only one speaker not giving full consent.

To control for interviewer influence, I used only those recordings conducted by Martin, lowering the total to 301 hours. Additionally, any recordings that did not take the form of a talking-head interview were also discarded (some of the recordings were factory walk-throughs, demonstrations, etc.), leaving 254 hours. One further interviewee was discarded upon Martin's recommendation, as she was suffering from dementia at the time of being recorded, making her speech style erratic and unsuitable for analysis.

The next and core reduction of the speakers was through their job. This project aims to investigate variation and social meaning in the pottery industry and in the potbanks specifically. As such, speakers were chosen from the stages of pottery production common and central to all potbanks, as outlined in §2.3.2. Interviews were discarded from people with no job listed; who held jobs in ancillary industries (crate maker, miller, carter, mason, lab technician); whose roles were unspecific or ill-defined (selector, sorter, tower); or whose roles were outside the ceramics industry (doctor, hairdresser, insulator). This left 141 hours of recordings from 46 speakers.

The next stage in streamlining was to create a representative social sample. Tagliamonte (2006, p. 31) suggests using "between three and five speakers per cell for the purpose of variationist statistical analysis", so the aim was to have three to five speakers from each section of the industry. Some cells had fewer than this number owing to the makeup of the archive, so in these cases all relevant speakers were selected and the smaller numbers were taken into consideration during the analysis. To narrow down the cells with more than this recommended number I first discarded a male painter, male clerk and female caster, as these roles were prototypically filled by the opposite gender, and these speakers are outnumbered by the opposite gender in the archive. While the consideration of the speech patterns of these individuals may have been interesting as a comparison, to include them would have introduced an extra level of complexity to the analysis.

Some of the participants that remained were considerably younger than the majority. The average age of the subset of the archive was 71, but two speakers were (at the time of recording) 35/36 and 42. Age was considered as a potential factor in influencing language use, so as these speakers were anomalous compared to the remaining sample, I decided to restrict the age of participants to 50+. This retains an age range of 41 years, but avoids a range of up to 55 years. The two younger speakers were, as such, removed.

Further speakers were removed based on their specific job roles, according to information from, among others, Sekers (1981). Two slip-makers were discarded because their roles were outside the core production tasks of slip-casting and press moulding. (Additionally, these two speakers were aged 51 and 55 respectively, and their removal further homogenised the age range, now at 58-91). A bottom-knocker represented the only person involved in saggar-making, outside the activity of the kiln-firing itself, and was also removed. Additionally, two participants were removed as they were the only representatives of their roles featured (transferrer and flower maker respectively), both of which were distinct from on-glaze decoration, which is represented by the majority of the decorators.

There were only two managers interviewed in the whole archive, so I originally included them both in the dataset for analysis. However, upon listening to their tapes it became clear that one of the managers had a very non-local, strongly Received Pronunciation accent, most likely acquired from his private schooling and family. I opted not to use his sample in the research as his accent was so different from other speakers (including the other manager) that it would skew the results. Unfortunately this left only one speaker in the management cell, but with this knowledge I ensured that any analysis done on this speaker took his unique status into account.

This process narrowed down all categories to <5 speakers, aside from Design and Decoration. Without further social or methodological justification for selection of speakers, I selected two representatives from each role at random. Table 4 shows the makeup of the final participant pool. There are 26 speakers in total, 9 women and 17 men, with an age range of 58-91 (33 years), and details of their roles and departments is in Table 4.

Speaker code	Job	Gender	Age	Topic shift?
Design				
WH	Modeller	M	78-79	✔
RC	Modeller	M	61-62	✔
JA	Mouldmaker	M	74	✔
DJ	Mouldmaker	M	70	✔
GM	Mouldmaker	M	65	✔
Production				
WB	Caster	M	62-63	x
RC	Caster	M	64	✔
GS	Caster	M	58	x
TB	Platemaker	M	80	✔
Firing				
SJ	Fireman	M	77-79	✔
AW	Kilnman	M	58	x
WS	Ovenman	M	90	✔
Decoration				
SD	Enameller	F	72	✔
EM	Enameller	F	91	x
DJ	Paintress	F	64	x
DK	Paintress	F	85	x
PH	Gilder	F	81	✔
GA	Goldstamper	F	81	x
JM	Goldstamper	F	64-65	✔
Glazing				
WA	Dipper	M	69	x
WS	Dipper	M	69	x

KJ	Glazer	M	60	x
AWil	Glazer	M	59	x
Management				
TB	Manager	M	54	x
Administration				
JB	Clerk	F	76-77	✔
EF	Clerk	F	69	✔

Table 4: Final dataset used for analysis

Many of the interviewees listed in Table 4 had several hours of recordings in the archive, though some only had one interview session which was approximately an hour long. I selected an hour for each speaker, so for those with only one hour available the entire interview was digitised. For speakers with several hours of speech available, noting that Martin's interview style usually restricted non-work and work topics to separate interview sittings, I selected 30 minutes from a non-work-focussed interview, and 30 minutes from a work-focussed interview. This allowed later analysis of broad topic-based distinctions. Speakers who had this topic split available are demonstrated in the final column of Table 4.

3.5 Summary

The final dataset represents a sample of people who worked in core roles of the pottery industry in Stoke-on-Trent in the 20th Century. It covers the main areas of production and design, as well as administration and management, and has a representative sample of male and female workers. However, the dataset is of course restricted by the structure and content of the oral history archive itself, as explained in the first half of this chapter. I consider these restrictions throughout the analysis of the data, and in detail in Chapter 8.

The following section outlines the phonetic methodology for quantitative analysis of these oral history interviews, including the variables selected and the statistical methods used.

Chapter four

Phonetic methodology

4.1 Overview

Having detailed the dataset used for analysis in the previous chapter, this chapter outlines the methodological choices made, theories considered, and issues faced in carrying out a sociophonetic analysis on this data. Detailed methodologies for each variable are given at the beginning of their respective analysis chapters (Chapter 5 for /h/ and Chapter 6 for (i)), and a detailed examination of qualitative methodologies is given at the beginning of Chapter 7. However, this chapter presents a brief discussion of the phonetic variables and chosen transcription and labelling conventions in §4.2, followed by an explanation of how the variables were extracted and measured in §4.3, including a discussion of forced alignment techniques. §4.4 details the statistical procedures involved in quantitative analysis, and §4.5 details the study's ethical approval.

4.2 Phonetic variables

I use conventional International Phonetic Alphabet Transcription symbols for the representation of sounds throughout this thesis. I also use square [ ] brackets to express a phonetic realisation and slanted / / brackets to express a more abstract phonological category. Systems of transcription and notation may be linked with particular theoretical positions (Kirkham, 2013, p. 109); however, I intend all notation to be as neutral as possible, and I use bracketing conventions for convenience, rather than to suggest the speech analysed is realistically segmentable, or to ground the work presented here in generative phonology. As Coleman (1998, p. 21) states, "[t]he use of a segmental notation-system does not commit a phonetician to a segmental view of speech”.

The first variable, analysed in Chapter 5, is the presence or absence of a word- or syllable-initial voiceless glottal fricative /h/, commonly known as /h/-dropping, a label used throughout this thesis. This variable was selected because of its status as a prominent, stigmatised dialect feature across the UK (Beal, 2010), and from auditory observation of its variable status in the oral history interviews. This variable is considered in a broadly binary manner, with variants of [h] or Ø, though intermediate variants are noted (such as voiced glottal fricative [ɦ]). A full descriptive history of this variable can be found in §5.2.

The second variable, analysed in Chapter 6, is the variable pronunciation of unstressed close front vowels. A full description and discussion is given in §6.2, but broadly this refers to the second, unstressed vowel in words such as *horses*, *started*, *biggest*, *baggage*, *walking* and *dentist*, and the vowel in unstressed tokens of the word *it*. In Received Pronunciation this is historically articulated as a short close front vowel [ɪ], similar to the stressed vowel in the KIT lexical set (Wells, 1982b). However, in Stoke-on-Trent, it has been observed (Gibson, 1955; Montgomery, 2003; Leach, 2012) that this vowel may be closer and fronter than the standard, more similar to the [iː] vowel of the FLEECE lexical set. This variable encompasses the words in the horsES lexical set (Foulkes and Docherty, 1999) as well as others beyond, but does not have a title or lexical set, as it has not yet been formally studied. Throughout this thesis I refer to it as the (i) vowel, and broadly consider its variants to be [ɪ] and [iː] (though its realisations are very variable, see §6.4).

These variables were selected due to their contrasting nature. /h/-dropping is a widely distributed dialect feature with established patterns of social class variation (see §5.2), while the (i) vowel is a local feature which does not appear to be explicitly linked with social categories or stereotypes at present (see §6.2). The analysis of the two variables is complementary and enables their patterns to be compared and contrasted (see Chapter 8).

While /h/-dropping is auditorily analysed for a mostly binary presence/absence, the quality of the (i) vowels in the dataset is analysed acoustically. Again, a full explanation of the acoustic analysis is outlined in §6.3, but the vowels were measured and analysed in Praat (Boersma and Weenink, 2018) for their formant measurements. F1 was taken as a measure of vowel closeness or height (inversely proportional, so the lower the F1 the closer the vowel), and F2 was taken as a measure of vowel frontness (the higher the F2 the fronter the vowel) (Ladefoged, 1982). From these measurements, an F2-F1 measurement was calculated, as a consideration of peripherality in the vowel space; a high F2-F1 measurement suggests a high F2 and a low F1, which in turn suggests a fronter, closer vowel, while a low F2-F1 measurement suggests a low F2 and a high F1, which in turn suggests a more open, backer, and therefore centralised vowel. The method for taking and analysing these formant measurements is explained in the following section.

4.3 Extraction and measurement

This section explains the methodological choices made in identifying, extracting and measuring the variables from the oral history interviews. While only the (i) vowel tokens required acoustic measurement, both variables required tokens to be identified and delineated before analysis. I explored and tested forced alignment software for this process, which is elaborated in §4.3.1. However, this method was ultimately rejected, and the final manual method of identification, extraction and measurement is outlined in §4.3.2.

4.3.1 Forced alignment

Forced alignment is the employment of computer software to automatically segment a speech file into its composite phonemes and label them.

Researchers in North America have led the development of forced alignment software for use on English language data in the last three decades. Programmes and interfaces vary, but by inputting an audio file, a time-aligned transcript and a dictionary, forced alignment programmes output a time-aligned file split into phonemes and labelled (semi-)phonemically, which can then be used for analysis.

There are two main methods for achieving an accurate alignment. Firstly, a programme can create an acoustic model from the audio speech data which is fed into it, and essentially trains itself to measure and label the speech based on this. Examples of this kind of programme include ProsodyLab Aligner, developed by Gorman et al. (2011), and the Speech Phonetization Alignment and Syllabification programme (SPPAS, developed by Bigi, 2012). MacKenzie and Turton (2013) tested these two aligners on British dialect data and found that they had high levels of accuracy in delimiting vowel phonemes, with an average boundary displacement of >0.3 seconds for PLA and 0.5 seconds for SPPAS (compared to hand-coded data). However, both programmes are designed to work on laboratory speech, produced by one speaker under stringent conditions, broken into small breath groups. Their accuracy on an extended interview with two interlocutors was very variable, with the confusion of background noise and the interviewer's contributions meaning that some boundary placements were up to 55.5 and 69 seconds out for PLA and SPPAS respectively (MacKenzie and Turton, 2013). This makes them unsuitable for use in the present project, which uses interview data, and as such they were not trialled.

Alternatively, forced alignment programmes may rely on a pre-existing 'gold standard' acoustic model upon which the aligner is trained. The programme then compares the speech fed into it to its gold standard model in order to accurately divide it into phonemes. The Forced Alignment and Vowel Extraction or FAVE suite (Rosenfelder et al., 2011) is an example of such a programme. MacKenzie and Turton (2013) also tested the FAVE programme on their British English data. It performed the best of the three aligners tested, with an average boundary displacement of <0.02s, and is designed for use on sociolinguistic interviews rather than laboratory speech. As such, it represented the most suitable software for use on the oral history archive dataset. A detailed description of the development and operation of the programme, and the successes and failures of a pilot study, follows.

4.3.1.1 The FAVE suite

The Forced Alignment and Vowel Extraction (FAVE) programme was designed by Rosenfelder et al. (2011) for use on the Philadelphia Neighbourhood Corpus (PNC). Since 1972, the University of Pennsylvania has conducted an undergraduate module which requires its students to collect sociolinguistic interviews from socially stratified neighbourhoods in Philadelphia. This forty-year project has resulted in the PNC, consisting of 150 hours of interviews with 379 speakers from 49 different neighbourhoods (Rosenfelder, 2013). In order to work with this data, which represents speech from across a 100-year age span, researchers developed a forced alignment programme specifically designed to handle lengthy sociolinguistic interviews. According to Labov, Rosenfelder and Fruehwald (2013, p. 35), manually analysing one interviewee's vowel system could take up to 40 hours and result in 300-350 measurements. With the advent of FAVE forced alignment software, this number was increased to 3,000-9000 measurements, with time taken drastically reduced.

To align a sound file, FAVE first uses the Carnegie Mellon University (CMU) dictionary, which has ARPABET (Roman alphabet representations for 54 GenAm phonemes) transcriptions for lexical items, to provide broad phonetic transcriptions for each word spoken in the sound file. Unlike in manual annotation of sound files, forced aligners do not rely on auditory or spectrographic data to place phoneme boundaries, instead using cepstrual coefficients from the waveform to categorise the internal structure of different phonemes. FAVE was trained on 25.5 hours of audio data from the Supreme Court of the United States (SCOUS) corpus, and subsequently built monophone models of all phonemes found in General American English from this corpus, using these as the ‘gold standard’ to which to compare inputted speech. Upon alignment, the FAVE suite inspects the cepstrual coefficients of the audio file at 10ms intervals in the signal and uses Hidden Markov Models to split the audio into the most probabilistic phoneme segments. Thus, if the aligner is aligning the word <cat> [kæt], it inspects the coefficient measurements at 10ms intervals throughout the [k] [æ] and [t] segments and places the phoneme boundaries at the most probabilistic transition points between these segments, reviewing and optimising over larger stretches of audio as the process continues.

The input to the FAVE suite is the sound file, and a tab-delimited .txt file; this should be created in ELAN[12] and contain a full transcription of the speech or interview, divided into breath groups and containing information on speaker name, the start and end of each breath group boundary, and the content within. Researchers must also provide ARPABET transcriptions of any words in the sound files not already listed in the CMU pronouncing dictionary, highlighted by the programme on a first pass of the data. The output of the FAVE suite is a Praat TextGrid, comprising a word and phone tier for each speaker aligned with the audio file, enabling analysis of the acoustic

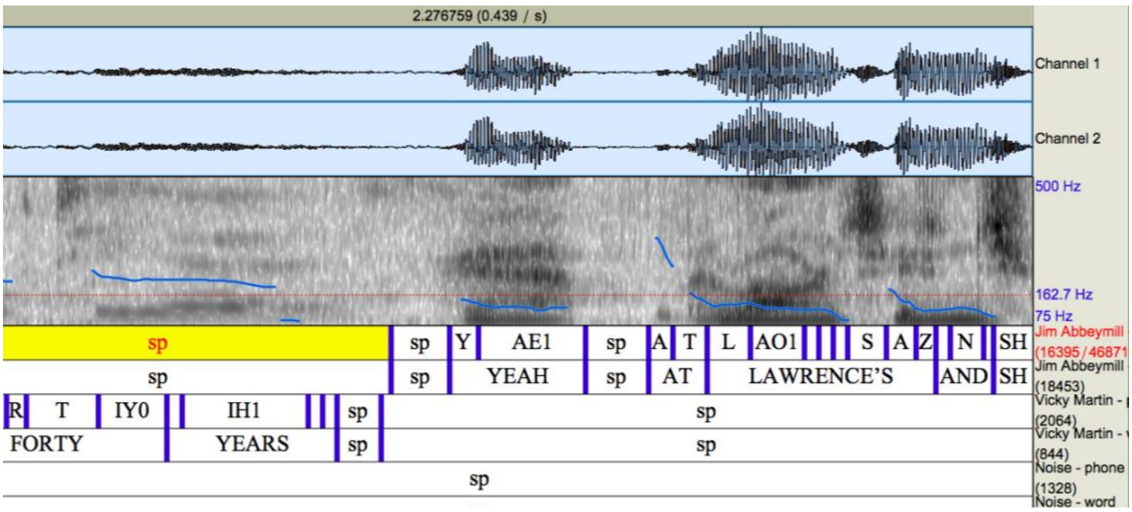


Figure 10: Example FAVE output on Stoke-on-Trent data (speaker’s name is a pseudonym)

[12] http://tla.mpi.nl/tools/tla-tools/elan/

properties of the sound file according to segment (see Figure 10 for an example).

Researchers can work on this output in their own way, or can use FAVE to automatically extract measurements for vowels. Full details of the processes involved in automatically extracting vowel measurements can be found in Labov, Rosenfelder and Fruehwald (2013, pp. 35–36), but as this extraction was not employed in the pilot study, it is only covered briefly. A Python script (based on one designed by Evanini (2009)) extracts measurements (F1, F2 and the log bandwidth of both) from points in the formant structure of the vowel (for monophthongs, at a default of a third of the way through the vowel portion, with custom points for diphthongs, see Labov, Rosenfelder and Fruehwald (2013, p. 35)) according to various Linear Predictive Coding (LPC) configurations. This creates a candidate set of measurements for each vowel. These are then compared first to the distribution of measurements of the same phoneme from the Atlas of North American English, then to the other examples of the same phoneme in the speaker's repertoire. As a result, the most reasonable estimate for the formant measurements is selected, in order to "eliminate the vast majority of gross errors" (Labov et al., 2013, p. 36).

According to the researchers, the FAVE suite has "increased speed and accuracy [of vowel extraction and measurement] by several orders of magnitude" (Labov et al., 2013, p. 31). In order to account for the accuracy of the software, the researchers ask if "the increase in the number of tokens measured [is] accompanied by a gain or loss of precision" (Labov et al., 2013, p. 38). According to their calculations, the standard error of the various vowel measurements in the PNC reaches and stays below 10Hz when the number of tokens analysed rises above 50. This is presented in comparison to the measurements of vowels in the Atlas of North American English, which has <50 tokens for each vowel and whose error margins fluctuate from 5-25Hz (Labov et al., 2013, p. 38).

According to the programme's designers, using forced alignment to process audio data has several benefits (Fruehwald, 2015): firstly, consistency: the programme provides consistent boundary placement and formant measurement processes throughout a project; secondly, replicability: using a standardised piece of software in (socio)linguistic research means that results from different studies are directly comparable and easily replicable; thirdly, speed: though the speed of forced aligners differs depending on the programme and length of sample(s) to be analysed, forced alignment is much faster at processing audio data than manual annotation and measurement. Additionally, once a sound file has been fully aligned, subsequent research can be carried out much quicker, without the need for continued re-annotation. And finally, they cite the benefits of 'richer data': processing larger amounts of data, as made possible by forced alignment, allows for the analysis of sociolinguistic phenomena only found in rarely-occurring phonological contexts. For example, Fruehwald (2015) was able to analyse the effect of /t d/-flapping on the phenomenon of Canadian raising, using only 600 tokens in a corpus of 700,000 vowel measurements (compiled through the use of FAVE). Had the data been analysed manually, it may not have been possible to find such a number of tokens.

4.3.1.2 Previous work with FAVE

Labov, Rosenfelder and Fruehwald (2013) demonstrate sound change in Philadelphia across a century using the PNC, processed with FAVE. They analyse interviews with speakers whose birth dates range from 1888 to 1991, extracting examples of 21 different vowels from each of the 379 speakers. Aggregate data supported the previous finding that

> when plotting patterns of language change across speakers' age, the observed trends in speakers between childhood and late adolescence reflect patterns of language change within individuals, and trends seen after late adolescence into adulthood reflect language change across generations (Labov et al., 2013, p. 39)

Specific sociolinguistically-motivated vowel change observations include (Labov et al., 2013, p. 32; original phonetic notation elucidated with Wells' (1982) lexical sets):

- raising of /eyC/ (FACE), overlapping with /iyC/ (FLEECE)

- raising of /ay/ (PRICE) before voiceless consonants, the phenomenon known as ‘Canadian Raising’

- a late 20th Century reversal of the previously-observed /aw/ (MOUTH) raising and fronting of /ow/ (GOAT) allophones

The full alignment and extraction capabilities of FAVE were used in Labov, Rosenfelder and Fruehwald (2013), but the alignment portion alone has also been tested in previous studies of consonantal variation. In 2009, Yuan and Liberman further trained the FAVE acoustic model to be able to recognise clear and dark varieties of /l/, before hand-coding 21,706 tokens of /l/ from the Supreme Court of the United States (SCOUS) Corpus according to word-position. The forced alignment software was then tasked with identifying the same clear and dark variants of /l/, doing so with around 92% accuracy. The researchers state that “[t]hese numbers suggest that forced alignment can be used to determine the darkness of /l/” (Yuan and Liberman, 2009, p. 2216). The same researchers conducted a similar experiment into de-velarisation in orthographic <ing> (Yuan and Liberman, 2011). The acoustic models added to the aligner were trained to recognise a full velar [ɪŋ] and a de-velarised [ɪn], using the Buckeye and SCOUS corpora as training material. In this instance, the aligner’s output was compared to 8 human subjects’ perception of whether a /g/ was “dropped” or not. The human range of accuracy was between 79% and 96%, with the software producing a similar range of 79% to 90% (Yuan and Liberman, 2009, p. 491).

It is important to note that both studies by Yuan and Liberman (2011, 2009) test the software’s accurate alignment of data from the SCOUS corpus, the same corpus that informed the creation of the acoustic models upon which FAVE is based. They investigate consonantal variation deemed binary (/ŋ/ or

/n/, and a clear or dark /l/), which results in a forced choice between two options. They were also conducted at the University of Pennsylvania, with direct input from the researchers who developed the FAVE suite. Other researchers have tested FAVE on less straightforward data in less favourable conditions.

MacKenzie and Turton (2013) analysed the performance of FAVE (alongside PLA and SPPAS) on four kinds of British English dialect data, noting its high level of accuracy (<0.02s average displacement) in aligning the 1188 tokens of FOOT, STRUT, BATH, TRAP and GOOSE vowels sampled from RP, Essex, Liverpool and Manchester varieties of English. However, there are no acoustic profiles for some British English (BrE) phonemes in FAVE's model, meaning they have to be put into GenAm phoneme categories and re-coded post-alignment.

Additionally, FAVE and the other aligners struggled to deal with some consonantal features of BrE dialects (MacKenzie and Turton, 2013). For instance, FAVE necessarily inserts an /h/ in places where, in many accents of BrE, this is deleted. /l/-vocalisation, which is recognised as an allophonic pronunciation of /l/ and labelled as such in hand-coding, presents a problem for the forced aligners, all of which disagreed on the boundary between the vowel and /l/. Weak realisations of linking /r/ were frequently missed by FAVE and intrusive /r/ was not coded for, and as such was absent from the aligned transcriptions. FAVE had variable success in recognising glottalised /t/, could not recognise velar-nasal-plus in accents from the North West, and struggled to delimit lenited consonants found in Liverpool English, for example. MacKenzie and Turton (2013) conclude that, while "[s]tate-of-the-art forced alignment techniques are a viable option for non-standard sociolinguistic data" and align to a high degree of accuracy on BrE dialect data, FAVE's ability to be used on sociolinguistic data must be weighed against some inevitable hand-recoding of the output transcript.

Following MacKenzie and Turton's (2013) review of FAVE, with their warnings and suggestions heeded, I ran a pilot using FAVE to align a one hour sample of the Potteries Museum oral history archive. The speed of the alignment software and its ability to handle large amounts of data would have benefitted the project, but such benefits could have been outweighed by FAVE's performance on dialect data. The pilot allowed me to judge this for myself.

4.3.1.3 Pilot study and outcomes

At the time of the project, the FAVE suite came in two guises. There was an online Graphical User Interface (http://fave.ling.upenn.edu/) which allowed users to feed in their data and then emailed out an aligned transcript. This interface was very user-friendly, but could not be used for this study, due to the fact that it did not operate on long stretches of audio.

Alternatively, the FAVE software could be installed locally. In contrast to the GUI, where data is fed in and fed back with little researcher involvement, the installed version of FAVE is command line-based, and involves several processes being applied to the data in order to reach the same output. The setup involves installing the HTK toolkit, XCode development software and the SoX sound processing programme, FAVE-align and FAVE-extract as two separate programmes, and the operation of Python, a script-running software. The installation process was complicated and involved editing the code of the programmes, and a debt of gratitude is owed to the user communities who helped throughout[13].

Following installation, the first Python script is run on the tab-delimited transcription .txt file, creating an output file containing any words in the transcription which are not recognized by the CMU Pronouncing Dictionary. The user is requested to correct any errors in the transcript highlighted by the script, and provide ARPABET transcriptions for any vocabulary missing from the dictionary. This dictionary check is run as often as it takes for no errors or omissions to be found in the transcription file. Finally, a second Python script

[13] Particular thanks are owed to Danielle Turton, Laurel MacKenzie, Josef Fruehwald and Daniel Ezra Johnson for their kind help and patience.

is run using the updated dictionary, and the aligned TextGrid output is created.

There were several issues I faced in operating the FAVE suite to its full potential on the oral history archive data, owing overall to a mismatch between the programme and the dataset. These are outlined in the section that follows. Cumulatively, these led me to choose a manual method of phonetic identification, measurement and extraction over forced alignment.

i. Transcription

Fifty hours of the oral history archive were transcribed by the original researcher (Vicky Martin), and these transcriptions are held in Microsoft Word files. These can be copied across to Praat or ELAN with relative ease (though considerable time commitment), though separation into breath groups does take some time. However, there are two additional issues. Firstly, the transcriptions provided are full, but often contain transcription errors, or instances of the transcriber standardizing the speaker's language (by expanding out contractions, etc.). This requires manual adjustment. Secondly, the tab-delimited input file for the FAVE suite needs to be formatted in a very specific way in order for forced alignment to be run successfully and with minimal error. Speakers must have their own tier, with a separate tier for noise (coughing, audible breaths, laughter, etc. with specific coding for each). Additionally, non-standard or special language features, such as unfinished words, acronyms, mispronunciation, contractions, numbers, hesitations and interjections all have specific coding requirements.[14] Taking into account the adjustment of transcription errors and the coding required by the FAVE programme, it became clear that transcription from scratch was quicker than editing the existing file. Of course, time-consuming transcription is an inevitability of studies involving sociolinguistic interviews and cannot be eradicated, but this extended transcription time combined with other issues (see ii. and iii.) somewhat

[14] For details, see http://fave.ling.upenn.edu/downloads/Exporting_transcriptions.pdf

offsets the time saved by running forced alignment

ii. Output

On close inspection of the first portion of the output file, I found much of the boundary placement unsatisfactory. In the first 30 seconds of the transcript, I adjusted the boundaries for six vowels which were inaccurate to my eye. These were small adjustments, but there were also instances of extremely inaccurate boundary placement (see Figure 11, demonstrating FAVE's alignment above my own), most likely due to the non-standard British English variety being aligned.

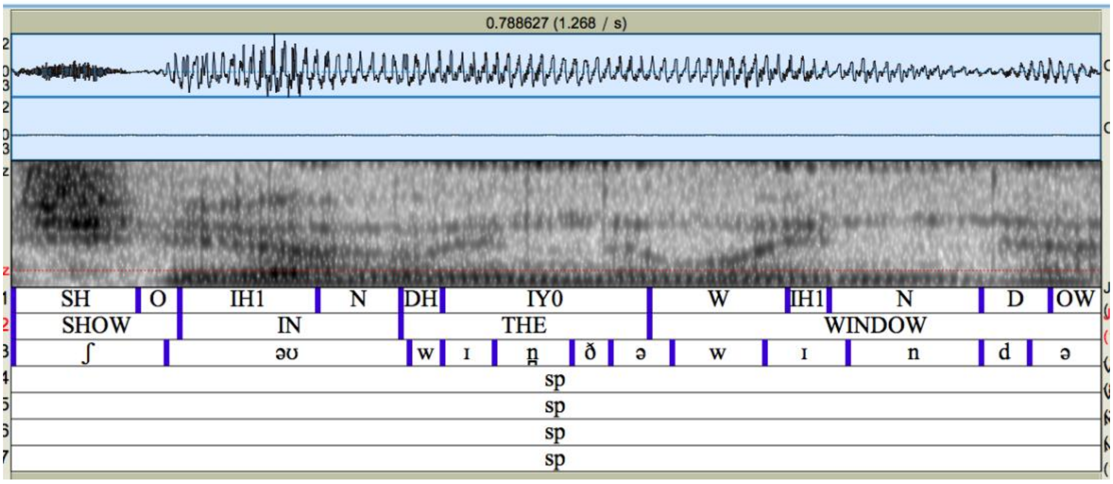


Figure 11: Example of FAVE misalignment of Stoke-on-Trent data

Boundary placement for unstressed vowels needed more adjustment than for stressed vowels. Labov, Rosenfelder and Fruehwald (2013) and MacKenzie and Turton (2013) only used stressed vowels in their analysis, but if the forced alignment of unstressed vowels is more subject to inaccuracy (as may be expected, with their weaker formant structure), the FAVE suite is rendered less suitable for analysis of the (i) vowel.

As was expected following MacKenzie and Turton's (2013) study, many of the vowels in the output file had to be re-coded, as they were labelled according to GenAm's phonemic inventory. In the first 30 seconds of the output file, it was necessary to re-code five vowels to their BrE phonemes, a ratio which, when expanded to several long sound files, again added more time to the process. At the time of the pilot there was not yet a method of saving these changes to build up a new phonemic inventory aside from editing the whole CMU dictionary, and the re-coding had to be repeated on each sound file. Additionally, FAVE's phoneme boundaries are not placed at a zero-crossing point on the waveform. Placing boundaries at zero-crossing points is highly recommended in acoustic phonetics, as not only is it a convenient method of ensuring consistency across measurements, but failure to do so can often result in disturbances in the sound when played back (Weenink, 2014, p. 149).

Furthermore, MacKenzie and Turton (2013) found that the FAVE suite struggled with alignment involving h-dropping, velar-nasal-plus and consonant lenition, all features likely to be found in Stoke-on-Trent English (§2.4). As /h/-dropping is a variable chosen for analysis, this could prove particularly problematic. According to MacKenzie and Turton's testing, FAVE performed best on RP speech, and less accurately on dialect data. The non-standard dialect of my speakers would likely present many issues for accurate forced alignment if it were used on the whole dataset.

iii. Suitability for sociolinguistic analysis

By replacing the manual identification, delimitation and labelling of phonemes in sociolinguistic interviews with a computer programme that automates this process, the researcher inevitably cuts down their 'face-time' with the data. While the analysis portion of a sociolinguistic project could involve listening to the data, which could make up this dearth of contact, the process of manually delimiting and coding the audio data gives the researcher the opportunity to spend a long period of time engaging with the data, and specifically with the variables being analysed. Reducing the time spent engaging with audio data could have had a detrimental effect on this project in three main ways.

Firstly, while automatic alignment and extraction of measurements can provide data that demonstrates broad patterns of language variation and change (as it did for Labov, Rosenfelder and Fruehwald (2013)), subtler patterns of variation may be missed by not manually coding the data. The researcher will be sensitive to data-specific variation owing to their extended experience with the variants in question and so may be able to notice patterns that coarser statistical analysis may miss. Additionally, using the formant extraction capabilities of FAVE does not produce an absolute measurement of a phoneme, rather one selected relative to a benchmark and to the speaker's own distribution. As such, it could be said that the results will adhere more to the trend of the speaker, or of the ANAE variety more generally, and outliers may be brought into trend rather than considered for their specific quality.

Secondly, this project aims to be a sociolinguistic study of accent and social meaning in Stoke-on-Trent. Labov, Rosenfelder and Fruehwald (2013) were able to take the statistical data provided by FAVE and cross-reference it with age, gender, social class and other broad sociological categories; forced alignment allowed them to do this with very large amounts of data. However, as explained in §2.3, some of the social categories involved in the analysis presented here are industry-specific, and the qualitative research presented in Chapter 7 in particular is informed by the content of the interviews themselves. Lack of engagement with the audio data risks a depleted knowledge of the social structures particular to the pottery industry, and of the speakers themselves. This is particularly the case for this project (and others using extant oral history data), as not collecting the data myself means my exposure to its content is already somewhat depleted, and it is important that this deficit is redressed so social meaning analysis can be conducted with more thorough background knowledge.

Finally, sociolinguists for many years have endeavoured to conduct research according to a code of honour of sorts, adhering to ethical benchmarks such as Labov's Principle of Debt Incurred – "An investigator who has obtained linguistic data from members of a speech community has an obligation to use the knowledge based on that data for the benefit of the community, when it has need of it" (Labov, 1982, p. 173) – and Wolfram's Principle of Linguistic Gratuity – "Investigators who have obtained linguistic data from members of a speech community should actively pursue positive ways in which they can return linguistic favours to the community" (Wolfram, 1993, p. 227). Similarly, having been granted access to this oral history archive from Stoke-on-Trent Museums, and considering the original interviewees offered their time and stories voluntarily, I believe there is an ethical duty to fully engage with the data. Mining the data as a resource rather than using it to develop a fuller understanding of language use and identity in Stoke-on-Trent limits my ability to feed back to the community and share the knowledge I developed during the project, and is doing a disservice to the generosity of the speakers and the museum in allowing me to use the data.

To conclude, forced alignment programmes (and FAVE specifically) offer a time-saving method of harvesting acoustic information from a large amount of audio data. The ability to quickly create a full phonemic transcription of a lengthy sociolinguistic interview has multiple benefits for the project at hand, and future research. However, due to the incompatibility between the programmes available at the time of research, the dataset and the aims of this project, forced alignment was not used. FAVE's basis in American English requires considerable manual adjustment of the aligned file which counteracts the time saved in automating the transcription process. Additionally, its use may be unsuited to this sociolinguistic analysis of a specific, local linguistic community. In order to best achieve the analysis proposed in this thesis, the pilot study suggested that manual analysis was the better methodological option.

4.3.2. Method of annotation and analysis

As stated in §4.3.1.3, while some of the oral history audio files were transcribed by the museum, these transcriptions were held in MSWord files, and were often incomplete or contained regularisation of non-standard features. Rather than transforming these MSWord files into a format readable by Praat and correcting the discrepancies, I decided to start transcription from scratch, enlisting the help of two research assistants[15]. The two assistants between them transcribed nine hours of audio, while I transcribed the remaining seventeen. Audio was transcribed directly into Praat TextGrids with three basic tiers: one for interviewee, one for interviewer and one for any potential interruption noise (coughing, laughter, background, etc.). Transcribers were directed to transcribe the speech as naturally as possible; speech was broken into rough breath chunks, it was not necessary to add punctuation or other written features, but it could be used to indicate pauses or tone of voice. Transcribers used their own discretion and research to transcribe to the best of their ability, and I checked the TextGrids provided for any inconsistencies or jargon they may not have been familiar with.

I then manually coded each interview file according to the variable being analysed. For /h/-dropping, I coded only /h/ variability, and used a Praat script to extract this coding, though no acoustic information was recorded. The coding and this process is explained fully in §5.3. For the (i) vowels, I coded the tokens themselves, plus a set of reference vowels for normalisation and analytic purposes. I then used a Praat script to extract the coding and F1 and F2 measurements for all vowels. A full description of this is given in §6.3. For both variables, I used tokens from across the interview, avoiding where possible tokens collected around one short section of speech, to ensure I gathered a representative sample of an interviewee's speech. However, for some more reticent speakers, this step was not always possible.

All measurements and coding were saved into .txt files, then compiled into two Excel spreadsheets, one for each variable. Any errors and anomalies were accounted for (see detail in §5.3 and §6.3), and the spreadsheets were converted into .csv files for quantitative statistical analysis in R.

[15] As mentioned in §4.3.1.3, I expressed concern that forced alignment would reduce my face-time with the data. Although two research assistants helped with transcription, I did the bulk of this, and the entirety of the coding, which gave me extended contact with the interviews.

4.4 Statistical analysis

Following many contemporary sociolinguistic studies, the quantitative analysis of the two variables presented in Chapters 5 and 6 combines statistical analysis with inspection of the raw data. Statistical models, explained further below, aim to robustly and objectively test for the influence of social and linguistic factors on a variable's realisation, while inspection of raw data contextualises these patterns, and examines patterns too nuanced to be captured by broader statistical tests.

I ran regression models on the quantitative data for both variables. Regression models assess the likelihood that a particular input factor (in this case, a social or linguistic one) affects the outcome (the realisation of the variable) when all other input factors are held constant. An input factor is rated significant by the regression model if its relationship with the outcome is deemed more feasible than a null hypothesis, which suggests the relationship between the two is due to chance. Significance is commonly measured by *p*-values, which represents "the probability of the null hypothesis being falsely rejected if the experiment was repeated an infinite number of times" (Kirkham, 2013, p. 112). There has been discussion recently, in both linguistic science and other academic disciplines, about the appropriateness of reporting significance according to *p*-values (e.g. Wagenmakers, 2007), but this measurement continues to be standard practice in sociolinguistics, and it is maintained throughout my quantitative analysis. An input factor which returns a *p*-value of <0.05 is considered to be statistically significant, as is consistent with research across the social sciences.

Mixed-effects regression models were run for both variables, which allow the inclusion of fixed input factors such as gender and age, as well as random effects, such as speaker and word. The inclusion of random effects ensures the model does not consider each individual token as completely independent from another when it is articulated by the same speaker or articulated within the same lexical word, which may artificially inflate the significance of the output patterns.

For the /h/-dropping variable, a mixed effects logistic regression model was fitted, owing to the binary nature of the variable; for the (i) vowels, a mixed-effects linear regression model was created. Models were 'stepped down', meaning all input factors were included in the model, with factors removed one by one and the model re-run to assess whether it was a better fit with or without a factor included. This left a model of 'best fit' for each variable, which includes all significant predictor variables. All statistical modelling was carried out in R using the glm() function in the lmer package. Full details of the regression models can be found in §5.4 for /h/ and §6.4 for (i).

4.5 Ethical approval

The project was granted unconditional ethical approval by the School of English ethics committee at the University of Sheffield (see Appendix 1). This approval was partly based on the robust ethical procedures for the oral history archive itself. Before being interviewed, all speakers signed a consent form issued by Martin and the museum (see Figure 12), which allowed them to detail what specific permissions they gave for the use of their data. Having selected the speakers I intended to analyse, I located the consent forms for each speaker, checking whether the speakers had, at the very least, consented for their interviews to be used for "research purposes" and "educational use". This was the case for 24 of the 26 speakers, with most speakers giving blanket consent.

The consent forms for two of the speakers (Admin_EF and Admin_JB) were missing from the museum's records; Martin ensured that forms were signed before any recordings took place, so it is likely the forms were just misplaced. As I was keen to analyse these speakers, as the sole representatives of the role of administrator in the whole archive, I pursued other avenues of consent. For speaker Admin_JB, the museum maintained contact with a relative, and this relative was happy to give retrospective consent for the interviews to be used. Efforts were made to track down any relatives of Admin_EF, but these were unsuccessful. However, the University of Sheffield's Ethics and Integrity department cleared this file for use in the project, as there was "a defined process for gaining consent which makes it unlikely that the recording would have been made without this being in place" and the project "only involves looking at numerical aspects of the language", meaning no harm could come to the participant. As such, I was able to use both interviews.

I was provided access to the oral history archive by the staff at the Potteries Museum and Art Gallery with the approval of Vicky Martin, the original project lead. The archive itself was stored on tapes kept in a safe at the museum itself, and I was not permitted to move these off the museum grounds. I visited the museum on multiple occasions, selecting tapes according to the criteria outlined in §3.4 and digitising them in turn. The sound files were then transcribed, coded, and analysed by myself and my research assistants either on campus or at our respective homes. All speakers have been made anonymous (referred to by initials, and with other identifying information removed) throughout this thesis and in all other research outputs, and the audio data has not been shared in non-research contexts.

As part of the work of this Museum we need to safeguard this information before it disappears. The purpose of this consent form is to ensure that your contribution is used in strict accordance with your wishes.

Do you consent to your contribution being used in the following ways:

1. For research purposes YES/NO
2. For public reference YES/NO
3. For educational use (in seminars or workshops for schools, colleges or universities) YES/NO
4. For broadcasting (radio/ television/ internet) YES/NO
5. For public exhibitions and displays YES/NO
6. For publication (e.g. books, cassettes) YES/NO
7. Are there any other restrictions that you would like to place on this material YES/NO (if yes, please specify)

Do you consent to your name being mentioned? YES/NO

Do you wish to apply a time restriction before your contribution is released? YES/NO

Figure 12: Example oral history archive clearance form

4.6 Summary

In this section I have explained the theoretical underpinnings of the quantitative phonetic research presented in the following chapters of this thesis. I have broadly outlined the methodological choices made and the reasoning for these. In the quantitative analysis chapters that follow I cover the issues and methods more directly related to each variable, before presenting the results of the quantitative analysis and discussions thereof.

Chapter Five

/h/-dropping

5.1 Overview

This chapter presents an analysis of /h/-dropping in the oral history archive dataset. I start by covering the history and status of the variable in varieties of English in §5.2, before explaining the specific methodology for coding and extracting tokens of /h/ in §5.3. The results of the analysis, and a discussion thereof, are presented in §5.4, with a short conclusion in §5.5.

5.2 Background

The presence or absence of syllable-initial /h/ has been described as "the single most powerful pronunciation shibboleth in England" (Wells, 1982b, p. 254). It is recognised as a feature of many regional accents of English, though Beal (2010, p. 21) states it is "more of a social than a geographical phenomenon", and while it is "marked socially, it is the norm geographically". This suggest its social connotations are more salient than its regional affiliations, and that varieties of English are more likely to demonstrate some level of /h/-dropping than not (details of specific varieties are in §5.2.2).

The presence of syllable-initial /h/ is historically associated "almost inevitably with the 'educated' and 'polite', and its loss commonly triggers popular connotations of the 'vulgar', the 'ignorant' and the 'lower class' (Mugglestone, 2007, p. 1). The widespread presence of /h/-dropping in regional dialects of the UK is linked to these indexical values, and the feature retains some of these stigmas today. However, the feature has also developed positive social meanings, of solidarity, friendliness and humility. The following section examines the trajectory of /h/-dropping stigma in more detail.

5.2.1 Development of /h/-dropping and associated social stigma

There are various theories as to how /h/ reached its current status in varieties of English. Trudgill (1999a, p. 28) suggests it is “a relatively unimportant consonant” due to being restricted in its distribution, only appearing word- or syllable-initially, and states its absence is unlikely to cause semantic confusion. As such, it is easily omitted, hence its frequent absence in contemporary regional English dialects – an absence that mirrors the loss of Latin /h/ in modern-day French and Italian (Trudgill, 1999a, p. 28). Wells (1982) states two phonological possibilities: that there is no /h/ phoneme in English, and its presence is only as a marker of emphasis; or that the phoneme /h/ does exist, but with an optional zero-realisation, particularly sensitive to surrounding phonological context (Wells, 1982b, pp. 253–254).

Mugglestone (2007, pp. 5–6) explains that, while Old English had word initial /h/, following the Norman Conquests, incorporation of French loan words containing an orthographic <h>, which was frequently unarticulated, complicated the English system, leading to variable spellings in those words. The point at which this variable articulation of /h/ may have progressed to native English words is debated: Wells suggests it may be after the colonial invasion of the United States, as the varieties of English there are entirely /h/-retaining (Wells, 1982b, p. 255), whereas Milroy states that variability has been observed since early Middle English, suggesting “strongly that (h) has been a variable in English for many centuries” (Milroy, 1992, p. 142).

Overt social commentary on the omission of /h/, and those who omitted /h/, appears to begin in the late 18th Century, one of many effects of the rapid social upheaval of the time (Mugglestone, 2007, p. 4). The late 18th Century brought about an increased attention to what was considered proper, correct, educated and ideal as opposed to vulgar, common, uncultured and slovenly. It is acknowledged by writers of the time that variable omission of /h/ was, at this point, already commonly found in speech, but it is labelled a defect, inelegant, evidence of "a conspicuous unfamiliarity with elite culture" (Mugglestone, 2007, p. 9) – in fact, the perceived rarity of retained syllable-initial /h/ makes it all the more desirable and elite a possession. Importantly, the feature was also linked with provinciality – distance from esteemed London culture specifically, and a mark of rurality and peripherality that ties in with its link to regional dialects today – by writers such as Sheridan (1762) and Lowth (1762).

By the early 19th Century, prescriptive writings publicly derided the dropping of /h/, and considered its retention a marker of refinement. This included writings designed for schools, such as Murray's (1799) *English Grammar*, passing the same judgements and instructions to children and forging a link between /h/-dropping and lack of intelligence. Furthermore, dropping of /h/ was 'treated' in the increasingly popular elocution lessons of the time, suggesting a lack of /h/ was a feature of disordered speech (Mugglestone, 2007, p. 18).

By the mid-19th Century, the link between /h/ and social status expanded to associate /h/-retention with those who were forward thinking, fashionable and metropolitan, in contrast to backward and archaic /h/-droppers. This is evidenced by its inclusion in etiquette manuals of the time, such as *The laws and bye-laws of good society* (FWR and Lord Charles X, 1867) and *Etiquette for all* (Anon, 1861).

An extension of this was the treatment of hypercorrection, i.e. the articulation of /h/ in words which do not, by standard pronunciations, require it, such as *heir* and *honour*, and even words without orthographic <h>. An endeavour to erroneously 'correct' one's own pronunciation was considered the trademark of the New Rich, those whose money and status was not hereditary or long-standing, and who could not match the innate refinement and linguistic sophistication of the true upper class. Such hypercorrectors were a source of ridicule in texts such as *Poor Letter H* (Hon. Henry H, 1854), wherein the author describes "a rich nobody, who having, perhaps, more money than wit, built himself a large mansion, and dubbed it his *habbey*", explicitly linking the misuse of /h/ with a lack of gentlemanliness, wit, hereditary wealth and social standing.

Many popular texts made use of /h/ variability in extolling social virtue. Humorous manuals and essays, such as *Poor Letter H* (Hon. Henry H, 1854) and *Harry Hawkins' H Book* (Eccles, 1879) anthropomorphised /h/ itself and mocked its abuse at the mouths of misusers. These texts were cheap, accessible and frequently reprinted, circulating the prejudices around /h/-dropping into the middle and lower classes. Additionally, the use of /h/-dropping by characters of low social standing and moral integrity in novels and literary texts of the time - by authors such as Charles Dickens and DH Lawrence, among others – reinforced and re-encoded "prevalent opinions and suppositions about the role of language as a social signifier" (Mugglestone, 2007, p. 33). One of the most famous critiques of /h/-dropping comes from Professor Henry Higgins to Eliza Doolittle in George Bernard Shaw's Pygmalion (1914), and the subsequent musical version My Fair Lady (Lerner and Loewe, 1956). Doolittle, a brash flower seller, is coached by Higgins to improve her speech and demeanour and enter the upper echelons of society – but only when she pronounces /h/ in the 'correct' fashion.

These links between /h/-dropping and low social standing, lack of education and even poor moral integrity persist today, with the feature still subject to overt metalinguistic commentary (Beal, 2010, p. 21). Despite the social stigma, /h/-dropping remains a stable feature of English dialects , and its longstanding link with non-urban, non-elite, working class communities (Wells, 1982b, p. 253) may have encouraged its persistent use by those wishing to reject the standard and its middle class connotations. The following section charts the contemporary status of /h/-dropping in dialects of English.

5.2.2 /h/-dropping in varieties of English

As previously stated, /h/-dropping is widespread across the United Kingdom. As Mugglestone (2007) demonstrates, it has been a long-standing feature of working-class London English, though in RP/SSBE it is only likely to be found in closed class words in connected speech (Hughes et al., 2012, p. 45). /h/ is variably dropped in Derby (Docherty and Foulkes, 1999, p. 47), and /h/-dropping is common in Reading, Milton Keynes and Hull, for the latter especially in younger speakers (Williams and Kerswill, 1999a, p. 147). In Sheffield, /h/-dropping is common in both older and younger speakers, though younger females tend to retain /h/ (Stoddart et al., 1999, p. 76), while in West Yorkshire, /h/-dropping is near categorical in WC males but far rarer in their MC counterparts (Petyt, 1985). In Merseyside /h/-dropping is present, non-categorical and socially salient in both Liverpool (Watson, 2007, p. 352) and West Wirral (Newbrook, 1999a, p. 98). /h/-dropping is widespread across the West Midlands (Clark and Asprey, 2013, pp. 63–64) and Manchester (Hughes et al., 2012, p. 116). The feature is also found in Cardiff, though /h/ may also be realised as /j/ in Welsh English varieties (Mees and Collins, 1999, p. 192).

There are areas of the UK, however, where /h/ dropping has never taken hold, or is far less frequent traditionally. East Anglia has historically been an /h/-retaining area, though /h/-dropping is found in the city of Norwich and other urban locations, such as Ipswich, albeit at much lower levels than other areas of the UK (Trudgill, 1974a). Trudgill summarises the situation in East Anglia as “city people drop their h’s, country people don’t”, though the /h/-dropping in East Anglian cities is socially stratified, with working class people having higher rates than middle class people (Trudgill, 1999b, p. 137).

The situation in the North East is also distinct; /h/ is historically retained in Newcastle-upon-Tyne, but /h/-dropping is attested in Sunderland and is “virtually categorical in Middlesbrough and other parts of the Teeside conurbation” (Hughes et al., 2012, p. 67) – the feature, historically at least, distinguishes Tyneside from Teesside varieties of English (Beal, 2010, p. 21). However, with /h/-dropping being observed in some young speakers from Newcastle-upon-Tyne, this may be another example of young speakers moving towards supra-regional Northern norms, as shown in Watt (2002). A contrasting recent development in London suggests speakers of Multicultural London English – a multiethnolect spoken by young Londoners of varying ethnicities – retain more /h/ than their grandparents' generation. This may be due to the combination of MLE speakers' resistance to emulating an older variety of London English, and the influence of the non-English varieties of first-generation migrants on second-generation MLE speakers (Cheshire et al., 2008).

Scottish and Irish varieties of English have consistently retained /h/ aside from in connected speech, as have all varieties of American English. South African English does not usually have /h/-dropping, it being described as "a bad habit the colonists brought with them" (Siebers, 2010, p. 278). However, Siebers' (2010) analysis of writing from first generation settlers in the 19th Century suggests /h/-dropping and hypercorrection of /h/ were both once present, but later fell out of use. In Jamaican Creole, /h/ is not contrastive, but "rather variably appears in syllable onsets, independent of historical or spelling patterns, to mark emphasis" (Patrick, 2008, p. 264).

It has previously been assumed that, like other colonies, Australia and New Zealand have no /h/-dropping, but Bell and Holmes (1992) present evidence to the contrary. They cite Horvath's (1985) study of Australian English which saw consistent levels of around 10% /h/-dropping among participants, some reaching 30%, with slightly higher averages for working class and male speakers. Their own data shows even higher use of /h/-dropping amongst New Zealand speakers. Older and middle-aged Maori men and older Maori women in particular had high levels of /h/-dropping, while older Pakeha (European) women notably resisted it (Bell and Holmes, 1992, p. 235). While /h/-dropping is a symbol of working class or uneducated speech in the UK, in New Zealand it seems to be more directly linked to ethnicity.

It should be noted that, in all the regions mentioned, /h/-dropping may be linked to social status and, potentially, gender of the speaker (Trudgill, 1974a), among other things, and regional tendencies may not apply to all local speakers. Additionally, Upton & Widdowson suggest that /h/ is linked to the formality of the speech situation: “the readiness of a speaker to delete h or use it is strongly influenced by the formality of the context in which they are speaking and therefore by the degree to which they are monitoring their pronunciation, making it a marker in the Labovian sense” (Upton and Widdowson, 1996, p. 47).

5.2.3 /h/-dropping in Stoke-on-Trent

In the Linguistic Atlas of England (Orton et al., 1978) and the SED Basic Materials for the West Midlands counties (Orton and Barry, 1970), the whole county of Staffordshire, including the northernmost region close to Stoke-on-Trent, is considered /h/-dropping. The only alternation to these /h/-less pronunciations is in three of the four northernmost villages (Warslow, Mow Cop and Alton), who show a consistent pronunciation of [wɒmstɛd] for *homestead*, a lexicalised pronunciation that persists and is recognised in contemporary Stoke-on-Trent English (Leach and Montgomery, 2013).

Trudgill considers Staffordshire a traditional /h/-dropping region (Trudgill, 1999a, p. 33), while Heath’s (1980) coverage of Cannock in South Staffordshire demonstrates a more variable picture. Only a small number of his informants produced the tokens *heel* and *harder* without initial /h/, with more omitting the /h/ in *behind*. However, he notes that these were elicited in isolation and unlikely to demonstrate a naturally dropped /h/. He observed several instances of /h/-dropping in his informants’ conversational exchanges, and states that Cannock English could be considered an /h/-less accent “under normal conditions” (Heath, 1980, p. 51).

Academic research from contemporary Stoke-on-Trent regarding /h/ is minimal. However, Leach & Montgomery’s (2013) survey asked the question “*Are there specific pronunciations and words that you would associate with the local accent?”,* to which several respondents highlighted omission of /h/. Some speakers noted /h/-dropping as a common blanket phenomenon in Stoke-on-Trent English:

> most of us don't pronounce the 'h' I[sic] most words- 'ouse, 'ome.
>
> Anything with a T in it, so the T doesn't get pronounced. Same with H.

Droppping [sic] the "H" sound from the start of words. My sister sounds more like "Anna" than her given name as "Hannah"
Any words that should begin with a 'h'
Lots of words have their 'h' dropped
Dropping 'H' at the start of words
"Not pronouncing "h".

There are also several phrasal constructions that people list as being specific to Stoke-on-Trent which include an omitted /h/, such as references to the city centre, Hanley.

Up 'anley duck.
Up 'anley duck!
Up Anley Duck - Going to Hanley
Anley
People also say they are 'going up 'Anley.
Up 'Anley (Hanley)

The phrase 'Up 'Anley duck' is emblematic of Stoke-on-Trent and local dialect, and a mug emblazoned with the phrase is available to purchase through Moorland pottery's popular Stokie Ware range[16], which has expanded to include commodified ceramics displaying regional features from across the UK. The wide recognition, enregisterment and subsequent commodification (Beal, 2009) of this phrase suggests an omitted /h/, at least in this context, is strongly linked to Stoke-on-Trent English.

A similar iconic local phrase – also available on a Moorland pottery mug[17] – is some variation on "*cost kick bo agen a wo and yed it til it bosts*", which roughly translates to "*can you kick a ball against a wall and head it until it bursts*". The origin of the phrase is unknown but, like other dialect phrases, it is designed to demonstrate popular dialect pronunciations and show local belonging (Schilling-Estes, 2004, p. 56). The phrase contains the word 'head',

[16] http://www.moorlandpottery.co.uk/moorland-pottery-ranges/stokie-ware-mugs/up-anley-duck-mugs.html
[17] http://www.moorlandpottery.co.uk/moorland-pottery-ranges/stokie-ware-mugs/cost-kick-a-bo-mugs.html

which is written as “yed” (suggesting [jɛd]) both on the equivalent Moorland pottery mug, and in the articulations suggested below from survey respondents. This again suggests a non-standard pronunciation of /h/ – though not a complete elision – is linked to Stoke-on-Trent English in this word, in both noun and verb form.

> cos kick a bow a gin a wo n yed it til it bosses.
> "Chuck a bow aggen a woe, yed it, kick it an bost it!" meaning bow is ball and woe is wall and yed is head
> Cost yed a bow agen a woe an bost it w'yed?

Other specific examples of /h/-dropping highlighted by survey respondents include instances of *have*, *how* (specifically in *ow at*, a local greeting[18]) and open class words such as *Holditch* (a location in the city) and *horse*.

> Ast - have you
> ana (has not)
> astna have you
> Anna (haven't)

> Ow at - How are you?
> ow at o rate = How are you? alright?
> ow at

> Oss – horse

> The thing i think of for a proper '1950s' potteries accent is 'holditch' pronounced 'owditch'.

Further detail about the status of /h/ may be gathered from dialect literature. While semi-phonetic spelling of dialect features in Contemporary Humorous Localized Dialect Literature (CHLDL) may not reflect the linguistic reality of the variety, “if orthography is conceived as a social practice in which spelling choices are the result of an author’s meaningful decisions, then any respellings of the kind found in CHLDL have the potential to shed light on

[18] http://www.moorlandpottery.co.uk/moorland-pottery-ranges/stokie-ware-mugs/ay-up-ow-at-oraight-mugs.html

which particular linguistic features are salient to the speakers of a given community" (Honeybone and Watson, 2013, p. 306).

In the preface to Leigh's (2011b) *Ow Ter Toke Raight*, he requests that he be "excused at the deliberate dropping of the 'H' and of my interpretation and spelling of the dialect, which may differ from other users", making clear his personalised phonetic spellings and, potentially, highlighting that /h/-dropping in Stoke-on-Trent is variable between speakers. In the glossary/dictionary section of the book, he simply writes "H inner used", suggesting (for him at least) a blanket omission of /h/. Lexical items which have /h/ appear throughout the book in Leigh's dialect spelling, and Table 5 demonstrates how he transcribes them.

Word	**with /h/**	**without /h/**	**Word**	**with /h/**	**without /h/**
he('d)	2	80	his	1	57
had(n't)	0	37	her	2	36
him	1	31	horse(s)	0	19
who	0	17	Hanley	0	14
happen(ed)	0	13	have(ing)	1	12
hole	0	8	hundred(s)	0	7
have	0	6	hear(ing)	0	6
heard	0	5	half	0	5
hung/hanged	0	4	himself	0	3
hard(er)	1	3	horn(s)	0	3
hang(ing)	0	3	how	1	2
hooves	0	2	hand(s)	1	2
harvest(ing)	0	2	has	0	2
here	1	2	Holland	0	2
hello	0	1	hunting	0	1
hell	0	1	hesitated	0	1
hit(ting)	2	1	horror	0	1
horrible	0	1	heavy	0	1
haunted	0	1	hospital(s)	0	1

hurry	0	1	honeycomb	0	1
hold	0	1	heart	0	1
hide	0	1	hounds	0	1
hymns	1	0	hatched	1	0
Hollies	1	0	help(ing)	2	0
Hamlet	1	0			

Table 5: Tokens of /h/-containing words and their phonetic spellings in Leigh (2011)

As Table 5 shows, there is a near-categorical absence of orthographic /h/ in Leigh's book. However, there are some instances of /h/ being retained orthographically, suggesting imprecision in his writing, or inconsistency in his /h/ realisation. There is inconsistency across word classes, with both closed and open class words being variably written, suggesting a lack of systematicity. While neither the survey nor the dialect literature represent real-data accounts of /h/ in Stoke-on-Trent English, they do lend evidence to the status of /h/ as a variable of interest in this variety, and in this dataset.

5.2.4 Linguistic constraints of /h/-dropping

Not all /h/s are equal, and just as a person who has /h/-dropping may not do so in all contexts, a person who ostensibly doesn't drop /h/ may in fact do so in certain circumstances. Speech rate, stress, word frequency, word class, surrounding phonetic context and utterance position may all affect the likelihood of a /h/ being dropped. Wells (1982b, pp. 254–255) and Hughes et al. (2012, p. 45) state that even RP speakers are likely to omit /h/ when it appears at the start of pronouns and auxiliaries that are unstressed and not post-pausal, with Wells suggesting these tokens should not be considered /h/-dropping in the proper sense. However he notes that middle class speakers do sometimes insert /h/ in these contexts, perhaps due to a "genteel anxiety".

Tolfree's (1999) account of South East London English shows similar linguistic sensitivity. In South East London Regional Standard (a near-RP local standard), older speakers were observed to /h/-drop in unstressed auxiliaries and pronouns, but not elsewhere, whereas younger speakers extended /h/-dropping to open class words in unstressed and occasionally stressed positions. /h/-dropping in these speakers was least likely in word-internal intervocalic and utterance-initial positions, the latter prompting self-correction when it did occur. In contrast, in South East London English (a broader local variety), /h/ dropping was far less restricted, even in metrically stressed positions (Tolfree, 1999, pp. 172–179).

Alongside similar results for closed-class words favouring /h/-dropping, Bell & Holmes (1992) also found a significant effect of preceding segment on likelihood of /h/ retention. A gradient effect was observed, with a preceding voiced obstruent most favouring a dropped /h/, followed by nasals, liquids, voiceless obstruents and vowels, with a preceding pause inhibiting a dropped /h/ most of all (Bell and Holmes, 1992, p. 236).

5.3 Method of analysis

In investigating /h/ variation in this dataset, I took into account the previous research regarding linguistic and social constraints. This section details the methods for selecting, coding and extracting the tokens of /h/, and their subsequent analysis. Section 5.3.1 explains the social and linguistic variables coded for each token, while 5.3.2 details the methods for coding and extraction.

5.3.1 Coding

Tokens of /h/ were coded for social, phonetic, lexical and discursive factors, according to the social makeup of the oral history archive and local industry (see §3.4) and previous research on the social and linguistic constraints of /h/ dropping (see §5.2). These are described below and summarised in Table 6.

i. *Social constraints*

Tokens of /h/ were coded according to the speaker's age (with a range of 58-91), their gender (male or female[19]) and their role in the industry (design,

[19] Speakers in the oral history archive were pre-coded using a binary male-female gender distinction, and this was maintained for all analysis

production, firing, glazing, decoration, management or administration; see §2.3.2 for details).

ii. Phonetic constraints

Tokens of /h/ were coded according to their directly preceding and following segments, using IPA symbols to note the exact segment. Following Bell & Holmes (1992), preceding segment coding was also organised according to the broader phonetic categories of voiced obstruent, voiceless obstruent, vowel, nasal, liquid and pause. Additionally, tokens were coded for number of syllables in the carrier word, and stress of the carrier syllable (1 signalling nuclear stress in the phrase, 2 signalling secondary stress, 0 signalling no stress).

iii. Lexical constraints

Tokens of /h/ were coded according to word class, as open or closed. Additionally, following previous research, tokens were also coded according to the specific type of carrier word: pronouns (*he, he'd, he'll, he's, him, his, her, himself, herself*); instances of have (*had(n't), has(n't), have(n't), having*); other closed class words (*who, who'd, who's, whose, how, how's, whom, whoever, however* and *here*); and open class words (e.g. *house*, *hospital*). It was also noted if a token of /h/ was in a proper noun. Tokens were coded for their position in the carrier word, whether initial or medial, and whether the token appeared at the beginning of an utterance.

iv. Discursive constraints

Tokens of all variables were coded for both broad and narrow changes in topic. As explained in §3.4.2, where possible, I digitised half an hour of talk about work and half an hour of talk about non-work topics (summarised as 'home') for each speaker. (For speakers without separate sound files, this broad discursive distinction does not apply.) Additionally, for all speakers, specific topics have been coded for each token according to emergent categories from the interview content. Examples include schooling, grandparents, marriage and childhood home in the home section, and lunchtimes, wages, processes and managers in the work section. The speakers' answers were also coded according to whether the answers were specific (referring to a specific memory or incident) or generalised (referring to 'how things were' in general, in the past). This is to test the potential effect of episodic memory on phonological recall (see §3.3.2). Finally, the timestamp of each token was also extracted.

/h/-dropping		
	Factor	*Range or values*
Social	Age	58-91
	Gender	Male (M)/ Female (F)
	Role in industry	Design / Production / Firing / Glazing / Decoration / Management / Administration
Phonetic	Preceding segment	[All possible segments]
	Preceding segment (following Bell & Holmes, 1992)	Voiced obstruent, voiceless obstruent, nasal, liquid, vowel, pause
	Following segment	[All possible vowels]
	Number of syllables	1-4
Lexical	Word type	A – instances of 'have' P – pronouns C – misc. closed class words O – open class words
	Word class	Open (o) / Closed (c)
	Position in word	Initial (i) / Medial (m)
	Utterance initial?	Y / N
Discursive	Topic (broad)	Work / Home
	Topic (narrow)	[Emergent categories]
	Type of answer	Specific (s) / Generalised (g)
	Timestamp	[time in mm:ss]

Table 6: Coding for /h/ tokens

5.3.2 Selection and extraction

Sixty tokens of /h/ were extracted from each sound file where possible; ten pronouns, ten instances of ‘have’, ten other closed class words and 30 open class words. This was done to present an even split of closed- and open-class words, but also to ensure I had adequate evidence of potential /h/ dropping in contexts less likely to be affected by high word frequency or low word stress i.e. open class words. For speakers with two sound files, one representing work topics and one representing home topics, 60 tokens were extracted from each sound file; for speakers with one sound file, 60 tokens were extracted in total. Where the maximum number of tokens could not be found in the sound file, as many as possible were coded, and the numbers per speaker are summarised in Table 7. All recordings began at the start of a particular interview session, and all coding and extraction began at the start of each recording, with the timestamp of the token recorded.

Tokens were auditorily coded with 0 (zero) for a complete absence of /h/ or any other sound, and 1 (one) for a complete presence of /h/. Some tokens presented some breathy or voiced glottal noise, and these were coded with / and made up 70 of 2191 tokens coded. Where tokens were ambiguous, acoustic information in the waveform and spectrogram (the presence of high-intensity energy at the upper part of the spectrogram) was used to classify the quality of /h/, though this was rare. Tokens were coded in Praat with sections delineating the start and end of the word in which the token appeared. If a word was reduced to the point of cliticisation (as in *they’d*, for example) or not fully articulated then it was rejected and coding continued at the next token.

Dept	**Speaker**	**Broad topic**	**closed**	**have**	**pro.**	**open**
Design	DJ	Home	10	10	10	30
		Work	10	10	10	30
	GM	Home	4	10	10	30

		Work	10	10	10	30
	JA	Home	5	10	10	30
		Work	3	10	10	30
	RC	Home	7	10	10	30
		Work	10	10	10	30
	WH	Home	5	10	10	30
		Work	10	10	10	30
Production	GS	All	10	10	10	30
	RC	Home	10	10	10	30
		Work	10	10	10	30
	TB	Home	10	10	10	30
		Work	5	10	10	30
	WB	All	7	10	10	30
Firing	AW	All	10	10	10	30
	SJ	Home	6	10	10	30
		Work	4	10	10	30
	WS	Home	10	10	10	30
		Work	10	10	10	30
Decoration	DJ	All	5	10	10	30
	DK	All	7	10	10	30
	EM	All	10	10	10	30
	GA	All	7	10	10	30
	JM	Home	3	10	1	14
		Work	4	10	5	12
	PH	Home	5	10	10	26
		Work	1	10	6	18
	SD	Home	4	10	10	30
		Work	10	10	10	30
Glaz.	AW	All	10	10	10	17

	KJ	All	10	10	10	24
	WA	All	6	10	10	30
	WS	All	10	10	5	30
Admin	JB	Home	7	10	10	30
		Work	10	10	10	30
	EF	Home	6	10	10	21
		Work	10	10	10	30
Man.	TB	All	10	10	10	30

Table 7: Number and types of /h/ tokens per speaker

Tokens were delineated in a separate tier in Praat and coded as in the following example:

Word	h?	Preceding	Following	Word type	Utterance initial?	Initial or medial	Number of syllables	Topic: general	Topic: specific
home	1	m	əʊ	0	n	i	1	g	family

A Praat script was used to extract the coding and timestamp of each token, though no acoustic phonetic information was recorded. Coding and measurements were saved into .txt files for each speaker then compiled into a spreadsheet, with any missing information clarified using the original sound files. The data was then imported into R for raw and statistical analysis.

5.4 Results

This section details the quantitative analysis of /h/ variation in this dataset. The section begins with an overview of the statistical modelling and subsequent results in §5.4.1, before presenting the analysis by linguistic factors in §5.4.2, and social factors in §5.4.3.

5.4.1 Overview

Due to the non-continuous nature of the variable, logistic regression models were fitted to the dataset. This required the removal of the 70 tokens of 'intermediate' glottal noise from the dataset to leave a binary opposition of /h/ or Ø. I opted to remove the tokens entirely rather than subsume them into one of the two categories because an argument could be made for grouping them with either, and with only 70 tokens removed the dataset still comprised a robust 2121 tokens.

The division between male and female departments made designing a model more complex. Because males solely occupy the design, production, firing, glazing and management departments and the females solely occupy the administration and decoration departments in the dataset, testing both gender and department in one model was impossible, as the categories were directly collinear. As such, I fitted two models to the whole dataset: one which included department as a predictor variable and one which included gender as a predictor variable. Department was ranked as significant, and gender was not. I also removed the management speaker from the regression models as he was the only representative of his department, which could skew statistical results.

To investigate the effect of preceding segment, only the six broader Bell & Holmes (1992) categories were added to the model, as including all 39 individual preceding segments would create a model that was overly complex. Additionally, the category of following segment was removed from the regression model, as it shares significant collinearity with word type: in the closed class words, only certain following vowels are permitted (e.g. pronouns are restricted to *he*, *him(self)* and *her(self),* so the only possible following segments are [i:], [ɪ], [ɜ] and [ə]). Having tested separate models with both categories included, word type was found to be a more significant predictor variable, and so was retained.

R's default baseline variables were used for department and preceding segment, as there was no logical reason to choose another. The baseline department was administration and the baseline word type was '*have*' tokens.

Regression models were fitted using the glm() function in R by first including all possible predictor variables, then removing those which did not reach significance in order to create a model of best fit. The results of the whole-dataset model are presented in Table 8, followed by investigation of the variables using the raw data in §5.4.2 and §5.4.3.

In this model, a negative β value suggests a tendency toward /h/-dropping from the baseline, and a positive β value suggests a tendency towards /h/-retention from the baseline. The model demonstrates significance of both social and linguistic factors in predicting use of /h/. Compared to the baseline of administration, all departments (aside from management, not included in the model) predict a lower use of /h/ to a significant degree (with only the design department not reaching the level of significance, likely because it has fairly similar values to the baseline administration department, see §5.4.3).

All three word types are significantly distinct from 'have' – the baseline – in predicting presence of /h/. Pronouns predict higher chance of dropped /h/ compared to 'have', while other closed and open class words predict more retention, the latter being particularly significant. Additionally, all classes of preceding segment (following Bell & Holmes, 1992) appear to predict higher rates of /h/ retention than the baseline of liquid, suggesting in this dataset liquids favour /h/-dropping most, followed by (according to the β figures) voiceless obstruents, voiced obstruents and nasals, with preceding pauses and vowels most favouring /h/ retention.

(h)	β	Standard Error	z-score	p
(Intercept)	-2.43996	0.34200	-7.134	<.001***
Department				
Decoration	-2.10663	0.22415	-9.398	<.001***
Design	-0.27663	0.20875	-1.325	0.18511
Firing	-2.91972	0.29216	-9.994	<.001***
Glazing	-2.41761	0.29388	-8.227	<.001***
Production	-1.7580	0.23357	-7.527	<.001***

Word Type				
Closed	0.74440	0.37410	1.990	0.04661*
Open	2.37254	0.32419	7.318	<.001***
Pronoun	-0.93881	0.41667	-2.253	0.02425*
Preceding segment type				
Nasal	1.35041	0.25936	5.207	<.001***
Pause	1.83777	0.37203	4.940	<.001***
Voiced Obs	1.05582	0.26246	4.023	<.001***
Voiceless Obs	1.05552	0.24784	4.259	<.001***
Vowel	2.22337	0.23355	9.520	<.001***
Stress				
Stress	0.86479	0.17620	4.908	<.001***
Word place				
Medial	0.98159	0.46530	-2.110	0.03489*
Topic Type				
Specific	-1.80880	0.21171	-8.544	<.001***
Word Type*Stress				
Closed*Stress	-0.70351	0.26370	-2.668	0.00764**
Open*Stress	-1.12801	0.22145	-5.094	<.001***
Pronoun*Stress	-0.06447	0.29099	-0.222	0.82466

Table 8: Whole-dataset regression model for /h/

Increased word stress is a significant predictor of /h/-retention, and there is a small but significant effect of position within the word, with /h/s in medial position more likely to be retained. In contrast, a specific (rather than generalised) topic appears to be a predictor of /h/-dropping. Finally, there was an interactional effect between word type and stress, which is perhaps to be expected – pronouns, ‘*have*’s and other closed class, function words are more likely to be unstressed in an utterance than open class, content words. The following sections explore these results in more detail.

5.4.2 Linguistic factors

Several linguistic factors were singled out as statistically significant predictors of /h/ variation in the regression model. This section explores each one in turn, examining the patterns found.

Previous accounts and research have shown that /h/ is more likely to be dropped in closed-class function words than in open-class content words, and this pattern is borne out in the dataset. Closed class words have 84% /h/-dropping compared to 63% for open class words. The fact that two thirds of the tokens of open class words are produced without /h/ in this dataset shows strong evidence of what Wells (1982) calls /h/-dropping "proper", in words that are unlikely to be affected by speech rate and stress, as closed class words frequently are. However, 12% of closed class words are produced with retained /h/, suggesting sensitivity to /h/ quality that affects even closed

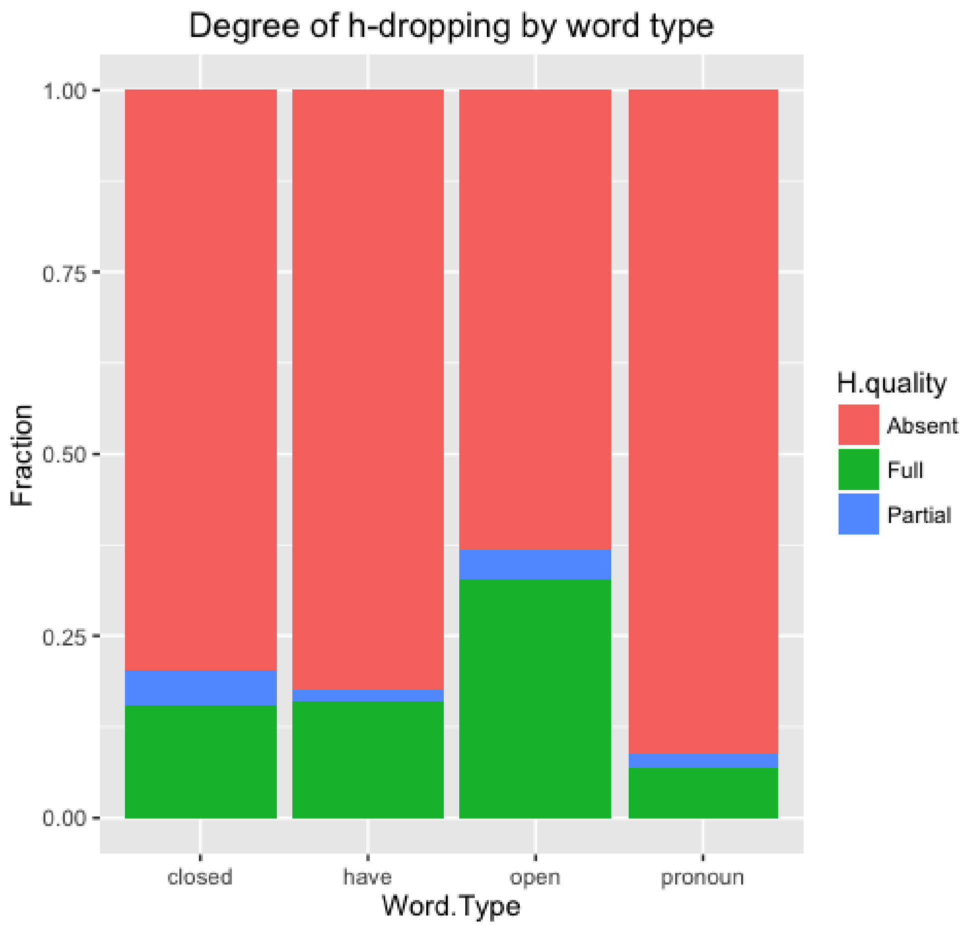


Figure 13: Level of /h/-dropping according to word type

class words in some circumstances.

Figure 13[20] shows the breakdown of this group of closed class words into the types selected based on previous research – pronouns, instances of *have* and other closed class words. Pronouns have the highest level of /h/-dropping at 91%, followed by instances of *have* at 82% and other closed class words close behind at 79%, with open class words at 63%.

The regression model demonstrated an interaction between word type and word stress, highlighting the fact that closed class words were less likely to be stressed than open ones, and that this is likely to affect the realisation of /h/. Figure 14a shows the proportion of /h/-dropping according to stress of the carrier word, and illustrates the linear relationship between stress and /h/ – the less stressed a word is, the more likely it is to have a dropped /h/. Unstressed tokens have 80% /h/-dropping, words with secondary phrasal stress have 72% and words with primary phrasal stress have 59%.

Also linked to the behaviour of closed-class words and /h/-dropping may be the number of syllables in the carrier word. A word is more likely to receive reduced phrasal stress if it is monosyllabic, so shorter words maybe more likely to have dropped /h/. Figure 14b shows the raw figures for number of syllables in the carrier word and proportion of /h/-dropping. In the dataset there were 1703 monosyllabic words, 408 disyllabic words, 78 trisyllabic words and just two words with four syllables. Dismissing the four-syllable words due to low token count, monosyllabic words demonstrate 76% /h/-dropping, disyllabic words 63% and trisyllabic words 73% (though there are far fewer tokens of the latter than mono- and disyllables). While the effect was not significant enough to be highlighted in the regression model, the data does suggest that monosyllables are more likely to drop /h/ than at least disyllables.

[20] This, and all subsequent raw-data figures, are presented with the partial realisations of /h/ included.

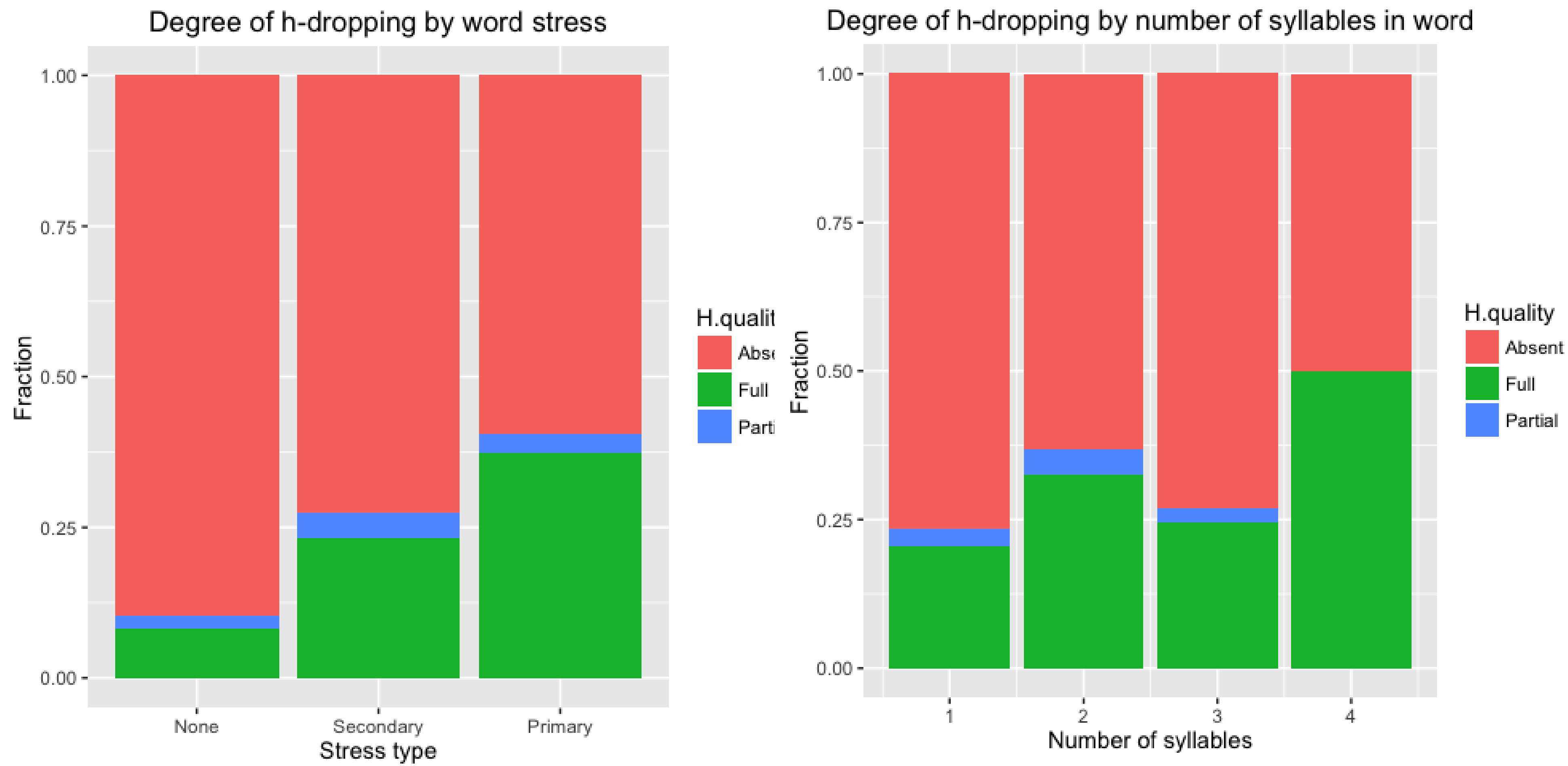


Figure 14: Level of /h/-dropping according to word stress [left] and number of syllables [right]

Knowing that unstressed and monosyllabic words are more likely to have dropped /h/ can illuminate the patterns of /h/-dropping in different types of closed class words observed in the dataset. Table 9 summarises the numbers of particular words featured in the closed class categories. Figure 13 showed that pronouns are most likely to lack /h/ than other closed class words. Closed-class words are more susceptible to being unstressed than open class words, and monosyllabic closed-class words are particularly susceptible to /h/-dropping, as demonstrated in Figure 14b. Monosyllabic words are common across all closed class categories – i.e. *had*, *have*, *how*, *who*, *he*, *her, him*, *his*. However, pronouns have the highest proportion of monosyllabic words of any closed category. *he* in particular represents a word that is monosyllabic, has a short vowel (as opposed to the long vowels/diphthongs in *how* and *who*) and is in an open syllable (unlike *had* and *have*). It is likely then, because of the combination of these factors, that *he* is more likely to be reduced (and, as such, pronounced without /h/) than all other tokens. The fact that the pronoun category is over 50% *he* tokens may explain why pronouns have the highest figure for /h/-dropping overall.

Have			**Closed**			**Pronoun**		
Word	#	%	Word	#	%	Word	#	%
had	234	60	here	71	25	he	205	55
hadn't	12	3	how	150	53	he'd	18	5
has	9	2	how's	1	1	he'll	2	1
hasn't	2	1	who	53	17	he's	7	2
have	112	29	who'd	4	2	her	48	13
haven't	11	3	who's	1	1	him	51	14
having	8	2	whoever	1	1	his	38	9
Total	388	100	Total	281	100	Total	370	100

Table 9: Types of closed class words in the dataset

The other factor which proved to be consistently and highly significant in predicting variability in /h/ was preceding segment. I used Bell and Holmes'

(1992) categories to group the 35 different preceding segments (plus preceding pause) into phonetic categories. The hierarchy for preceding segments which inhibited /h/-dropping in Bell & Holmes (1992) is pause > vowel > voiceless obstruent > liquid > nasal > voiced obstruent. The raw figures for this dataset are displayed in Figure 15, and demonstrate that the hierarchy for preceding segments which inhibited /h/-dropping in this dataset is vowel (54% /h/-drop) > pause (60%) > nasal (76%) > voiced obstruent (78%) = voiceless obstruent (78%) > liquid (90%). This differs slightly to the findings of Bell & Holmes, but there are similarities, such as preceding pauses and vowels consistently being most likely to favour /h/-retention in both studies. The main differences are the figures for preceding voiceless obstruents, which in this dataset are much less likely to inhibit /h/-dropping than in Bell & Holmes', and preceding liquids, which favour a

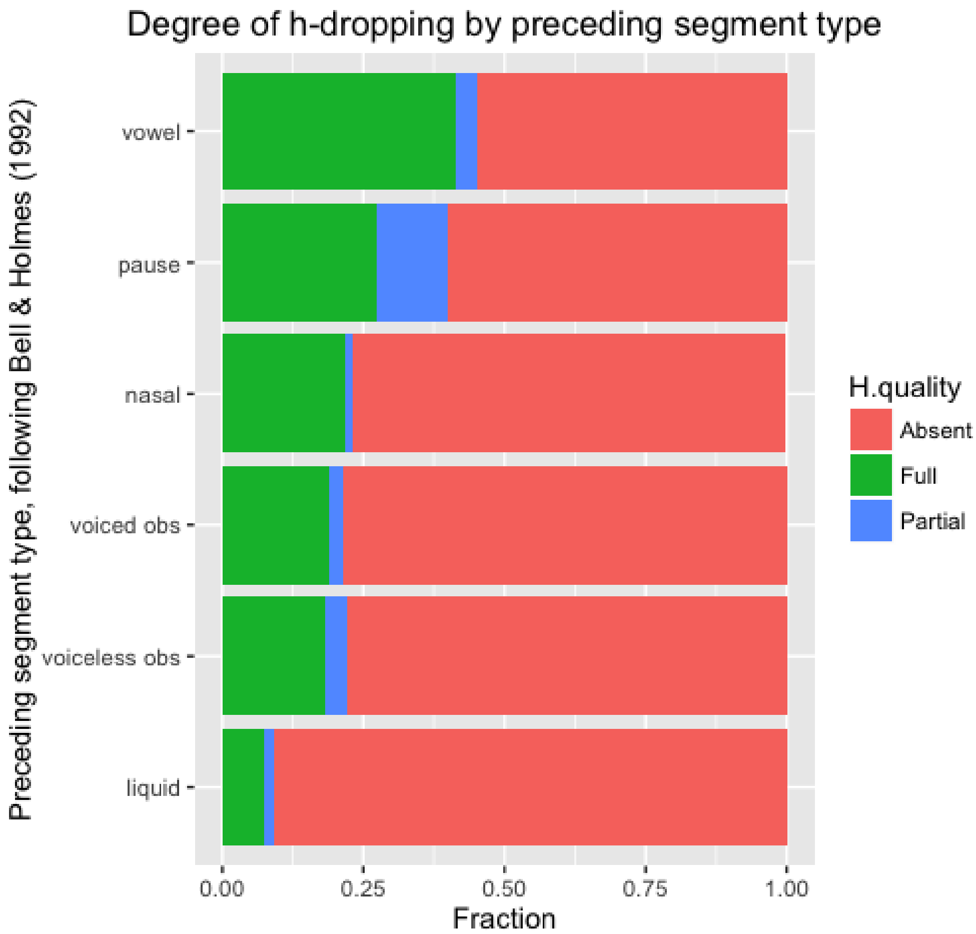


Figure 15: Level of /h/-dropping according to preceding segment type (following Bell & Holmes, 1992)

particularly high level of /h/-dropping in this dataset.

The final linguistic factor of interest here is the effect of proper nouns. This was not tested for in the regression model due to the small number of proper nouns featured in the dataset, with only 83 instances in 2121 tokens. The figures for /h/-dropping in these 83 instances are displayed in Figure 16, but in this instance they are not translated into percentages because several words are only represented by one token.

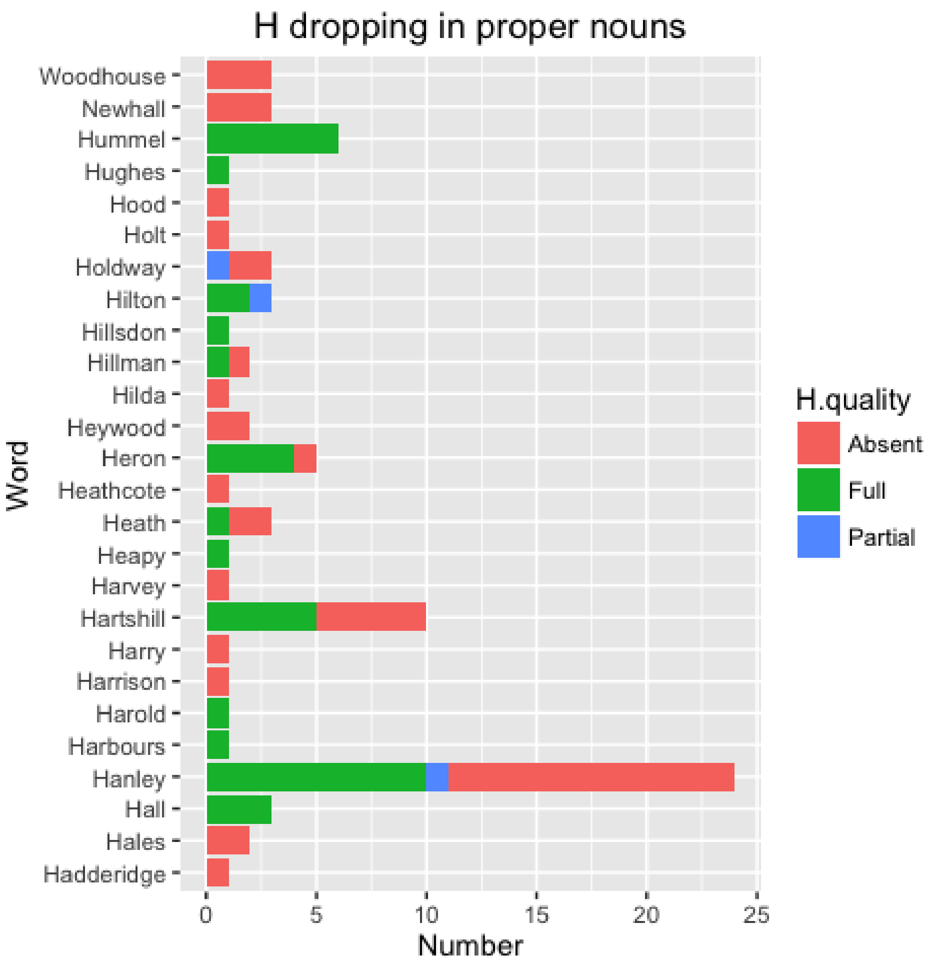


Figure 16: Level of /h/ dropping in proper noun tokens

It might be expected that proper nouns are most likely to retain /h/, because they are more likely to be fully stressed than any other word. However, there is considerable variability between dropped and retained /h/ across the proper nouns. One thing I wanted to examine in particular was the presence of /h/ in the word *Hanley*, as it had been singled out in Leach & Montgomery

(2013), Leigh (2006) and in commodified produce as an emblematically /h/-less word. In this dataset the word is spoken 24 times, 10 with full /h/, 1 with partial /h/ and 13 with Ø. This suggests the emblematic status of the word as /h/-less may not be reflected in the reality of pronunciation. However, it could be the case that the word is only emblematically /h/-less in the phrase 'Up 'Anley Duck' itself, because of its performative and often humorous context, and that phrase in its entirety is absent from the dataset.

5.4.2.1 Discussion of linguistic factors

Several linguistic factors have been shown to be significant predictors of /h/ variability. Additionally, several linguistic factors are, if not collinear, then interdependent. Word type was shown to be a particularly significant predictor of /h/ variability, with open class words having the least /h/-dropping overall, followed by miscellaneous closed class words and tokens of *have*, with pronouns having the highest levels of /h/-dropping overall. I have shown that several linguistic characteristics of pronouns may make them particular targets for /h/-dropping. In this dataset, monosyllabic tokens were demonstrated to favour /h/-dropping more than polysyllabic ones, and the pronoun tokens in the dataset were almost exclusively monosyllabic. This dataset demonstrated a tendency for unstressed tokens to predict more /h/-dropping than those with primary or secondary phrasal stress, and the status of pronouns as closed class words means they are more susceptible to reduced stress in continuous speech (Wells, 1982b). The pronominal token *he* combines these factors with a short vowel in an open syllable, potentially making it a stronger target for reduction in connected speech, and thus dropping of /h/. The high proportion of this token in the dataset may be responsible for the particularly high levels of /h/-dropping overall in pronouns.

This analysis provides further evidence for the well-established observation that closed class words are more susceptible to /h/-dropping (e.g. Bell and Holmes, 1992; Hughes et al., 2012; Tolfree, 1999). Indeed, Wells (1982b, pp. 254–55) suggests that dropped /h/ in unstressed non-pre-pausal closed class

Figure 17: Level of /h/-dropping in different word types, by each speaker in the dataset

tokens should not be considered /h/-dropping in the proper sense at all, suggesting a speaker must drop /h/ in open class words to be considered an /h/-dropper. Figure 17 shows the patterns of /h/ variation for each individual speaker according to word class, demonstrating that almost all 26 speakers show at least a very small amount of /h/ dropping in open class words, suggesting they are almost all dialectal /h/-drop users.

Figure 17 demonstrates three main patterns of /h/-variation across the dataset. The first is complete or very near categorical /h/-dropping in all word types, demonstrated by Decoration_DK, Decoration_EM, Decoration_GA, Decoration_PH Design_JA, Firing_AW, Firing_WS, Glazing_Awil, Glazing_KJ, Glazing_WA, Production_GS, Production_TB and Production_WB. For these speakers, it could be the case that, as Wells (1982b, p. 253) suggests, there is no phonemic /h/ in their inventory, and a voiceless glottal fricative only appears as an allophonic "variable marker of emphasis".

The second pattern observable in the dataset is some use of full /h/ concentrated almost exclusively in open class words, with very little or no use in closed class words, demonstrated by Decoration_SD, Decoration_JA, Design_DJ, Design_GM, Firing_SJ and Glazing_WS. This pattern may be suggestive of Wells' (1982b, p. 254) alternative conceptualisation of /h/dropping, with speakers retaining an /h/ phoneme, but with an optional zero-realisation, which may be triggered by phonetic context, among other things.

The remaining speakers – Admin_EF, Admin_JB, Decoration_DJ, Design_RC, Design_WH, Management_TB and Production RC – show lower levels of /h/-dropping in open class words, and considerable /h/-retention in closed class words. Wells (1982b, p. 255) suggests a pattern like this is somewhat unnatural, the result of the "genteel anxiety" of "middle class speakers". Broadly, the speakers investigated in this dataset are working class, but these speakers' low levels of /h/-dropping (in comparison to the majority of their peers) and use of full /h/ in closed class words could indeed be socially motivated. The following section explores this.

5.4.3 Social factors

While several social factors were examined in the dataset and added into the regression model, only department was found to be a statistically significant predictor of /h/ variation. This section examines all the social factors in turn and evaluates their relevance to this dataset.

i. Age

Variation in /h/ is recognised as a stable variable not undergoing change across generations, and /h/-dropping has been consistently listed as a feature of Stoke-on-Trent English for at least 50 years of study (Leach and

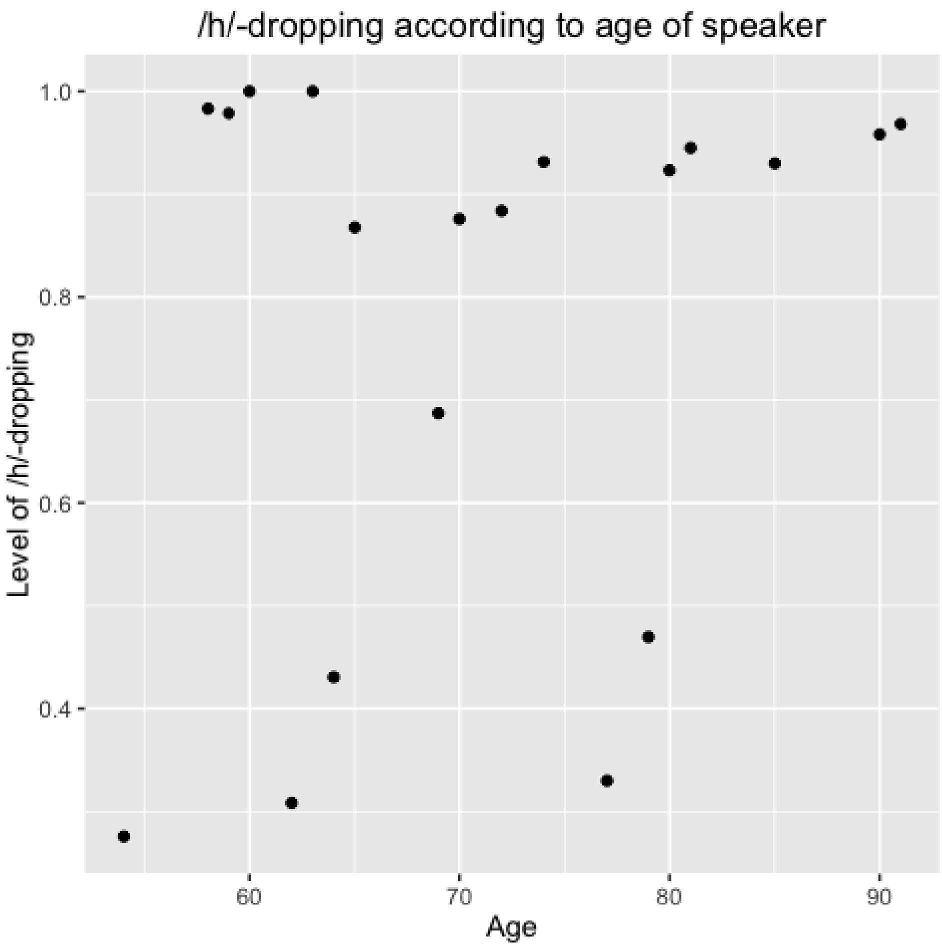


Figure 18: Level of /h/-dropping according to the age of the speaker

Montgomery, 2013; Orton and Barry, 1970; Trudgill, 1999a). Figure 18 demonstrates relative stability in the feature across the age ranges in this dataset – there is no direct correlation between increased or decreased level of /h/-dropping (measured on the Y axis) and the age of the speaker.

However, two things are of note: firstly, this dataset presents no data for speakers younger than 55, who may demonstrate different patterns; and secondly, most age points are represented by one speaker. There are two speakers in this dataset who are aged 58, two aged 64, two aged 65, two aged 79 and two aged 81 and three who are 69, while all others ages are represented by one speaker. As such, the data displayed in Figure 18 is not representative of an age pattern throughout Stoke-on-Trent.

ii. Gender

Looking at the raw figures, as demonstrated in Figure 19, there is very little difference overall in the use of /h/ by gender of speaker: male and female speakers in the dataset drop /h/ 74% and 72% of the time respectively. I ran a test logistic regression model on the whole dataset in which I included gender as a predictor (but removed department, as they are closely linked), and it was not ranked as a significant factor in predicting /h/-dropping.

While previous research in Sheffield (Stoddart et al., 1999) and Norwich (Trudgill, 1974a), for example, has shown /h/-dropping to be sensitive to gender, with female speakers tending towards /h/-retention, the variable in this dataset does not appear to be sensitive to speaker gender. However, previous studies have included both working and middle class speakers, which may result in differing patterns.

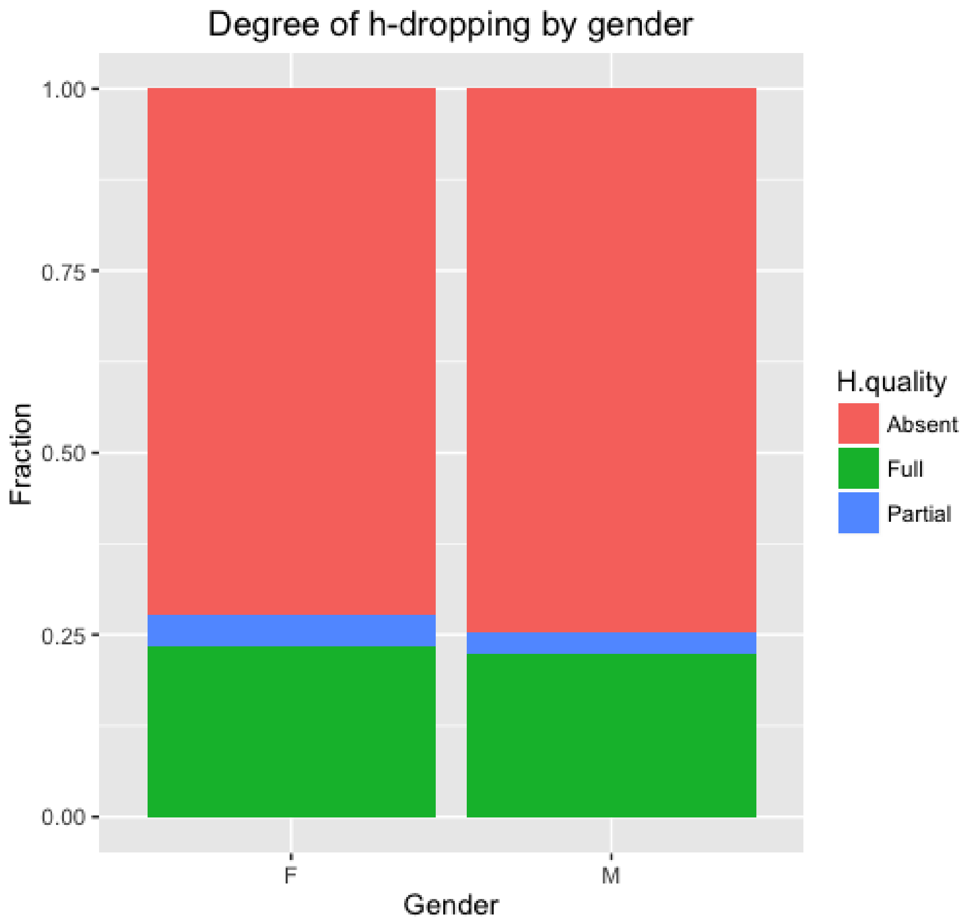


Figure 19: Level of /h/-dropping according to speaker gender

ii. Department

The statistical models have consistently shown that the department in which the speaker is based appears to be the only statistically significant social predictor of whether the speaker is likely to drop or retain /h/. Figure 20, which shows the proportion of /h/-dropping and retention by department, illuminates this further. The two departments which demonstrate least /h/-dropping are management, with 27.5% dropped, and administration, with 46% dropped. The design department has an intermediate level of /h/-dropping at 63%, while the production, glazing, firing and decoration

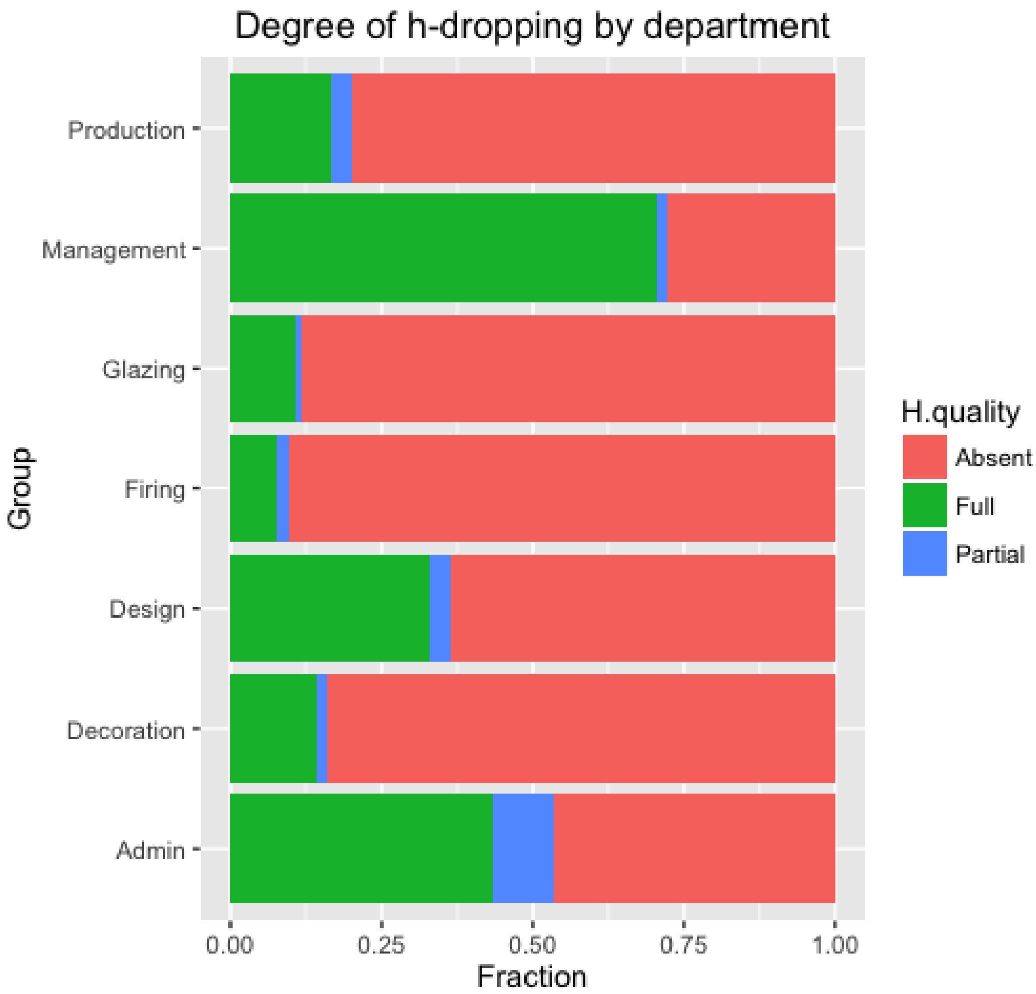


Figure 20: Level of /h/-dropping according to speaker department

departments show fairly similar, high levels of /h/-dropping, with 79-90% /h/-dropping across these departments.

The following section scrutinises this departmental pattern further, exploring why departments may have different levels of /h/-dropping.

5.4.3.1. Discussion of social factors

The department in which the speaker worked is the most significant social factor in predicting their /h/ variation. In order to examine why this may be, I use linguistic research on social meanings associated with /h/, my previous research on the social structures of the pottery industry (see §2.3) and the content of the interviews themselves, wherein the speakers discuss what type of work they did, where they worked and who they interacted with.

The department with the lowest overall rate of /h/-dropping is management, with just 27%. It should be stated that the management department is only represented here by one speaker, so his results may not be indicative of the category as a whole, but Management_TB's lower levels of /h/-dropping overall may well be directly related to his position in the industry. Born in 1946, the speaker worked in the production department of a factory until 1969, when he was made assistant manager. Four years later he was made manager of the jolly shop – one specific area of the production department – then in 1979 was made pre-kiln manufacturing manager, overseeing all production before firing. He was then promoted to works manager, overseeing all aspects of production, and was invited to join the board of directors as production director in 1989. As such, while the speaker considers the jolly shop his "home", he rose steadily through the ranks over his time there and eventually to the highest management level.

As such, this speaker has an interesting dynamic with his colleagues: he has historical ties with the department, working for many years on the factory floor, and in his management role he interacts with colleagues on a daily basis, ensuring their work is running smoothly and addressing any problems. However, he is in a position of superiority over them. In managing these interactions, he could be distinguishing himself from the other production factory-floor workers (who, based on the levels observed in this dataset, are more likely to be /h/-droppers), by using (among other things) this socially salient variable, and articulating more of the standard full /h/.

Additionally, his role as manager – and eventually his seat on the board of directors – entails more day-to-day interaction with other senior management figures, including the owners of the potbank, who were usually very well-off. Indeed, the speaker mentions his memory of showing Lord Snowdon, Princess Margaret's husband, round the factory. Experiences like this may have exposed the speaker to increased /h/-retention in these circles, or encouraged such /h/-retention in his own speech due to a desire to both fit in and prove his place. The management speaker's low levels of /h/-dropping, then, may serve the dual purpose of indicating his position of authority on the shop floor, and allying with other senior managers and asserting his position among them.

As demonstrated in §5.4.3, neither female nor male speakers behave as a homogenous group. Figure 20 shows the administrators have much lower rate of 46% /h/-dropping compared to the other female employees in the dataset, the decorators, who have 84% /h/-dropping. Speakers Admin_EF and Admin_JB worked together in the same factory, and spent most of their time in offices away from the factory floor, working with other secretaries and close to and with the owners of the factory. Their duties involved mainly managing wages and invoices, typing and answering phones. However, they also frequently visited the factory floor (at least "once a week", according to JB) and conversed with the staff there, and Admin_EF states that they often formed friendships with colleagues on the factory floor – they were "so friendly. There wasn't a thing like them and us like factory and office staff".

In contrast, the decorators worked only in their section of the factory floor, away from the other production departments – Decoration_SD states that "you weren't allowed in any other part of the factory". Freehand paintresses (such as speakers DJ and DK) had slightly more creativity in their tasks, but both they and the transferrers and goldstampers/gilders were given strict instructions and worked on specific patterns and ware, supervised by more senior female decorators. Their conditions were perhaps harsher, with several speakers describing cold buildings and stools designed to be uncomfortable so one wouldn't relax.

In this dataset, there appears to be two distinct patterns of /h/ variability in female speakers. The decorators pattern with the other manual, mass-production workers, with generally high levels of /h/-dropping. This is perhaps linked to their manual roles: while distinct from the rest of the factory spatially, the decorators' roles have many similarities with workers in the production, firing and glazing departments, such as working in large numbers on a production line, receiving lower pay and enduring harsher conditions. In contrast, the administration speakers pattern with the management speaker, having low levels of /h/-dropping. These departments share some level of seniority over, and social and spatial distance from, the factory floor workers, as well as consistent interaction with senior management and outward-facing tasks, which may be linked to their more frequent use of full /h/.

It is interesting that the production, glazing, firing and decoration departments all have the same high levels of /h/-dropping, with a difference of only 11% between them. Considering the strict division of departments within the potbanks of Stoke-on-Trent (Baker, 1991b; Sekers, 1981), it is unlikely that there would have been consistent interaction between members of these departments on a day-to-day basis, so their similar figures are unlikely to have been influenced by direct exposure across departments. However, these departments have in common manual work, in that they are all instrumental in producing and finishing hundreds of ceramic items a day. This is in contrast to the management and administration departments, whose roles do not include mass production. The collective high levels of /h/-dropping in these departments correlates with this manual work, potentially due to the variant's historical association with working class labour and people (Mugglestone, 2007).

However, further distinctions become apparent when we go beyond the level of department to examine the overall levels of /h/-dropping in individual speakers, shown in Figure 21.

Examining individual speakers

Figure 21 demonstrates that some speakers show a great deal of consistency with their departmental peers, while others stand out against them. Among the female speakers, both administrators have a generally lower level of /h/-dropping (59% for Admin_EF and 33% for Admin_JB) than the female decorators, six of the seven of whom have a /h/-dropping level over 70%, with two speakers reaching 96% /h/-drop (Decoration_EM and Decoration_JA). However, speaker Decoration_DJ has a level of /h/-drop even lower than the administrators, registering only 29%. She is the only female speaker in the dataset to go against her departmental trend.

Single outliers also appear in the other departments. In the firing department, speaker SJ has 78% /h/-dropping, a slightly lower figure than speaker WS (95%) and speaker AW (100%). Firing_SJ's slightly higher use of /h/ may be linked to his position – as the fireman, he is the manager of his department, and as explained in §2.3.2, his role was particularly skilled and highly respected. While his /h/-dropping levels are not as low as some, his increased use of /h/ could be reflective of his superior position over the other firers.

There are also single outliers in the production and glazing departments. Every production speaker has a /h/-dropping level of >92%, aside from Production_RC who has only 49%. Additionally, all the glazers have /h/-

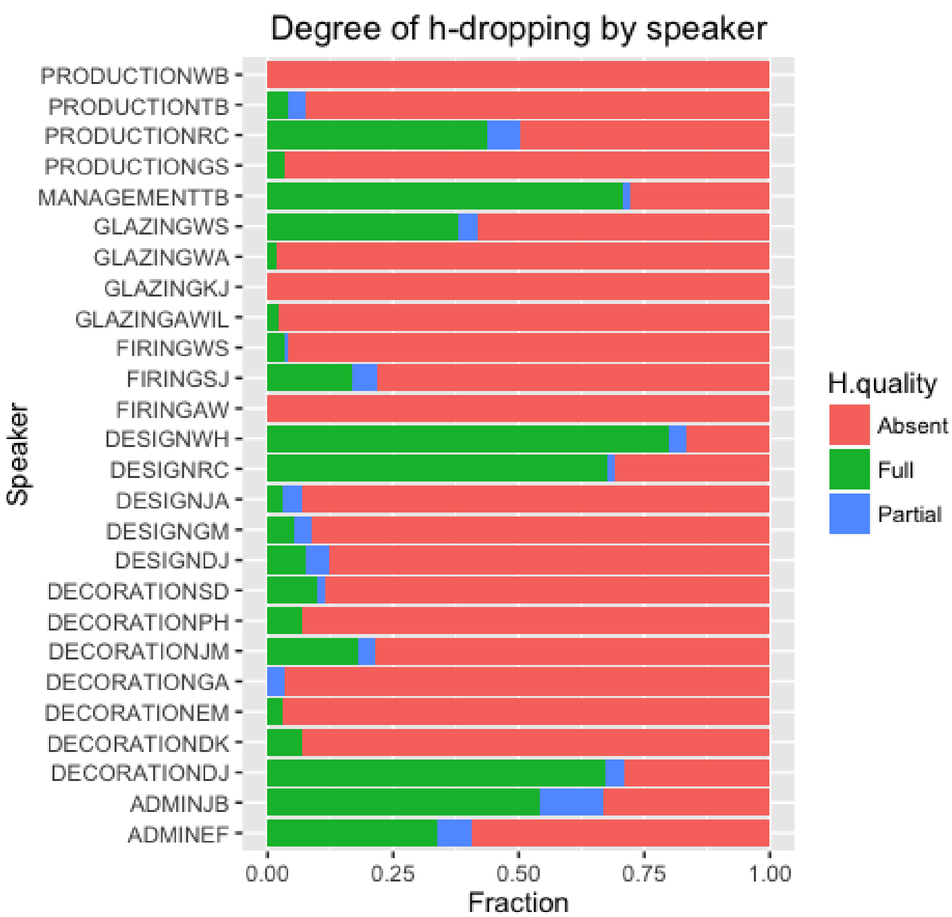


Figure 21: Levels of /h/-dropping for each individual speaker

dropping levels of >97%, aside from Glazing_WS, who has only 58%. Production_RC and Glazing_WS do not have roles in the industry which single them out within their departments as likely users of more /h/. Their situations – as well as all the other outliers in /h/ use – will be explored further in Chapter 7.

Within the design department, Figure 21 illuminates a division. Speakers DJ, GM and JA all have /h/-dropping rates of >87%, comparable to the majority of the other manual workers, both male and female. However, speakers RC and WH have /h/-dropping rates of 30% and 16% respectively, significantly lower than their peers.

Speakers RC and WH are modellers by trade. Design_RC describes the challenges and high level of skill required in modelling a piece from a design or idea passed to them by the management, explaining they had to have an understanding of how to design ware with specific capacities and proportions, so a good deal of maths was involved alongside the physical modelling skill. Modellers would usually have their own studio in the factory, were paid well compared to other pottery workers, and often interacted with management and owners of the factory – Design_WH explains that he would take designs and prototypes back and forth to the factory owners for approval as he designed them.

Indeed, later in his career, speaker Design_WH was made a junior director in his firm, attending board meetings and having more say in the artistic direction of the company. In his interview he frequently talks about meeting with the owners of the factory, whom he refers to as "Sir [forename]" and "Mr [forename]" Wade. While the Wade family were Stoke-on-Trent locals their whole life and built the company themselves, Design_WH's interactions with these well-off, highly esteemed managers may have encouraged his particularly low levels of /h/-dropping – Design_WH has the lowest /h/-dropping levels in the whole dataset, with just 16%.

In contrast, speakers DJ, GM and JA are mouldmakers, who would take the designs made by the modellers and turn them into multiple plaster or rubber moulds for use by the production department. This job was less skilled and less well-paid than the modellers, and would have involved less interaction with management and more interaction with the factory floor.

The division between these jobs, the prestige associated with them and the differences in their likely everyday interactions may be reflected in the higher use of /h/ in the modellers compared to the mouldmakers. While both jobs were manual, the role of modeller required more training, skill and interaction with superiors – and, consequently, less interaction with the factory floor – and is associated in this dataset with a much lower level of /h/-dropping than the more manual, typically working class role of mouldmaker.

The correlations between industrial role and /h/ use may draw on existing broad indexical links (Silverstein, 2003) between the variable and certain social qualities and ranks. Mugglestone (2007) illustrates historical links between /h/-retention and the middle class, the educated, and people of high esteem and social ranking. In this dataset, these indexical links between /h/-retention and prestige may be reanalysed in this specific hierarchical environment to distinguish between roles within the pottery industry that differ as to their daily activity and level of prestige. This may be an example of fractal recursivity, defined by Irvine and Gal (2000, p. 38) as "the projection of an opposition, salient at some level of relationship, onto some other level". As has been observed in other linguistic studies of specific communities (e.g. Bucholtz, 1999; Burland, 2017; Eckert, 2000; Kirkham, 2013; Mendoza-Denton, 1997; Moore and Carter, 2015; Moore and Podesva, 2009; Podesva, 2007), a variable with a broad, inter-group social meaning – such as the middle/working class difference in /h/ realisation – is refracted onto a local level, developing related but distinct intra-group social meaning – such as distinguishing between manual and non-manual workers in this dataset.

5.5 Summary

Linguistically, /h/ variation in this dataset mirrors and reinforces patterns noted in previous literature. Notably, the prevalence of /h/-dropping in closed class words, pronouns in particular (Tolfree, 1999); the influence of preceding segments on /h/ realisation (Bell and Holmes, 1992); and potentially different internal schema for /h/ phonology (Wells, 1982b).

Socially, the factors most closely linked to /h/ variation appear to be department within the pottery industry, and specific industrial role held. In this dataset, /h/-dropping correlates with manual, mass-production roles, while /h/-retention correlates with non-manual, highly-skilled, more senior roles, particularly those with regular interaction with senior management.

Chapter 7 explores these potential social meanings on an intra-speaker level, shedding more light on this variable. However, the following chapter explores whether a similar local-level pattern can be observed in a variable with less broadly-recognised social meaning, the (i) vowel.

Chapter Six

The (i) vowel

6.1 Overview

This chapter presents analysis of variation in the (i) vowel in the oral history archive dataset. As this variable is previously unstudied, I provide a detailed description of the variable and its linguistic history in §6.2. The method of analysis is presented in §6.3, followed by analysis and discussion of the results in §6.4, and a short conclusion in §6.5.

6.2 Background

In outlining his reference lexical sets, Wells (1982b, p. 165) includes three for categorising weak (unstressed) vowels: happY, lettER and commA. These, he states are "not really standard lexical sets", but they do "have indexical and diagnostic value in distinguishing accents". Foulkes and Docherty (1999, p. 7) add a horsES lexical set "to represent the vowel typically used in e.g. *–es* plurals and the *–ed* past tense suffix". This description is closest to the vowel of interest here, though it also encompasses unstressed /ɪ/ found other suffixes such as *–age*, *-ity*, *-est,* and *–ice*; in unstressed instances of monosyllabic grammatical words such as *it*, *him* and *his*; and in morphologically opaque words such as *tennis*, *market* and *biscuit*, for example. In order to group all these usages under one descriptor, I will use (i) to represent the vowel in question.

6.2.1 The (i) vowel in varieties of English

According to the studies collected in Foulkes and Docherty (1999), there is regional variability in how the (i) vowel in horsES words is articulated. RP speakers historically have, and the British English standard is considered to be, [ɪ]. Newcastle-upon-Tyne has [ə] in horsES (Watt and Milroy, 1999, p. 27), as does Norwich (Trudgill, 1999b, p. 125). In Derby, [ə] is the prevalent form, with [ɪ] only occurring in “comparatively rare cases of style-shifting” (Docherty and Foulkes, 1999b, p. 50), while Sheffield has [ə] more frequently than [ɪ] or centralised [ɪ̈] (Stoddart et al., 1999, p. 73) 70% of speakers from the Wirral used the local form [ə] over [ɪ] in the most casual speech style. As the speakers surveyed tended not to overtly evaluate this local form as superior, this variable is thought to be affected by covert prestige in Merseyside (Newbrook, 1999, pp. 102–03). Schwa is also found in (London)Derry in Northern Ireland (McCafferty, 1999, p. 247) and in all varieties of Dublin English (Hickey, 1999, p. 271).

Varieties which retain [ɪ] in horsES words include Milton Keynes, Reading, Hull (Williams and Kerswill, 1999, p. 143) and Cardiff (Mees and Collins, 1999, p. 187), while South East London is attested to have an [ɪ]/[ɪ̈] alternation (Tolfree, 1999, p. 165). Glasgow Standard has [ɪ] and Glasgow Vernacular has [ɪ̈]/[ʌ̈] (Stuart-Smith, 1999, p. 206), with the same centralised alternation attested for both Edinburgh English and Scots more broadly (Chirrey, 1999, p. 225).

West Midlands English has frequently been observed to have a tenser (i) vowel than [ɪ] or [ə], moving towards [i/iː]. Mathisen (1999), Clark (2008), and Hughes et al (2012) state that the stressed KIT vowel in West Midlands English has a general tenser quality, as [i], and this vowel is described as “perhaps the most salient and instantly recognisable feature of this accent, having less centralised and much closer quality than any other British English variant” (Thorne, 2003, p. 90). Both Asprey (2007) and Mathisen (1999) also report [i] in *–es* and *–ed* suffixes in the horsES lexical set, suggesting the (i) vowel can have a tenser realisation, alongside standard [ɪ] and lax [ə]. §2.4.4 covered the links between Stoke-on-Trent and the surrounding cities, and the potential for West Midlands influence on the regional accent.

6.2.2 KIT/schwa drift

In contrast to the tenser realisation of (i) observed in the West Midlands, Received Pronunciation has a documented tradition of KIT/schwa drift, where unstressed /ɪ/ vowels are articulated with a central [ə] schwa. As noted in §6.2.1, Foulkes and Docherty (1999) suggest that this phenomenon may be present in horsES words in a variety of British English accents.

Wells (1982b, p. 167) suggests that some accents of English have a weak vowel distinction between words such as *Lenin* and *Lennon*, articulated as [lɛnɪn] and [lɛnən] respectively, while some have the same schwa vowel in both. For the latter, those which Wells states have undergone Weak Vowel Merger, the words *abbot* and *rabbit* rhyme. Traditional RP, Wells states, retains a distinction, while "many accents of England including some which could perhaps be considered to fall within RP, occupy [an] intermediate, variable position" (Wells, 1982b, p. 167). He elucidates this in a discussion of changes in RP taking place in the mid-twentieth century, including "Drift from weak /ɪ/ to /ə/" (Wells, 1997):

> In various categories of weak syllables /ə/ is increasingly used where /ɪ/ formerly prevailed. Thus *possible* is now usually /ˈpɒsəbl/ rather than, as previously, /ˈpɒsɪbl/. For *private* and *carelessness* my father said /ˈpraɪvɪt, ˈkeəlɪsnɪs/, but I say /ˈpraɪvət, ˈkeələsnəs/. While both variants are still to be heard in these endings *-ible, -ate, -less, -ness,* and likewise in *-ity, -ily,* the balance of preference has, in my judgement, swung from /ɪ/ to /ə/.

Gimson (1984) conducted a word-list elicitation study of 460 tokens to investigate the quality of weak vowels in RP speakers. Specifically, his targets were prefixes and suffixes, investigating the vowel qualities in -*less*, -*ness*, -*ible*, -*ity*, -*ical*, -*iple*, -*itive*, -*ace*, -*ice*, -*ate*, -*ite*, -*age*, -*ege*, -*ily*, -*est*, -*in*, -*en*, -*eign*, -*ain*, -*em*, -*a/enge*, -*inal*, -*imal*, -*ed*, -*ed*, -*et* and *re*-, *de*-, *te*-, *be*-, *e*-, *se*-, *pre*-, *ne*- and *le*-.

According to Gimson's findings, "/ə/ had indeed made inroads in certain weak syllables where amongst most conservative RP speakers /ɪ/ is more typical" (Gimson, 1984, p. 52). However, not all affixes were exclusively /ɪ/ or /ə/, and many showed variability. Affixes that showed a shift towards /ə/ include the following, with Gimson stating that "these changes towards /ə/ are of much longer standing than dictionaries would have us believe" (1984, p. 52):

- *-ity*, excluding words such as *unity* and *enmity,* which retained /ɪ/.
- *-ible*, excluding *eligible*, *crucible*, *negligible*[21]
- *-itive*, excluding *fugitive*
- *-ate*, excluding *private*, *climate*
- *-ily*, excluding *heavily* and *happily*
- *-em*, excluding *poem*

Affixes in which /ɪ/ "remains completely dominant" (Gimson, 1984, p. 52) include *–age*, *-ege*, *-est*, *-ice*, *-ical*, and *–icle*. Additionally, Gimson notes that "there appeared to be no tendency for the morphemes *–ed*, *-es*, to change from traditional /ɪd, ɪz/ to /əd, əz/ e.g. in *horses*, *raises*, *waited*, *dreaded*" (1984, p. 52), suggesting that horsES words are resistant to KIT/schwa drift.

Gimson also notes the influence of preceding consonant in some cases of variability between /ɪ/ and /ə/. He observes that the suffix *–et* is more commonly heard as [ɪt] after a velar stop or affricate, as in *jacket* or *budget*, and as [ət] in words such as *violet* and *cabinet*, for example (Gimson, 1984, p. 52).

Fabricius' (2002) investigation of weak vowels in RP analyses the progressive status of KIT/schwa drift. Fabricius first consults pronouncing dictionaries from 1917 to 2000 for their phonetic rendering of (ɪ). She finds that, for tokens such as *item* and *system* and suffixes such as *-ible* and *-able*, an [ə] pronunciation has been listed as early as 1917. *–ity* gains an [ətɪ] pronunciation alongside [ɪtɪ] between 1956 and 1988, as do *–less* and *–ness*.

[21] It should be noted that these are Gimson's examples of exceptions, not an exhaustive list.

Suffixes *–es* and *–ed* gain [ə] pronunciations in dictionaries from 1990, alongside *–est*, while tokens such as *women* and *dentist* are never listed with a schwa pronunciation in RP (Fabricius, 2002, p. 216). Fabricius' analysis of pronouncing dictionaries suggests an incremental introduction of [ə] in unstressed position across time, and thus a spread of KIT/schwa drift.

Fabricius combines this dictionary survey with an analysis of interview data from eight RP speakers taken from a corpus collected in the late 1990s. First and second formant measurements of KIT, FLEECE and (i) in *–es* and *–ed* syllables were analysed for their relative position in an individual speaker's vowel space. Accordingly with Gimson's (1984, p. 52) observation that the *–es* and *–ed* suffixes are resistant to KIT/schwa drift, Fabricius' data shows the same resistance, with the unstressed vowels in these suffixes showing "a clear preference for KIT-like vowels" across all speakers (Fabricius, 2002, p. 223).

In its various contexts, the (i) vowel shows variability throughout British dialects; laxing to schwa is common in RP and elsewhere, aside from the West Midlands, where tensing is common. However, Gimson and Fabricius' work suggests that effects of KIT/schwa drift may be mediated by the morphological and/or phonetic structure of the carrier word.

6.2.3 The (i) vowel in Stoke-on-Trent

The earliest mention of variability of (i) in Stoke-on-Trent is by Halliwell-Phillipps (1901, p. xxviii), who states that, in Staffordshire, "the lengthening of the vowel *i* appears very common". It is not clear whether Halliwell-Phillipps' comment refers to stressed or unstressed /ɪ/, or whether 'lengthening' may involve a perceived change in vowel quality, but his observation remains the first potential reference to variability in the (i) vowel in Stoke-on-Trent.

Regarding the (i) vowel, Gibson (1955) notes that there is "a closer form of [ɪ], which occurs only in final unstressed position" (1955, p. 42). Specifically, he observes that most localities have a consistent [ɪ] in all positions, but in Mow

Cop, Alton, Warslow and Barlaston (the northernmost villages in Staffordshire), there is a laxer, more centralised vowel to be found in *milk*, *with*, *dinner* and *wrinkle*, and a tenser, closer vowel in *starting*, *district*, *silly* and *Sunday* which is "characteristic of these localities", creating a north-south divide across the county (Gibson, 1955, pp. 50–51). Gibson's observations suggest a tense quality to (i) in the region of northern Staffordshire surrounding Stoke-on-Trent, in both suffixed (e.g. *starting*) and non-suffixed (e.g. *district*) words.

The next academic study of Stoke-on-Trent is Montgomery (2003), who investigated the quality and variability of (i) in tokens of the word *it* specifically. Using the SRN methodology (Llamas, 1999) which combines questionnaire and interview data elicitation, Montgomery surveyed eight Stoke-on-Trent speakers (four aged 16-20, four over 60 years of age) and categorised their articulation of *it* as [ɪt], [i:t] or [ət]. He found the vowel was stratified by social class, with middle class speakers using the standard [ɪ] over 80% of the time, while working class speakers had a roughly equal split between standard [ɪ] and local [i:] (use of [ə] was consistently below 2% in all speakers (Montgomery, 2003, p. 25)). Female speakers used the standard [ɪ] more often than male speakers by a small margin (2003, p. 26), and more specifically, female middle class speakers used standard [ɪ] in >90% of cases, while working class women again had an equal split between standard [ɪ] and local [i:] (2003, p. 27). Montgomery's findings suggest that variable realisation of (i) in Stoke-on-Trent persists in the 21st Century, and while his sample size is small, it demonstrates potential social stratification of the variable.

Leigh's (2011) *Ow Ter Toke Raight* comprises a dialect dictionary, stories, myths, legends and poems, all written in a semi-phonetic approximation of Stoke-on-Trent English. Table 10 demonstrates the instances of <ee> being used to represent the phonetic quality of (i).

Leigh's orthographic renderings of (i) support linguistic findings that, in Stoke-on-Trent English, a tense [i:] vowel may be found in (i) words. His orthographic expressions of this vowel appear in unstressed grammatical words (*it*, *his*, *is*); the *–ed* suffix of the horsES lexical set (*parted*, *ended*); other suffixes (*-age*, *-ive*, *-ish*); and in morphologically opaque words such as *captain*. Additionally, the phenomenon is reported in non-word-final position, as demonstrated by <fineeshed> and <relateeves>. However, it should be noted that not every potential (i) is spelt with <ee>, and the words *witches*, *coffin*, *basket*, *shifted*, *soonest*, *mended*, *wicked*, *harvest*, *tragic* and one instance of *captain* are all spelt as standard elsewhere in the book. This may be because of observed variability in the vowel itself, or inaccuracy on the part of the author – indeed, the variable spellings of the word *captain* suggest some authorial inconsistency.

Dialect spelling	**Meaning**	**Assumed pronunciation**	**# of occurrences**
eet	it	[i:t]	72
eeze	his	[i:z]	46
eeze	is	[i:z]	6
eezel	himself	[i:z ɛl]	1
parteed	parted	[pɑ:ti:d]	1
villeege	village	[vɪli:dʒ]	2
cotteege	cottage	[kɒti:dʒ]	5
capteen	captain	[kapti:n]	9
fineeshed	finished	[fɪni:ʃd]	1
relateeves	relatives	[rɛlati:vz]	1
dameege	damage	[dami:dʒ]	1
offendeed	offended	[ɒfɛndi:d]	1
endeed	ended	[ɛndi:d]	1

Table 10: Tokens of semi-phonetic (i) spellings in Leigh (2006)

In Leach & Montgomery's (2013) survey of Stoke-on-Trent speakers, participants were asked, among other questions, "*Do you pronounce the words traces and Tracy's the same?*" in order to elicit responses about (i). While self-reporting methods may not always accurately reflect the linguistic reality of a dialect region, they have been used to understand how speakers perceive their own dialect features, and give a strong indication of salient features of varieties of English (e.g. Leeman et al., 2018).

Of the 161 respondents, 50% (81) reported that they always or usually pronounced the words *traces* and *Tracy's* identically, 18% (29) reported that they sometimes did, and 32% (51) reported that they never did. A combined 67% of the sample note at least an occasional use of a tense, unstressed vowel in this example of an (i) vowel, which demonstrates significant recognition of the feature.

Additionally, when asked in an open-ended question whether there were any specific pronunciations and words the respondents would associate with the Stoke-on-Trent accent, sixteen of 161 respondents independently commented on the quality of unstressed /ɪ/ in various ways. The majority of the 16 respondents referenced the pronunciation of the word *it*, using <eet> or <eat> spellings to signify a [iː] quality, and using multiple orthographic vowels to perhaps suggest a lengthening of the vowel:

> 'Eet' is said instead of 'it'
> saying 'eat' instead of 'it'
> Eet (pronunciation of it)
> eeeet used instead of it
> 'eeet' instead of 'it', 'eeem' instead of 'him'
> If thee dussner noo ite abite eet, fint ite (If you don't know anything about it, find out)
> It (= eet)

Four speakers referenced *it* alongside a contracted form of isn't, perhaps suggesting a particular dialect phrase associated with Stoke-on-Trent English:

> 'in't eat'
> Intit (inteeet) for isn't it
> Int eet (isn't it)
> but that's dialect isn't it (or 'int eet')

Other speakers referenced the unstressed /ɪ/ in –*ing* suffixes, and in words such as *college* and *liquid*:

> I shuna like be in tha shoes listeneeen to this!
> Emphasis on the "ee" in words that end with "ing"
> Going as "goween"
> everything has at least five e's in the pronouciation[sic], Washing up liqueeeeed, isn't eeeee,
> College (colleeeaaagge)

Frequent references to the tense quality of (i) – both in Leach & Montgomery's (2013) survey, and its consistent use in Leigh (2011) – suggests that some locals are aware of it as a dialect feature. However, this may not be the case for all locals, and based on the academic coverage of the variable, the (i) vowel does not appear to have links to social classes and characteristics in the same way as /h/-dropping.

6.2.4 The phonetics of (i)

Motivated by previous findings, and having noted the same tense unstressed vowel in previous research (Leach, 2010), I conducted an experimental phonetic analysis of the quality of (i) in four male Stoke-on-Trent speakers (Leach, 2012). Speakers completed an elicitation task, reading aloud 312 carrier sentences containing CVC/ɪ/C disyllables from four categories: words with -*es* suffixes; nonsense -*es* words; [monosyllabic verb] + *it*; and miscellaneously suffixed/morphologically opaque words. Two speakers were aged 17, and two were aged 27 and 32 respectively, with an RP control speaker also recorded. Average F1 and F2 measurements from across each unstressed /ɪ/ vowel were extracted using a Praat script and these measurements (and F2-F1) were analysed according to the carrier word's morphological category, stem vowel quality (measured in the same way), and preceding consonant (Leach, 2012, pp. 24–27).

Results showed that the Stoke-on-Trent speakers had significantly tenser realisations of (i) than the RP control speaker, and also had larger standard deviations in their measurements, suggesting a less stable articulatory pattern for the vowel (Leach, 2012, p. 29). All Stoke-on-Trent speakers had articulations of (i) that overlapped with both KIT and FLEECE; for the older two speakers, this overlap was indiscriminate and the average quality of (i) was intermediate between [iː] and [ɪ], while the younger speakers had a more stable divide between two variants (and therefore, two distinct articulatory targets) for this vowel: a tense [iː] and laxer [ɪ] (Leach, 2012, pp. 30–33).

The influence of stem vowel quality on the articulation of a following unstressed vowel in English has been attested by Öhman (1966) and Magen (1997) among others, and accounts for patterns of unstressed vowel variation and vowel harmony in varieties such as Buchan Scots English (Fitzgerald, 2002; Paster, 2004). However, while stem vowel quality had some natural phonetic effect on the realisation of unstressed /ɪ/ in the Stoke-on-Trent speakers, there was not a statistically significant link between height of stem vowel and tenseness of unstressed /ɪ/ articulation (Leach, 2012, p. 47).

However, both the morphological category and the medial consonant of the CVC/ɪ/C tokens had significant, and interdependent, effects on the realisation of (i) in the Stoke-on-Trent speakers. For all speakers, *-es* suffixed words favoured a tenser articulation, as [iː]. This included all nonsense *-es* words, suggesting the pattern is productive and the *–es* morpheme may be encoded into the phonology of Stoke-on-Trent English as [iːz] (Leach, 2012, p. 36). Three of the speakers had statistically significant patterns in which a tenser, [iː]-like vowel was used for *-es* words and a laxer [ɪ] was used in *it*. In contrast to Montgomery's (2003) findings, [iː] was rarely used in *it* overall, perhaps owing to the social stratification Montgomery highlighted, with these speakers exhibiting the middle class patterns, or perhaps due to a change in progress, with [iː] falling out of use in *it*.

The morphological category and consonantal makeup of words in English are linked. In English, words with *–es* suffixes may only have sibilant fricatives or affricates before the suffix: [tʃ] as in *watches*; [dʒ] as in *judges*; [s] as in *masses*; [z] as in *freezes*; [ʃ] as in *rushes*; and [ʒ] as in *rouges*[22]. However, the [monosyllabic verb] + *it* and miscellaneously suffixed/morphologically opaque words may appear with the full spectrum of consonants before the (i) vowel. Articulations of (i) in words from the latter two categories were analysed according to the quality of the preceding consonant. For all four Stoke-on-Trent speakers, the tensest articulations were alongside velar and palato-alveolar consonants [k g tʃ dʒ ʃ], the laxest articulations were alongside bilabials, nasals and labiodentals [m n b p v f], with alveolar consonants [s z d t] falling in between (Leach, 2012, p. 52).

This pattern was also borne out for the RP control speaker. The RP speaker's (i) vowels ranged between [ɪ] and [ə], while the Stoke-on-Trent speakers' (i) vowels ranged between [ɪ] and [i:]. However, analysis of the preceding consonants showed that all speakers exhibited the same pattern: tenser vowels appeared alongside velar and palato-alveolar consonants, and laxer vowels alongside nasals, bilabials and labiodentals (Leach, 2012, p. 56). The articulatory relationship between high front vowels and these segments appears to explain this patterning, according to Leach (2012).

Coarticulation theory concerning VCV segments suggests that there are high- and low-resistant consonants, depending on the "mutual compatibility of the gestures constituting the segments" (Fowler and Brancazio, 2000, p. 2). Paster (2004) and Oddie (2012) observe the influence of mutual compatibility in their investigations of vowel harmony in Scottish English. Paster suggests a binary pattern of blocking and transparent consonants, while Oddie's later observations suggest a gradient scale of interaction with intervening consonants. According to her observations for Buchan Scots English, "coronals appear to favour transparency, closely followed by bilabials, with post-alveolar and velar obstruents to a lesser degree" (Oddie, 2012, p. 145).

[22] -es plurals following [ʒ] were rare enough as to be excluded from this study, and no other words in the other morphological sets contained a medial [ʒ] (Leach, 2012, p. 22)

Fowler and Brancazio (2000, p. 2) single out the dorsum of the tongue as particularly important in coarticulation, in that the more the dorsum is engaged in the articulation of a consonant, the more it blocks coarticulation. Leach (2012) concluded that velar and palato-alveolar consonants form a natural set of consonants which disfavour coarticulation because of their shared engagement of the dorsum in articulation. These consonants are associated with tenser (i) vowels in Gimson's (1984, p. 52) observations of KIT/schwa drift, and in the Stoke-on-Trent data from Leach (2012, p. 52). The aforementioned mutual compatibility of segments may be responsible for the qualities of (i) found in both RP and Stoke-on-Trent speakers.

Both velar and palato-alveolar consonants are articulated by raising the dorsum/back of the tongue towards the roof of the mouth. These articulatory gestures are similar to those of high front vowels, which also involve raising the tongue body, meaning the two types of segment are gesturally compatible: little movement of the articulators is needed to transition between them. Coronal consonants involve the tongue blade or tip, while bilabials/labiodentals involve little to no lingual articulation, making these gestures less compatible with high front vowels: considerable movement of the tongue is required in the transition between segments.

The historical evidence from both academic and folk dialectology (Gibson, 1955; Leigh, 2011b) suggests that the tense (i) vowel in Stoke-on-Trent is a relatively long-standing phenomenon, while the evidence from Leach (2012, p. 59) suggests that older speakers have a tenser vowel on average and more instances of tense (i) overall, while in some morphological contexts a tenser variant is falling out of favour in younger speakers. Leach (2012) concluded that this evidence points towards a potential change in progress towards a laxer (i) vowel, in line with theories of the levelling of regional features more broadly (Kerswill and Williams, 2005) and of the general tendency for unstressed vowels to be less stable and prone to centralisation (Fabricius, 2002, p. 217).

If the general trend is towards centring of the vowel to [ɪ], Leach (2012) suggests the effect could be mitigated by the adjacent segments, particularly those which have been singled out for their "blocking" qualities (Oddie, 2012; Paster, 2004): palato-alveolar and velar consonants. Because of the mutual gestural compatibility of high front vowels and palato-alveolar and velar consonants, the high front vowels in Stoke-on-Trent English adjacent to these segments retain their particularly tense articulations, as is presented in Leach (2012, p. 53).

Phonotactically *-es* suffixed words in English only permit certain medial consonants: [s z ʃ ʒ tʃ dʒ]. Leach (2012) explains that aside from the two alveolar fricatives, these segments belong to the group of consonants that have gestural compatibility with high front vowels. Therefore, *–es* suffixed words will consistently have an (i) with a tenser articulation, owing to the mutual compatibility of the segments (Leach, 2012, p. 58). According to Ohala's (1981) theory of sound change, consistent variation in pronunciation can be interpreted by the listener as correct, leading to that pronunciation being phonologised into a variety (see also Labov, 1994). Leach (2012) claims this is a likely cause of the articulation of the *–es* suffix as [iːz] by all Stoke-on-Trent speakers studied – the consistently tense vowel adjacent to palato-alveolar consonants in these words has resulted in the articulatory target for that suffix being phonologised as [iːz], to the extent that it becomes productive in nonsense words (Leach, 2012, p. 58).

However, in *it*, other suffixed and morphologically opaque words, the (i) vowel may be preceded by a full range of consonants. As such, the consistent reinforcement of gestural compatibility found in *–es* suffixes is absent, so the articulation of (i) in these contexts remains variable. While in these instances, the vowels adjacent to palato-alveolar and velar consonants remain the tensest (in words such as *biggest*, *biscuit*, *baggage* and *purchase*, for example (Leach, 2012, p. 50)), the phonological target of the vowel remains unstable and dependent on the phonetics of the word in question. This contrasts with*–es*, where it seems likely from the evidence that the tense vowel has been phonologised into the articulatory target for the suffix (Leach, 2012, p. 58).

From the evidence provided by Gimson (1984), Fabricius (2002) and the RP speaker in Leach (2012), a comparable variability is observed in KIT/schwa drift in RP speakers: *–es/-ed* suffixes are resistant to the drift, and palato-alveolar and velar consonants appear to block the phenomenon. Leach (2012) concludes that the quality of preceding segment may constrain the variability of unstressed vowels in multiple varieties of English.

(i) variation in Stoke-on-Trent has been observed to have both linguistic (Leach, 2012) and potential sociolinguistic (Montgomery, 2003) constraints. As such, I investigated the realisation of this local feature in the oral history dataset, in order to examine variability in (i) among older speakers, to see if the (socio)linguistic effects previously observed were also apparent in this dataset, and to compare and contrast its patterns of variation with those of /h/.

6.3 Method of analysis

This section details the methods for selecting, coding, extracting, measuring and transforming the (i) vowel data for analysis. §6.3.1 outlines the social and linguistic variables for which the tokens were coded, and §6.3.2 explains how the tokens were manually selected and extracted. Finally, the chosen methods of transformation and normalisation are outlined in §6.3.3.

6.3.1 Coding

Tokens of (i) were coded for social, phonetic, lexical and discursive constraints, according to the social makeup of the oral history archive and local industry (outlined in §2.3) and previous research on the (i) vowel (see §6.2). These are described below and summarised in Table 11.

i. Social constraints

Tokens of all variables were coded according to the speaker's age (with a range of 58-91), their gender (male or female) and their role in the industry (design, production, firing, glazing, decoration, management or administration; see §2.3.2 for details).

ii. Phonetic constraints

All tokens were coded for the number of syllables in the carrier word. Additionally, following research in Leach (2012) which suggested surrounding phonetic segments are related to realisation of (i) vowels, tokens are also coded for most recent preceding vowel, directly preceding consonant and directly following consonant, using IPA symbols, which could then be grouped in further analysis.

iii. Lexical constraints

All tokens were coded for their status as a lexical or grammatical word. Additionally, based on research outlined in §6.2, the morphological context of the token was coded for. Contexts selected for this variable are: ES, appearing in an *–es* suffix; IT, appearing in the word *it*; ING, appearing in an *-ing* suffix; SUFF, appearing in any other suffix, including *–ed*; and OPQ, appearing in any morphologically opaque word, such as *cricket*. The category PRO for pronouns (such as *him* and *himself*) was originally added, but discarded owing to too few usable incidences of these words in the interviews.

iv. Discursive constraints

As for /h/ (see §5.3.1), tokens of all variables were coded for both broad (home vs. work) and narrow changes in topic, and whether they appeared in an answer that was specific (referring to a specific memory or incident) or generalised (referring to 'how things were' in general, in the past). The timestamp of each token was also extracted.

(i) vowels		
	Factor	*Range or values*
Social	Age	58-91
	Gender	Male (M)/ Female (F)
	Role in industry	Design / Production / Firing / Glazing / Decoration / Management /

		Administration
Phonetic	Preceding stressed vowel	[All possible vowels]
	Preceding consonant	[All possible consonants]
	Following segment	[All possible consonants]
	Number of syllables	1-5
Lexical	Word type	ES: *-es* suffix IT: *it* ING: *-ing* suffix SUFF: other suffix, including *–ed* OPQ: opaque word
	Type of word	Lexical (L) / Grammatical (G)
Discursive	Topic (broad)	Work / Home
	Topic (narrow)	[Emergent categories]
	Type of answer	Specific (S) / Generalised (G)
	Timestamp	[time in mm:ss]

Table 11: Coding for (i) tokens

6.3.2 Selection and extraction

Fifty tokens of (i) were extracted from each sound file where possible, ten from each of the five word types contexts (see above). For speakers with two sound files, one covering work topics and one covering home topics, 50 tokens were extracted from each file; for speakers with one file, 50 tokens were extracted in total. Where the requisite number of tokens could not be extracted, as many as possible were labelled, and the numbers are summarised in Table 12. All recordings begin at the start of a particular interview session, and all labelling and extraction began at the start of each recording, with the timestamp of the token also recorded.

Tokens were delineated from the onset of stable periodicity following the previous segment to the offset of this periodicity, with coarticulatory effects of neighbouring segments removed as far as possible. Labels were placed at a zero-crossing on the waveform, to avoid disturbances or corruptions of the sound (Weenink, 2014, p. 149). Some tokens were unsuitable for analysis, and these were skipped as labelling progressed. Reasons for discarding included disruption from background noise or overlapping speech, or reduction of the vowel to the point of no visible formants. Any discarded vowels were noted, and are detailed in Table 12.

Dept	**Speaker**	**Home/ Work**	**ES**	**IT**	**ING**	**SUFF**	**OPQ**	**Disc.**
Design	DJ	Home	10	10	10	10	10	
		Work	10	10	10	10	10	
	GM	Home	4	10	10	10	10	
		Work	10	10	10	10	10	
	JA	Home	3	10	10	10	10	
		Work	10	10	10	10	10	
	RC	Home	10	10	10	10	10	
		Work	10	10	10	10	10	
	WH	Home	8	10	10	7	10	6
		Work	10	9	10	10	9	5
Production	GS	All	7	10	10	10	10	3
	RC	Home	4	10	10	10	10	4
		Work	2	10	10	10	10	5
	TB	Home	4	10	10	10	8	4
		Work	5	10	10	10	10	5
	WB	All	8	10	10	10	10	
Firing	AW	All	10	10	10	10	10	
	SJ	Home	10	10	10	9	10	2
		Work	9	10	10	10	10	5
	WS	Home	10	10	10	10	10	9
		Work	5	10	10	7	10	4

Decoration	DJ	All	10	10	10	10	10	3
	DK	All	10	10	10	9	10	
	EM	All	8	10	10	7	10	10
	GA	All	1	10	10	2	6	7
	JM	Home	3	5	6	0	2	2
		Work	4	10	10	5	10	7
	PH	Home	4	10	10	10	10	3
		Work	5	10	10	4	10	4
	SD	Home	8	10	10	10	10	9
		Work	10	10	10	10	10	10
Glazing	AW	All	5	10	10	10	10	2
	KJ	All	10	10	10	10	10	6
	WA	All	10	10	10	10	10	3
	WS	All	2	10	10	7	6	4
Admin	JB	Home	5	10	10	7	10	
		Work	10	10	10	9	10	
	EF	Home	10	10	10	10	10	
		Work	10	10	10	10	10	
Man.	TB	All	10	10	10	10	10	1

Table 12: Number and types of (i) tokens per speaker

Tokens were delineated in a separate tier in Praat and coded as in the following example:

Word	Word class	Word type	# of syllables	Preceding vowel	Preceding consonant	Following consonant	Topic: general	Topic: specific
vases	l	es	2	ɑ:	z	s	s	materials

When the requisite number of tokens were coded and/or the sound file was exhausted, a Praat script[23] extracted the F1, F2 and F3 measurements at the vowel midpoint for all tokens, along with their coding. The midpoint was selected because, as an unstressed vowel, (i) tends to be relatively short in duration, and as such the midpoint of the vowel is likely to provide the most stable and accurate reading of formant measurements. The Praat script cycled through each token in turn, providing a visual and auditory snapshot of the vowel in question for approval, which enabled a manual visual and acoustic check of the vowel, and allowed me to note any seemingly anomalous vowels to be investigated later. Figure 22 shows this process; the spectrogram slice shows the readings for F1, F2 and F3, which can then be checked for accuracy or any instance of formant collapse or tracking failure, and only once the vowel has been approved does the script continue. Figure 22 also demonstrates the reference points for F1, F2 and F3 for male and female speakers, adjusted accordingly in the dialog box on the left before

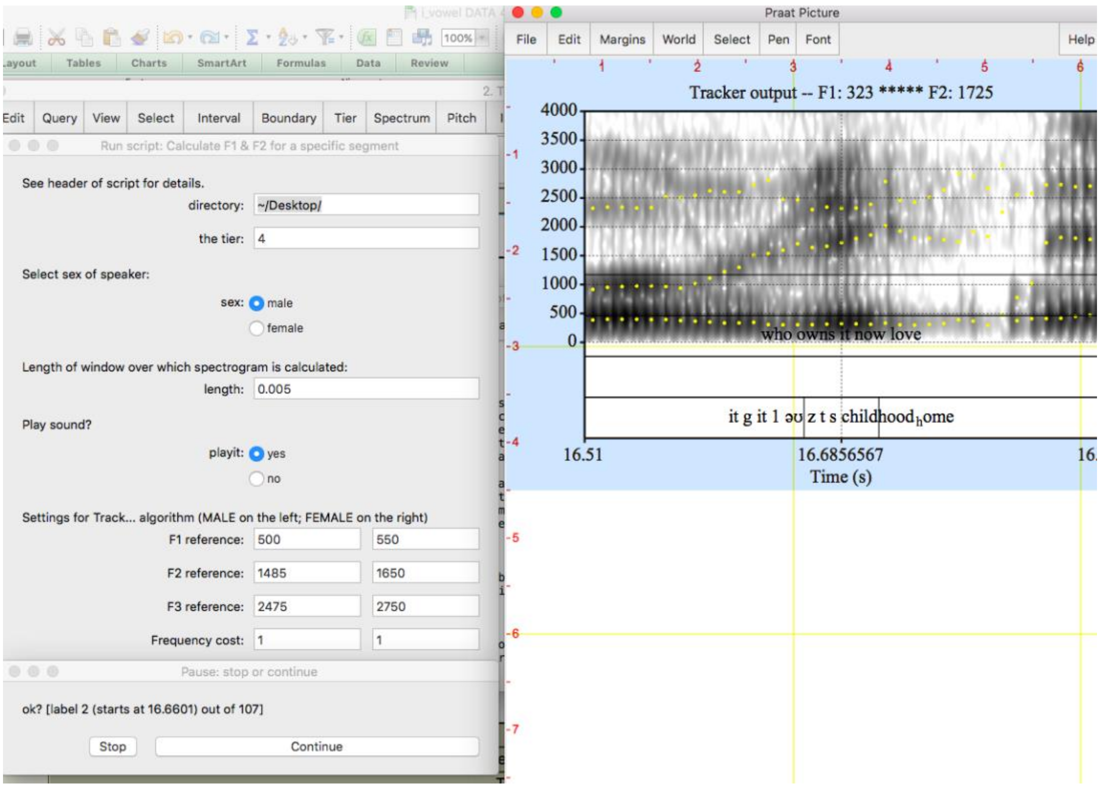


Figure 22: Praat script dialog box, allowing for checking of formant measurements

23 Provided by Kevin Watson, and edited with the kind help of Gareth Walker.

starting the procedure.

Formant measurements were saved into .txt files for each speaker, then compiled into a spreadsheet. Anomalies noted in the extraction, and any subsequently noted when the figures were plotted into rudimentary scatter diagrams, were checked. If it appeared the vowel was measured accurately but remained an outlier, it was left; however, several formants were misread by the script or mistracked by Praat. Of 1839 vowels measured, 66 were anomalous and hand-corrected, an inaccuracy rate of 3.6%. Hand correction involved manually calculating the vowel's midpoint using (*(end point – start point) / 2) + start point*, then taking manual measurements for F1, F2 and F3 using the formant track where possible, or measuring by hand. If this was not possible, the vowel was discarded. This left a final number of 1818 (i) vowels.

For the purposes of both my own analysis and normalisation of the dataset, I also labelled, measured and extracted other vowels. Five tokens of stressed KIT and FLEECE vowels were extracted per sound file in order to compare the (i) vowels to these stressed vowels which share the same acoustic space. Additionally, five TRAP vowel tokens were extracted per sound file, as (alongside KIT) these would be used in the Watt and Fabricius modified (2002) method of normalisation. All reference vowels were taken from between obstruents, and almost all from between plosives, in order to minimise the effects of surrounding segments. All vowels were extracted alongside the (i) vowels using the same rationale and processes for measurement, checking and extraction.

6.3.3 Transformation and normalisation

The data was transformed in two ways to prepare it for quantitative analysis. First, all raw formant data was converted to the Bark scale, via an R script[24] which used the formula in Traunmüller (1990), in order to better reflect human auditory perception.

[24] Kindly provided by Sam Kirkham.

Secondly, the data was normalised. The speakers in the dataset are homogenous as regards their employment and, broadly, place of origin, but vary in age and gender. Differences in age and gender can result in differences in Vocal Tract Length (VTL), which can then affect formant measurements; longer vocal tracts result in lower formant measurements, while shorter vocal tracts result in higher formant measurements. Listeners appear to be able to filter out these differences, but they must be accounted for in acoustic phonetic analysis, as comparison of raw formant measurements may yield differences that do not mirror perceptual reality. It is now standard sociolinguistic practice to normalise acoustic data to account for biological differences between speakers.

After researching normalisation procedures (Adank et al., 2004; Flynn, 2011) it appeared Lobanov (1971) and Watt & Fabricius modified (2002) were the most favoured and successful for use in sociolinguistic analysis. Watt & Fabricius was selected as it was designed to work with 'the particular challenges of the sociophonetic methodological practice of visual comparisons of speaker vowel plots' (Fabricius et al., 2009, p. 414). Using the NORM suite (Thomas and Kendall, 2007), the Bark-converted data was subjected to Watt & Fabricius modified normalisation and the unscaled output formed the basis of the quantitative analysis.

Additionally, once all transformation and normalisation had been completed, I created an F2-F1 measurement for each vowel, subtracting the F1 measurement of vowel height from the F2 measurement of vowel frontness in order to create one measurement per vowel that represented its peripherality in the vowel space (see §4.2). This allowed for various analyses to be conducted, including statistical regression.

6.4 Results

This section details the quantitative analysis of (i) variation in this dataset. The section begins with an overview of the statistical modelling in §6.4.1, followed by a summary of the results for the whole dataset in §6.4.2. I then present analysis of the data by linguistic factors in §6.4.3 and social factors in §6.4.4.

As is standard in phonetic analysis, throughout this chapter I used scatter charts to plot the F1 and F2 measurements against one another, reversing the axis to visualise the points in the vowel space. I use F2-F1 measurements to create corresponding box plots, and use both the full normalised data and mean and median averages to visualise various correlations. All graphical and mathematical analysis was carried out in R, using the ggplot, dplyr and lme4 libraries.

6.4.1 Overview

The dataset used for statistical analysis was streamlined, with any linguistic or social context represented by <10 tokens (aside from age) omitted in order to avoid erroneous significance being reported due to small datasets. Details of the tokens removed are summarised in Table 13.

Preceding vowel	# of tokens	Preceding consonant	# of tokens	Following consonant	# of tokens
a	165	b	14	d	281
a:	4	d	149	dʒ	62
aɪ	68	ð	8	f	5
aʊ	61	dʒ	53	g	2
ɑ:	100	f	35	k	67
ɒ	192	g	24	m	1
eɪ	191	h	2	n	390
ə	82	j	24	ŋ	46
əʊ	40	k	158	ŋg	10
ɛ	186	l	70	p	2
ɛ:	8	m	31	s	88
ɜ:	58	n	187	ʃ	51
i:	83	ŋ	2	t	393

ɪ	325	p	25	tʃ	2
ɔ:	73	P	12	v	16
ɔɪ	11	ɹ	74	w	1
P	12	ɾ	3	z	295
u:	51	s	205	ʔ	127
ʊ	129	ʃ	42		
		t	421		
		tʃ	70		
		v	63		
		vowel	1		
		w	38		
		z	118		
		ʔ	2		
		θ	8		

Table 13: Phonetic environments present in the dataset, with environments removed highlighted in grey

Mixed effects linear regression models were fitted to the data using the lmer() function in R, and the patterns of statistical significance (or non-significance) are illuminated using the raw data analysis through this chapter. Several mixed-effects regression models were fitted to the data, with F1, F2 and F2-F1 (measured in Watt and Fabricius normalisation units) as the outcome variables. Input predictor variables included the social factors gender, department and age, and the linguistic factors word type, preceding vowel and preceding consonant with speaker and word added as random effects. The absence of linguistic categories for word class and number of syllables is covered in §6.4.3.

The categories for preceding vowel and consonant had up to 20 options, and inputting these into a regression model where each option is compared to a baseline would not provide accurate results of the relationship between surrounding phonetic context and the (i) vowel. As such, I grouped the consonants and vowels according to their phonetic characteristics for the regression analysis, and I explore these categories as well as individual contexts in the raw data analysis that follows.

Vowels were grouped according to their closeness and frontness, divided into F(ront), C(entral) and B(ack), with F(ront)-B(ack) and C(entral)-B(ack) dipthongs; and C(lose), M(id) and O(pen), with O(pen)-C(lose) and M(id)-C(lose) diphthongs. Dummy variables for each category were entered into the model.

In order to add preceding consonant context to the model, each context was coded for its place of articulation and manner of articulation, and these were added as input predictors. However, as these are also categorical variables and may not demonstrate fine-grained patterning in a regression model, I added coding for the distinctive features [+/-sonorant], [+/-coronal], [+/-dorsal], [+/-continuant], [+/-anterior] and [+/-voiced], and added these to the model. These distinctive features were chosen as they were the smallest number of features that captured the distinctions between all preceding consonantal contexts.

As mentioned in Chapter 5, department and gender are directly collinear in this dataset, and cannot be tested in the same model. I ran four different regression models in all for the (i) data. I ran one that included gender as an input predictor and one that included department as an input predictor, with neither social factor reaching significance. I also ran a whole-dataset model using F1 data only, and a model using F2 data only.

R's default baseline variables were used for department and type: the baseline department was administration and the baseline word type was *–es* suffixes. Additionally, the management speaker was removed as he represented the only entry in his department. Models were first constructed with all possible predictor factors, which were removed in turn to refine the model and reach a model of best fit, in which all predictors were significant.

6.4.2 Whole-dataset summary

Figure 23 is a scatter plot of the entire dataset, demonstrating the general measurements of the (i) vowel among this group of speakers. There is demonstrable variation in the articulation of (i) vowels (the green datapoints); while their measurements only occupy the upper left quadrant of the vowel space, the vowels vary along both the F1 and F2 plane. Figure 23 shows the speakers' (i) vowels occupy the same section of the vowel space as their FLEECE vowels (the pink datapoints). The (i) vowels, however, frequently have a lower F2 than the FLEECE vowels, suggesting they stretch further back

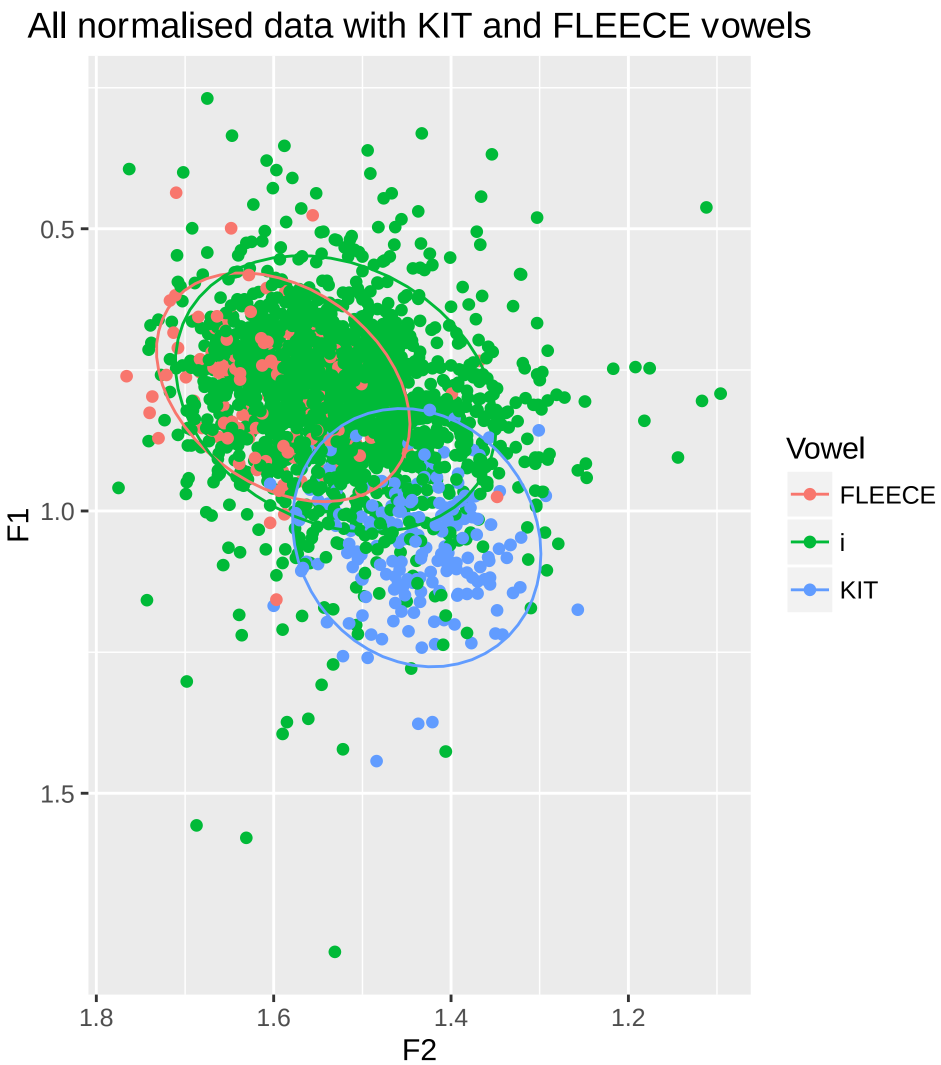


Figure 23: Scatter plot of all (i) measurements, alongside KIT and FLEECE

in the vowel space than FLEECE. The speakers (i) vowels also share some of the vowel space with their KIT vowels (the blue datapoints). However, the KIT vowels have a higher F1 than the majority of the (i) vowels (and are thus articulated more openly), and a lower F2 than some (i) vowels.

Overall, these measurements suggest that the quality of (i) used by these speakers may be as close or closer than FLEECE and as open as KIT, and as front as FLEECE and as back as KIT – the whole of the upper left quadrant of the vowel space is occupied by the measurements of (i), and the vowel shows more variation than the stressed KIT and FLEECE vowels do individually. The lack of a significant proportion of (i) tokens that are more open and/or backer than KIT may also suggest that that the variation in the (i) vowel in these speakers is between [ɪ] and [i:], and doesn't drift to [ə], as in many other varieties of British English (§6.2.1). However, without measurements of schwa from these speakers, such a claim cannot be certain.

Figure 24 shows the vowel plots of each individual speaker in the dataset, showing their (i) vowels alongside their KIT and FLEECE vowels. Overall, the individual speakers' measurements broadly demonstrate a similar pattern to the general pattern demonstrated in Figure 23 i.e. their (i) vowels occur in the same range as FLEECE and KIT, with more in the range of FLEECE. There is some intraspeaker variation in the distribution of KIT, FLEECE and (i) measurements in this section of the vowel space. Speakers Decoration_DJ, Glazing_AW, Glazing_WA and Production_GS have vowels that cluster very tightly, with little distinction between KIT, FLEECE and (i) overall. In comparison, speakers Decoration_JM, Design_GM, Design_JA, Design_RC, Design_WH and Production_RC have a wider range of measurements for their (i) vowels.

Leach (2012) found that the two youngest speakers analysed had two distinct articulatory targets for the (i) vowel – one closer to FLEECE, higher and fronter, and used in *–es* suffixes (including nonsense ones); and one closer to KIT, more open and backer, which was more often used in tokens of *it*. The two older speakers analysed, in their late twenties/early-thirties at the time, did not show such a division. The speakers in this dataset also do not show such a distinction overall (Figure 23), or individually (Figure 24), and appear to have one variable articulatory target rather than two morphologically-conditioned ones. This contributes evidence to Leach's (2012) conclusion that, if the split-target observation is indicative of a broader pattern in Stoke-on-Trent English, it is a more recent innovation.

On the F2 plane, all speakers' (i) vowel measurements are as front as their frontest FLEECE measurements and as back as their backest KIT measurements. This suggests that, on the F2 plane, the entire KIT/FLEECE region of the vowel space is available to use for an (i) vowel for these speakers.

In contrast, the relationship between (i) and KIT/FLEECE on the F1 plane is more complex. All speakers' (i) F1 measurements may be as low as the lowest FLEECE vowels, suggesting their (i) vowels may be as close as FLEECE. However, some speakers' (i) F1 measurements are as high as for KIT, while others are considerably lower. This suggests that some speakers may articulate (i) vowels as open as KIT, while some speakers have a more open vowel for KIT than for (i). Speakers' whose KIT vowels show distinctly different measurements from (i) in Figure 24 include Decoration_PH, Design_DJ, Firing_SJ and Firing_WS.

Understanding the situation of the (i) vowel in this upper left quadrant of the vowel space alongside KIT and FLEECE is vital in understanding its sociolinguistic behaviour, as for some speakers it may have more 'room' for variation, and thus more potential for the variable to be used for sociolinguistic work.

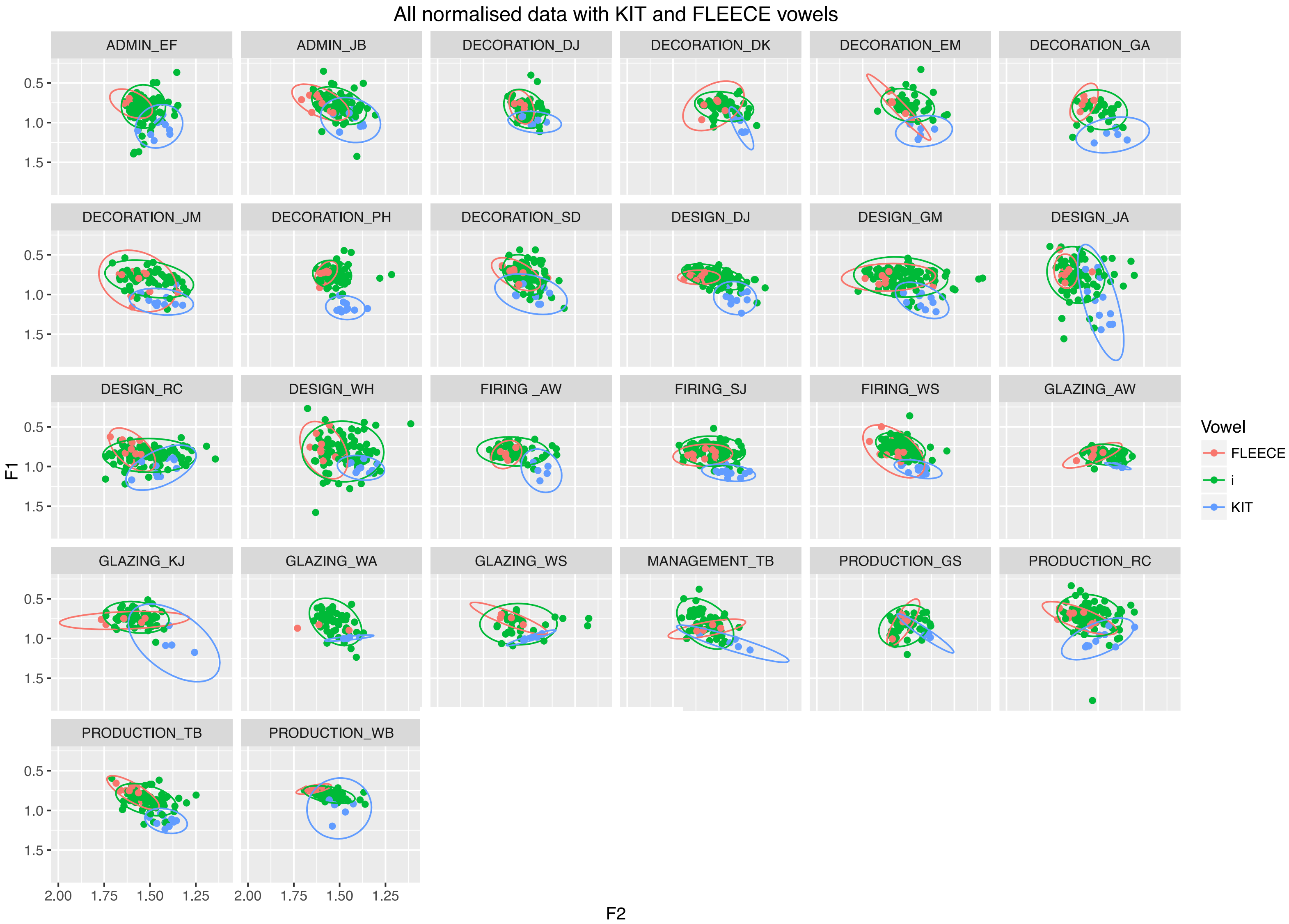


Figure 24: Scatter plots of (i), KIT and FLEECE vowel measurements for each speaker

Table 14 shows the results of the mixed-effects linear regression model conducted on the whole dataset of (i) vowels. The factors displayed in Table 14 are those which reached levels of significance as predicting factors of a change in (i) F2-F1 measurement. A positive figure in the table represents a predicted rise in F2-F1 (and thus a tenser or more peripheral vowel).

No social factors reached significance, but several linguistic factors did, including word type, preceding vowel quality and preceding segment. Compared to the baseline of *–es* tokens, all word types predict a lowered F2-F1, suggesting *–es* contexts favour the tensest vowels. *–ing* and *it* tokens predict a significantly lower F2-F1, suggesting the vowels in these contexts are consistently distinct from *–es* tokens, whereas for opaque and suffixed tokens there is not a significant difference between predicted (i) measurements as compared to *-es*.

A preceding mid-close or close vowel significantly predicts a raised F2-F1 measurement, suggesting a tenser (i) articulation, while a preceding centre-back diphthong predicts a lower F2-F1 measurement. Finally, various distinctive features of the preceding consonantal segment were also significant predictors of change in F2-F1 quality. This is explored in detail in §6.4.3.

F2-F1	β	Standard Error	df	t-value	p
(Intercept)	0.7456	0.02419	228.6	30.817	<.001***
Word Type					
-ing	-0.06751	0.01446	187.9	-4.670	<.001***
it	-0.08107	0.02669	5.1	-3.037	0.028197*
opaque	-0.02251	0.01427	178.6	-1.578	0.116400
suffixed	-0.02833	0.01621	252.7	-1.748	0.081737
Vowel height					
Mid-Close	0.07319	0.01314	243.9	5.569	<.001***
Close	0.03378	0.008579	398.2	3.937	<.001***

Preceding segment type					
[+sonorant]	-0.03135	0.01231	493.3	-2.547	0.011162*
[+coronal]	0.03728	0.01258	876.6	2.963	0.003126**
[+dorsal]	0.0349	0.01763	648.8	1.979	0.048204*
[+continuant]	-0.0421	0.01233	610.5	-3.413	<.001***
Vowel frontness					
Centre-Back	-0.05467	0.02721	1288	-2.009	0.044766*

Table 14: Whole dataset regression model for (i)

I also designed and ran mixed-effects linear regression models for the F1 and F2 measurements in isolation. As the F2-F1 measurement collapses the distinction between vowel height and frontness to one measurement for peripherality in the vowel space, the F1 and F2 models investigated whether the predicting factors had more or less influence on the acoustic correlate for (i) vowel frontness or (i) vowel height.

F1	*β*	Standard Error	df	t-value	*p*
(Intercept)	0.730303	0.013090	119.2	55.790	<.001***
Word Type					
-ing	0.080593	0.010831	168.9	7.441	<.001***
it	0.063802	0.021844	5.2	2.921	0.031667*
opaque	0.036284	0.010913	173.0	3.325	0.001080**
suffixed	0.021626	0.011532	175.2	1.875	0.001080**
Vowel height					
Mid-Close	-0.036528	0.009675	374.3	-3.776	<.001***
Close	-0.014536	0.006852	461.4	-2.122	0.034410*
Preceding segment type					
[+sonorant]	0.039556	0.009464	488.900000	4.180	0.012342*
[+coronal]	0.03728	0.01258	876.6	2.963	0.003126**

Vowel frontness					
Front	0.020547	0.006350	424.000000	3.236	0.001308**

Table 15: F1-only regression model for (i) vowels

The model of best fit for F1 measurements alone (Table 15) gives significant results for all word types predicting a rise in F1 as compared to baseline *–es*. This suggests that *–es* is a predictor for the production of the closest (i) vowel, with (i) vowels gradually produced with a more open F1 measurement in suffixes > opaque words > *it* > *-ing* respectively.

As in the F2-F1 model, mid-close and close preceding vowels are the most significant predictors of change in formant measurement, lowering the F1. This is perhaps unsurprising, as a lowering of F1 indicates a closer vowel, and the closeness of the stressed preceding vowel is likely to affect the closeness of the unstressed (i) vowel that follows (Magen, 1997; Öhman, 1966).

In this model, only [+sonorant] and [+continuant] preceding consonants are significant predictors of raised F1, indicating a lowering of the (i) vowel.

F2	β	Standard Error	df	t-value	p
(Intercept)	1.497	0.1299	220	115.230	<.001***
Word Type					
-ing	0.01705	0.007666	189.8	2.224	0.027343*
it	-0.01427	0.02095	11.7	-0.681	0.508949
opaque	0.0176	0.007636	177.1	2.305	0.022328*
suffixed	0.003829	0.008832	286.5	0.434	0.664922
Vowel height					
Mid-Close	0.03436	0.007718	289.5	4.452	<.001***
Close	0.02269	0.004838	472	4.689	<.001***
Preceding segment type					
[+coronal]	0.02117	0.006899	902.2	3.068	0.002219**

[+dorsal]	0.03793	0.009711	670.9	3.906	0.000103***
[+continuant]	-0.01014	0.00556	885.6	-1.825	0.068393
Vowel frontness					
Centre-Back	-0.04076	0.01494	1196	-2.728	0.006460**
Back	-0.01742	0.004997	400.2	-3.486	<.001***

Table 16: F2-only regression model

The model of best fit for the F2 figures (Table 16) gives fewer and less significant results for the predictive power of word type on (i) vowel frontness. Only *–ing* and opaque words have a small significant effect of raising F2, suggesting they predict a slightly fronter (i) vowel as compared to *–es* contexts.

The mid-close and close preceding stressed vowels both have strong significant effects of predicting a raised F2, while centre-back and back preceding vowels are significant in predicting a lowered F2. The latter result is unsurprising, as a lowered F2 suggests a backer (i) following centre-back and back vowels.

Finally, the preceding consonantal contexts which appear to predict significant changes in F2 quality are [+coronal] and [+dorsal], predicting a raised F2, and [+continuant], which predicts a lowered F2 to a near-significant degree.

Running regression models on the F1 and F2 measurements separately may capture nuances of significance that are missed by using F2-F1 measurements. However, they may also demonstrate patterns which are better captured using both F1 and F2 measurements. The following sections illustrate the patterns of variation in (i) measurements using the raw data, illuminating the results of the regression models further and aiding understanding of the interactions between patterns in F1 and F2.

6.4.3 Linguistic factors

Several linguistic factors were singled out as statistically significant predictors of (i) variation in the regression model. This section explores each one in turn, examining the patterns found.

i. Word type

As well as being coded for word type (*-es*, *-ing*, *it*, opaque and suffixed), the tokens were coded for the class of the carrier word (lexical or grammatical) and the number of syllables in the word (ranging from 1-5). However, these were not added to the regression models, as they showed direct collinearity with word type, and the latter demonstrates more nuance as a category. However, I present their results here to illuminate the patterns relating to word type further.

Figure 25a shows the medians and ranges for lexical versus grammatical words, and demonstrates the tendency for (i) in grammatical words to have a lower F2-F1 (and therefore, a laxer vowel) than lexical words. There are 1438 lexical tokens compared to 401 grammatical tokens in the dataset, and the median for the former is 0.7505 compared to 0.6930 for the latter.

Figure 25b shows the medians and ranges for (i) vowels according to the number of syllables in the carrier word. One-syllable words have the lowest F2-F1 measurements overall, suggesting that they favour laxer articulations of (i). There is not a linear correlation between number of syllables and F2-F1 measurement evident in this dataset, though the sample size is not equally distributed between the numbers of syllables, which may affect the averages – there are 398 disyllabic tokens, 1091 disyllabic, 288 trysyllabic, and 52 and 10 four- and five-syllable tokens respectively.

However, closer examination of these factors indicates a direct collinearity between them, and with word type. The only carrier words from grammatical word classes were the tokens of *it*; all other tokens were lexical items. The only words with one syllable were also tokens of *it*; all other syllable counts were distributed among other word types. I had originally hoped to analyse

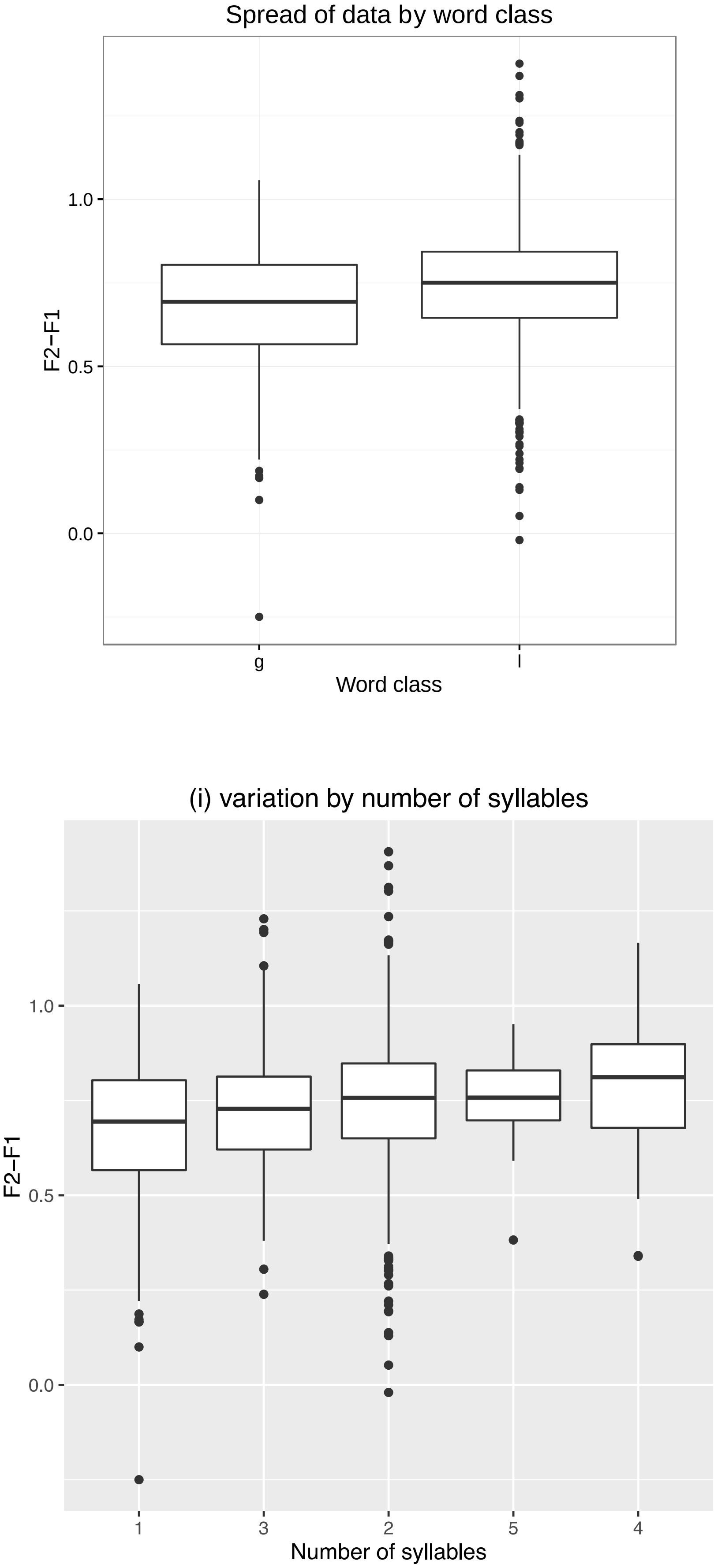


Figure 25: Boxplot of (i) measurements according to word class (open vs. closed) [top] and boxplot of (i) measurements according to number of syllables [bottom]

unstressed tokens of the pronouns *his* and *him* for their articulations of (i), which would have contributed to both the grammatical and one-syllable categories, and perhaps clarified if the patterns observable here (that grammatical and one-syllable tokens tend towards laxer measurements of (i)) are more broadly applicable or relate only to the lexical item *it*. However, from this dataset a broader conclusion may not be drawn. Nevertheless, the regression models returned statistically significant results for word type, an analysis of which is elaborated below, taking into account syllable count and word class.

Word type was consistently significant across the F1, F2 and F2-F1 models, and the boxplot in Figure 26 demonstrates the range of F2-F1 measurements according to word type. Figure 26 illustrates a hierarchy of average F2-F1 measurements for word types of *–es* suffixes > other suffixes > opaque words

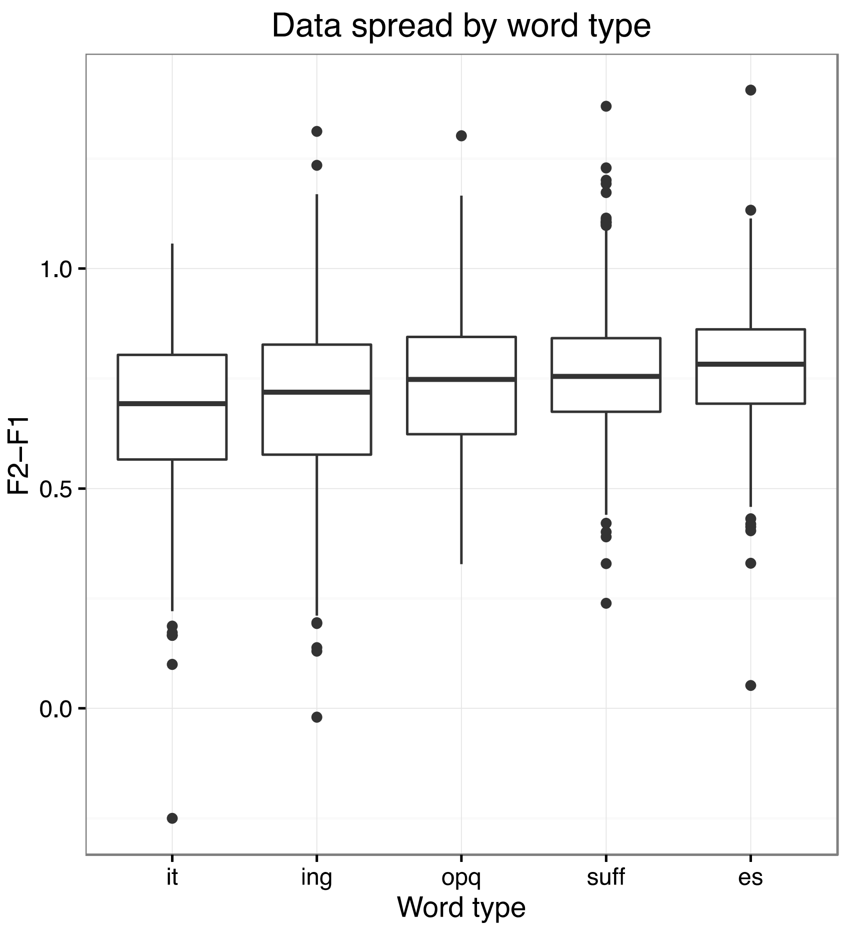


Figure 26: Boxplot of (i) measurements according to word type

> *-ing* suffixes > tokens of *it*. Figure 26 also shows a smaller range of measurements for *–es* and other suffixes as compared to the remaining categories, suggesting the former have consistently higher F2-F1 measurements, and a tenser, fronter (i) vowel.

Figure 27 is a scatter plot of the mean F2 and F1 measurements for (i) tokens according to word type. Plotting the figures in two dimensions gives a more nuanced visualisation of the differences between the word types, which

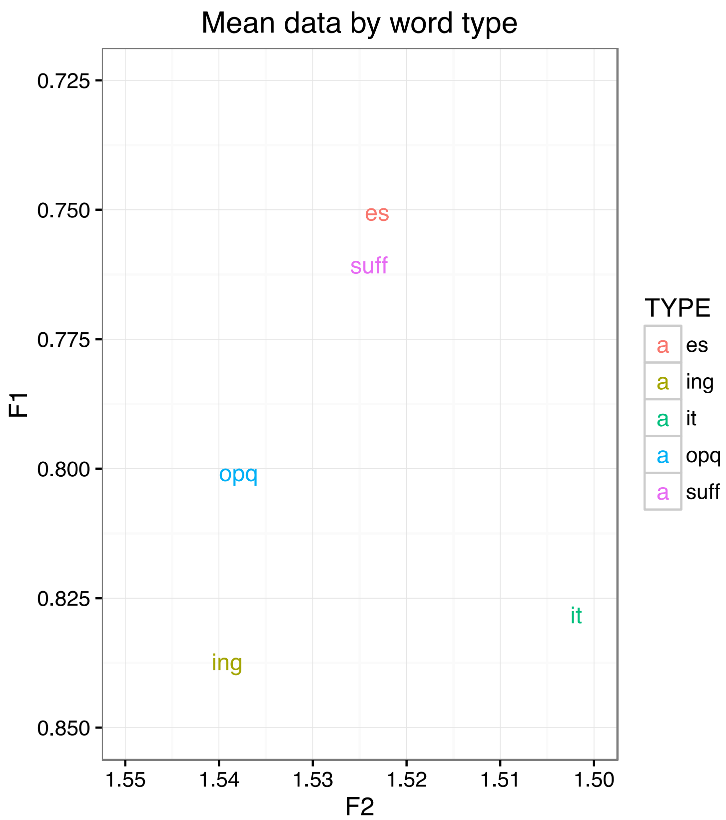


Figure 27: Scatter plot of mean (i) measurements according to word type

reflect the patterns shown in the F1 and F2 only models (Tables 15 and 16 respectively). Table 15 shows that all contexts predicted a raised F1 as compared to baseline *–es*, which is reflected in Figure 27, showing –es tokens highest in the vowel space.

The model using F2 figures (Table 16) showed fewer and less significant relationships between word type and (i) quality. According to the figures, *-ing* and opaque words predicted a significant raising of F2, as demonstrated by their fronted position relative to *–es* in Figure 27. In Figure 27, *it* tokens appear to be considerably backer on the F2 plane than *–es* tokens, but were not highlighted as significantly so by the regression model. This may be because the range of tokens for *it* was wider than that of *-es*, and so had enough overlap on the F2 plane to not be significantly distinct.

According to the averages displayed in Figure 27, suffixed and *–es* words appear to demonstrate very similar average (i) measurements on both the F1 and F2 plane. In the F1 model, however, suffixed words were highlighted as significantly different to *–es* tokens. We can look more closely at the group of tokens represented by the *–es* suffixes and other suffixed words, to see if a specific suffix favours a tenser or laxer vowel, as previously observed for KIT/schwa drift by Gimson (1984) and Fabricius (2002).

Figure 28 shows the mean qualities of (i) tokens according to the suffix in which they appear. Of the suffixes Gimson (1984) analysed which overlap

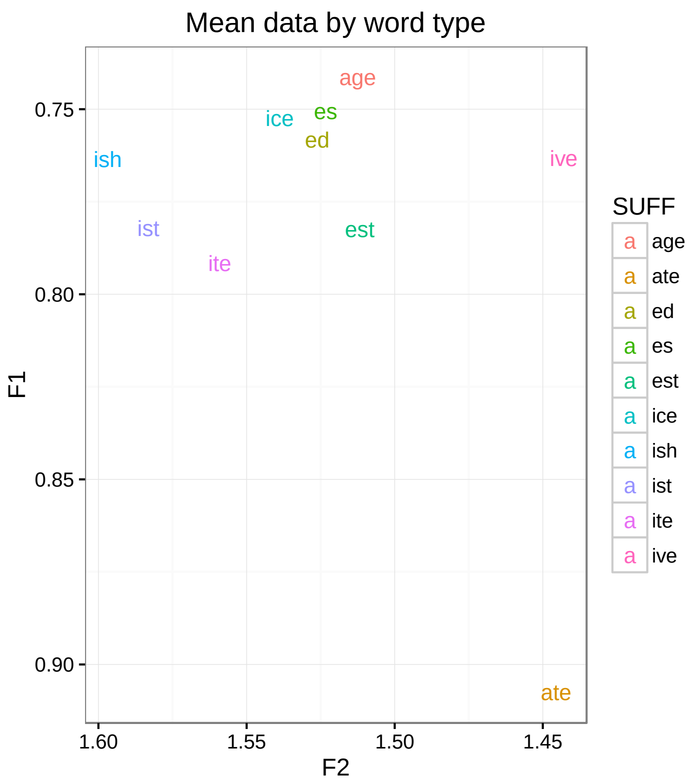


Figure 28: Scatter plot of (i) measurements for all suffixed words

with my own research, he found that *–es*, *-ed*, *-age*, *-est* and *–ice* were more resistant to KIT/schwa drift, while many instances of *–age* drifted towards [ə].[25] The data in Figure 28 shows the suffixes *–es*, *-ed*, *-ice* and *–age* from this dataset clustering lower on the F1 plane compared to the other suffixes, suggesting a closer vowel on average, with the *–est* suffix a little higher on the F1 plane.*–ish*, *-ist* and *–ite* averaging fronter and slightly more open vowels, and *–ive* slightly backer. However, there are very few tokens of some of the suffixes in the dataset, as illustrated by Table 17, so these results may not be a reliable representation of the broad articulation of these suffixes. In particular, the *–ate* suffix averages a much laxer vowel overall, but is only represented by two tokens, which would have affected the overall average for suffixed (i) vowels.

Suffix	# of tokens	Mean F1	Mean F2	Mean F2-F1	Median F2-F1
age	19	0.7413684	1.512474	0.7711053	0.7750
ate	2	0.9075000	1.445500	0.5380000	0.5380
ed	274	0.7581861	1.526109	0.7679234	0.7530
es	302	0.7504536	1.523328	0.7728742	0.7830
est	18	0.7823889	1.511778	0.7293889	0.7215
ice	6	0.7523333	1.538833	0.7865000	0.7545
ish	6	0.7635000	1.596833	0.8333333	0.8515
ist	9	0.7821111	1.583111	0.8010000	0.8280
ite	2	0.7915000	1.559000	0.7675000	0.7675
ive	12	0.7631667	1.442917	0.6797500	0.6650

Table 17: Numbers and measurements of suffixed words in the dataset

Nevertheless, the tendency for *–es* and *–ed* suffixes to retain a tenser unstressed suffix vowel, as in RP (Fabricius, 2002; Gimson, 1984) appears to be reflected in this dataset, with the average measurements for these vowels suggesting these morphological contexts favour tenser (i) vowels.

[25] Gimson (1984) did not consider *–ive* alone, only in *–itive* suffixes, nor did he study *–ish* or *–ist*. He did study *–ite*, but makes no mention of the patterns found.

ii. Preceding vowel

As in the regression models, a reduced dataset removing all contexts with >10 tokens was used for raw analysis of phonetic context, with the same aim of avoiding exaggerating patterns based on small numbers of data. All tokens of (i) were coded for the broad phonetic quality of the preceding stressed vowel. If the carrier word didn't have a preceding stressed vowel of its own, the closest preceding stressed vowel was considered, unless the token was preceded by more than one full second of silence, in which case the token was marked with P for pause.

Figures 29a and 29b show the average (i) measurements according to height and frontness of the preceding vowel, demonstrating categories collapsed from the original segmental coding (see §6.4.1). Preceding vowels were also coded for length (long/short), but no effect was found to be significant in the regression models and the raw data reflected this.

Mid-close and close vowels were singled out as consistently significant predictors of a change in formant measurement in the regression models, predicting a raised F2-F1, lowered F1 and raised F2, suggesting they correlate with (i) tokens that are higher, fronter and more peripheral in the vowel space, as is reflected in Figure 29a. However, there is not a linear correlation between height of preceding vowel and height of (i) vowel, as Figure 29a shows that preceding open vowels correlate with a closer (i) vowel on average than preceding close vowels.

Categories of vowel frontness had fewer and less significant effects on (i) measurements according to the regression models. In the F2 only model, centre-back and back preceding vowels strongly predicted a lowering of F2, and therefore a backer articulation of (i). This is reflected in the average data in Figure 29b, with the back and centre-back labels further rightwards in the vowel space (along with front-back vowels, which did not reach significance in the model). Indeed, though it appears to be less statistically robust in the regression models, the relationship between preceding vowel frontness and (i) tenseness/frontness appears to be linear, with Figure 29b showing the

O – open C – closed M – mid

OM – open mid diphthong CM – closed mid diphthong

F – front C – centre B – back

FB – front-back diphthong CB – centre-back diphthong

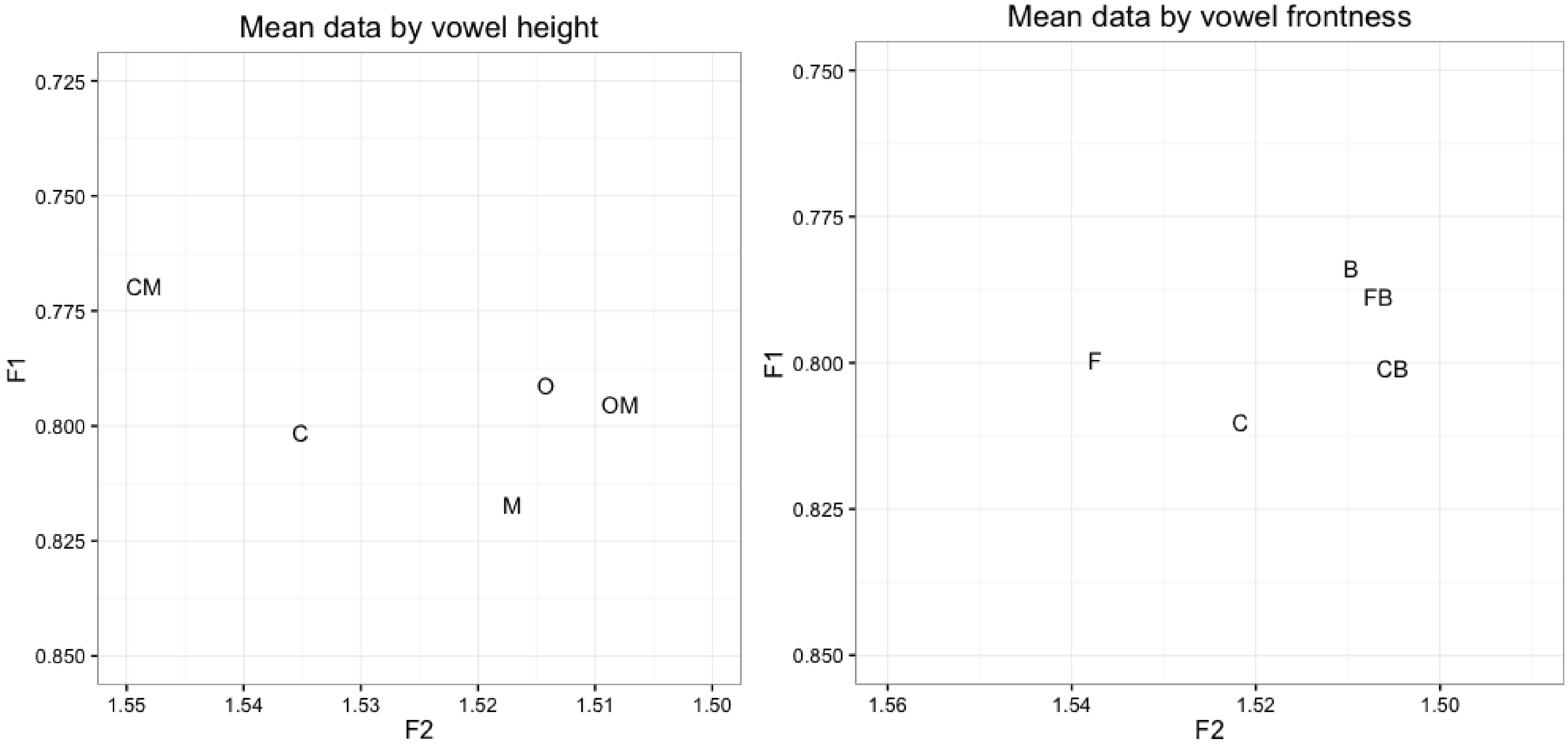


Figure 29: Mean (i) vowel measurements according to preceding vowel height [left] and preceding vowel frontness [right]

frontest stressed vowels correlating with the frontest average (i) vowels, and vice versa, with central vowels between.

As the model in Table 14 demonstrates, centre-back vowels had a small but significant effect on lowering the F2-F1, suggesting they predict the use of a laxer (i) vowel. This is interesting, as the only vowel in the centre-back category is [əʊ], which is also a mid-close vowel that, according to the same model, has the opposite effect of *raising* the F2-F1. Figure 30 shows the spread and average of measurements according to the specific preceding stressed vowel coded. In Figure 30, [eɪ] demonstrates a correlation with a particularly tense (i) vowel, showing what could be a phonetic or lexical effect. [eɪ] is the other mid-close preceding vowel context alongside [əʊ], and as such, the strength of the effects of [eɪ] may be solely responsible for the significant raising effect of the mid-close vowels, cancelling out the lowering effect of [əʊ].

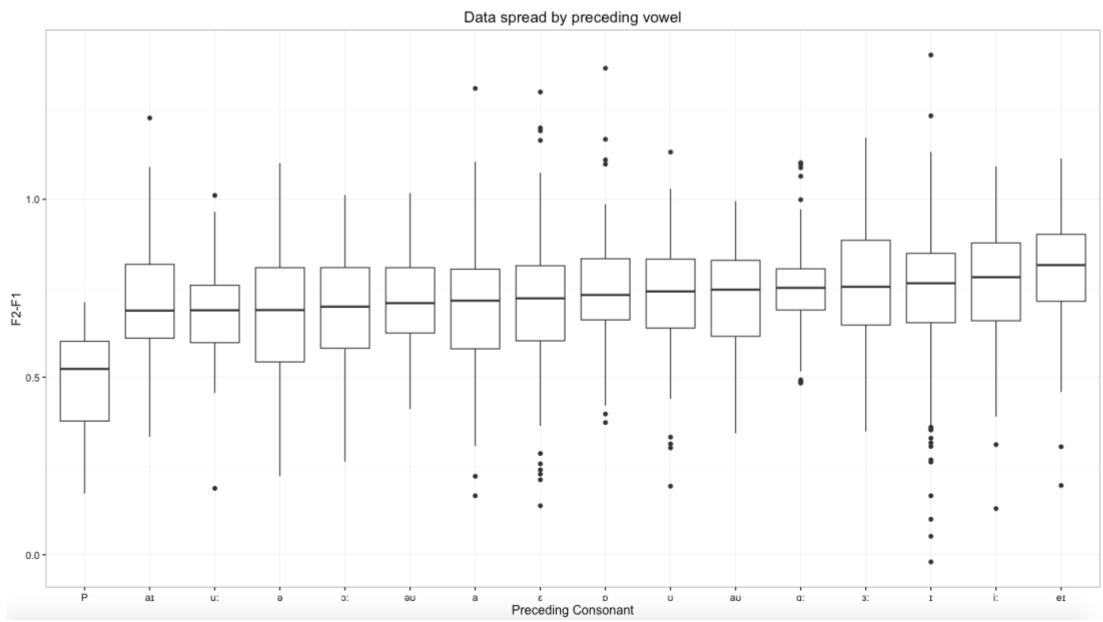


Figure 30: Boxplot of (i) measurements according to preceding vowel

iii. Preceding consonant

There were 26 possible preceding consonants in this dataset, with the addition of a preceding pause (again counted as a token being preceded by one second of silence) taking the number of preceding contexts to 27. The dataset reflects the entire spread of possible preceding consonants in this variety of English with the exception of [ʒ] in, for example, *rouges* [ɹu:ʒɪz]. This context did not appear organically in the dataset, and was also excluded from Leach (2012) for the same reasons of its infrequent appearance. As demonstrated in Table 13, the preceding contexts [ð h ŋ ɾ] were also excluded for having fewer than ten tokens, as was the one context where the medial consonant was completely elided, leaving a preceding vowel (V).

The preceding consonants were grouped into categories according to their place and manner of articulation to investigate broader trends. These are demonstrated in Figure 31, which shows box plots of the average and spread of (i) measurements according to place and manner of articulation. Broad patterns suggest that bilabials and approximants correlate with laxer (i) vowels, and palato- and post-alveolar consonants, along with affricates, correlate with tenser (i) vowels. However, while these findings are illuminating, these categories were not pursued in the statistical analysis for the following reasons:

1. There are collinearities between places and manners of articulation. For example, both the affricates and the post-alveolars correlate with the tensest (i) vowels. However, the only affricates included in the dataset (and, indeed, in English) are [dʒ] and [tʃ], which are both post-alveolar, and there are no other post-alveolar tokens that are not affricates.

2. The tokens are not distributed equally between the categories. While the tokens for manner of articulation are spread in a way that ensures one context is not disproportionately favoured, the place of articulation tokens are divided unevenly, with alveolars having 1190 tokens and palatals only 23. This is likely to affect the patterns, with a high number of tokens potentially masking variable (i) realisations according to different alveolar consonants,

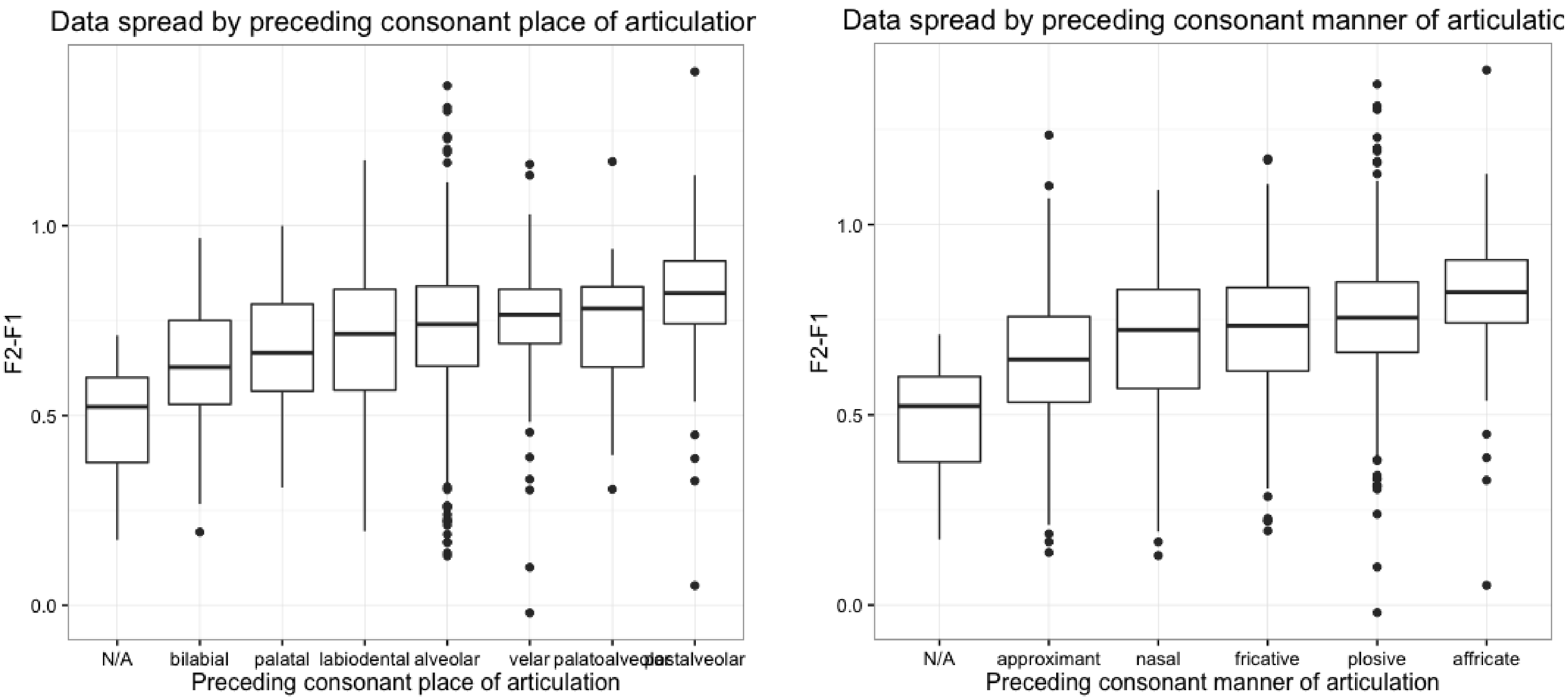


Figure 31: Boxplots of (i) measurements according to preceding consonant place of articulation [left] and manner of articulation [right]

and a low number of tokens suggesting a pattern that may not bear out for all preceding palatal contexts.

3. Linear regression modelling does not suit these kinds of multi-option categorical variables. Dummy coding (as was carried out on the preceding vowels) was possible, but unnecessarily complex with this many categories when simpler options may create a more elegant output.

For these reasons, (i) tokens were also coded according to a selection of the distinctive features of the preceding consonant, and the binary presence/absence of each feature was entered into the regression model. The features selected represented the smallest number of features necessary to distinguish between all the preceding consonant contexts: [+/- voice], [+/- sonorant], [+/- continuant], [+/- dorsal], [+/- coronal] and [+/- anterior]. The preceding contexts and their features are summarised in Table 18.

	#	[+/- voice]	[+/- son]	[+/- cont]	[+/- dor]	[+/- cor]	[+/- ant]
b	14	+	-	-	-	-	-
d	149	+	-	-	-	+	+
dʒ	53	+	-	-	-	+	-
f	35	-	-	+	-	-	-
g	24	+	-	-	+	-	-
j	24	+	+	+	+	-	-
k	158	-	-	-	+	-	-
l	70	+	+	+	-	+	+
m	31	+	+	+	-	-	-
n	187	+	+	+	-	+	+
p	25	-	-	-	-	-	-
Pause	12	NA	NA	NA	NA	NA	NA
ɹ	74	+	+	+	-	+	+
s	205	-	-	+	-	+	+
ʃ	42	-	-	+	-	+	-
t	421	-	-	-	-	+	+

tʃ	70	-	-	-	-	+	-
v	63	+	-	+	-	-	-
w	38	+	+	+	-	-	-
z	118	+	-	+	-	+	+

Table 18: Preceding consonant distinctive features

Preceding consonant context was the most consistently significant factor in predicting a change to F2-F1, F1 and F2 across the statistical models. Moreover, the raw data demonstrate that variation according to preceding consonant results in the largest difference in measurements and averages, suggesting that the effect of preceding consonant on (i) measurements is the most robust and significant of all the factors studied.

Four of the distinctive features used in the regression models were found to be consistent predictors of a change in (i) vowel quality. [+sonorant] and [+continuant] consonants predicted a lowering of F2-F1, with the former also predicting a raising of F1 and the latter lowering of F2, suggesting they both correlate with a laxer (i) vowel. [+dorsal] consonants predicted a raising of F2-F1 and F2, suggesting they correlate with a tenser (i) vowel; while [+coronal] consonants predicted a raise in F2-F1, F1 and F2, potentially suggesting they correlate with fronter but more open vowels.

A version of the combined model included all possible interactions between preceding consonant distinctive features. However, because of the restrictions of the dataset and the phonotactics of English, the low number of tokens resulted in the model being rank-deficient, with many of the interactions unable to be tested. However, the model did find a result for [+sonorant]*[+coronal], with its relationship with a raised F2-F1 reaching a near-significant p-value of 0.06, and [+coronal]*[+continuant], which reached a significant p-value of 0.04 for lowering F2-F1. While the dataset was perhaps not large enough for the regression model to identify interactions between preceding consonant distinctive features, the F1-by-F2 plot in Figure 32 suggests patterns not captured by the statistical modelling. The consonantal contexts that correlate with a tenser (i) vowel appear towards the top left of the graph, and the consonants that correlate with a laxer (i) appear towards the bottom right.

The contexts below the blue line on Figure 32 are all [+sonorant], while those above the line are [-sonorant], suggesting less sonorous preceding contexts favour tenser vowels. This is echoed by the results of the regression models, wherein [+sonorant] preceding contexts were significant predictors of a lowered F2-F1, and a raised F1. Indeed, the relationship between sonority of preceding consonant and F2-F1 measurements of (i) appears to be inversely linear, as best demonstrated by in the manner of articulation results in Figure 31b: the tenseness of the (i) vowel decreases as the preceding consonant moves up the sonority hierarchy. Approximants favour the laxest vowels and are the most sonorous of the obstruents, followed by nasals, fricatives, plosives and then affricates. Therefore, in this dataset, a decrease in sonority

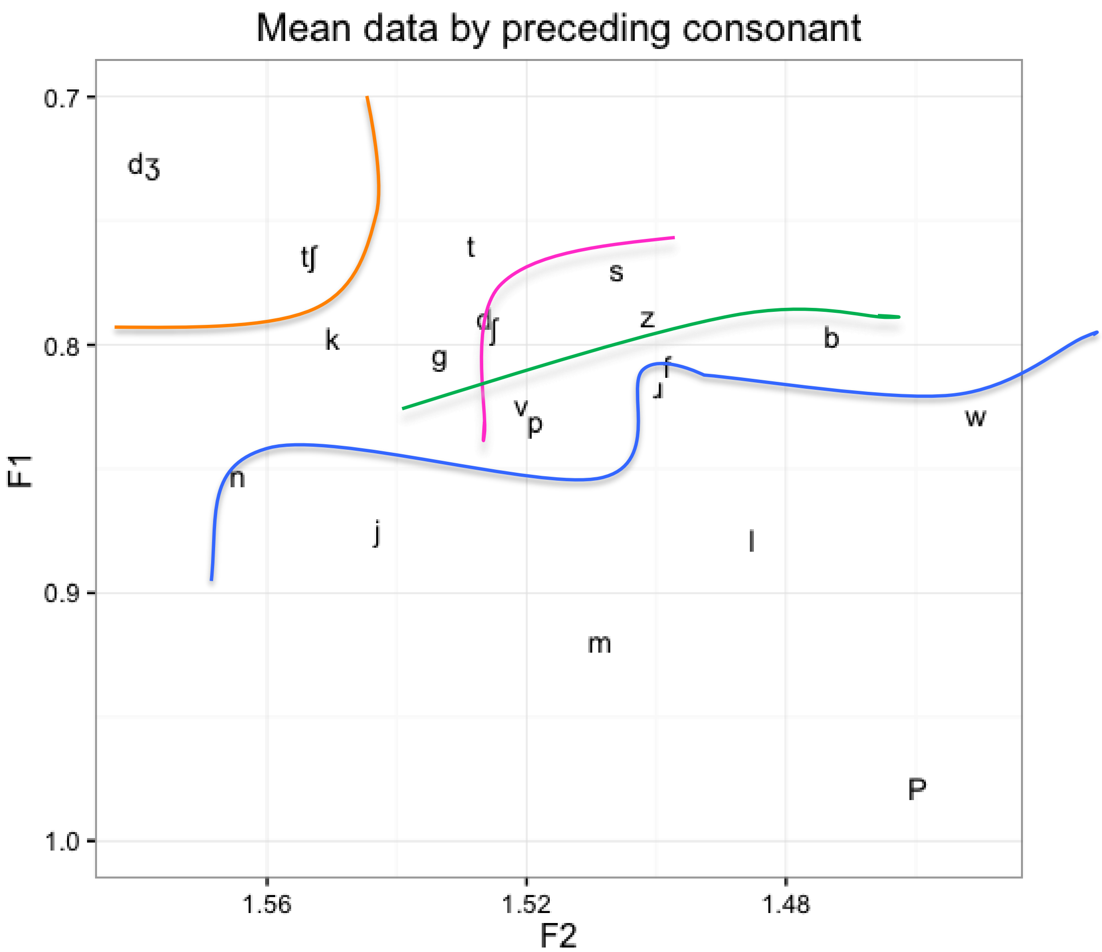


Figure 32: Scatter plot of mean (i) measurements according to preceding consonant, with added lines demonstrating division of precedng consonants according to distinctive features

in the preceding consonantal context correlates with an increase in the tenseness of (i) vowel realisation.

The contexts above the green line on Figure 32 are all either [+coronal] or [+dorsal], in that the tongue body is a primary articulator in their articulation. This leaves the bilabial and labiodental obstruents [p b f v] below the green line, suggesting that obstruents *with* lingual articulation favour tenser vowels than obstruents with *no* lingual articulation, an observation echoed in the results of the regression models.

The contexts above the pink line on Figure 32 are all [-continuant], while the contexts below the pink line are all [+continuant], separating out the continuants [ʃ s z] from the remaining contexts. This suggests that *stops* with lingual articulation favour tenser (i) vowels than *fricatives* with lingual articulation. Once again, this was a consistent finding in the regression models.

The two contexts that correlate with the tensest vowels are the affricates [dʒ] and [tʃ], and they appear to favour the tensest vowels to a considerable degree, as there is some distance in the upper left quadrant of Figure 32 between these and other consonantal contexts. These are distinguished from the remaining contexts by virtue of being both [+coronal] (distinguishing them from [k] and [g]) and [-anterior] (distinguishing them from [t] and [d]), and they also have [+delayed release], by virtue of being affricates. While [+/-anterior] was not highlighted as a significant predictor of a change in formant measurement in the regression models, this could be because [-anterior] alone combines [dʒ] and [tʃ] with many other preceding consonant contexts, smoothing the significance of the affricates specifically. It appears to be the combination of distinctive features that makes [dʒ] and [tʃ] most likely to pattern with a tense (i) vowel, by virtue of them being non-sonorant delayed release coronal anterior stops.

Figure 32 also illuminates the relationship between the distinctive features in a way the regression model was unable to do in other ways. For example, [+/-voice] was not highlighted as a significant predicting factor in the regression models. This is likely because voiced preceding contexts appear with some of the tensest and laxest (i) measurements. However, Figure 32 demonstrates that, on average, where both a voiced and voiceless obstruent of a particular type may precede (i), the voiceless one will usually correlate with a tenser vowel on average than the voiced one. (i) vowels that follow [t] are tenser than for [d], [k] are tenser than [g], [s] are tenser than [z], and [p] are fronter (but not closer) than [b]. There are exceptions, including [v] correlating with slightly fronter vowels on average than [f], and [dʒ] correlating with the tensest (i) vowels over [tʃ]. Nevertheless, voicing, it appears, may play its part in the relationship between preceding consonant context and formant measurements of (i).

Additionally, Figure 32 illuminates recursion in the relationships between preceding consonant distinctive features and (i) highlighted by the regression models. Among the preceding consonant contexts that tend to correlate with a laxer (i) vowel on average, the same interplay between tenseness of vowel and phonetic characteristic of preceding consonant is enacted as is seen in the whole dataset. For example, within the [+sonorant] group, below the blue line in Figure 32, it is the [+coronal] sonorant approximants [ɹ] and [n] that favour the tenser vowels, and the bilabial nasal [m], which has no lingual articulation, favours the laxest vowels overall.

iv. Following consonant

There were 18 potential consonants that appeared post-(i) in this dataset (see Table 13), but seven of them appeared in fewer than 10 tokens, so the total for calculations was reduced to 11. In both the raw data and the regression models, following consonant did not have a significant effect on the realisation of (i) in this dataset. Figure 33 demonstrates that there are some small differences between the averages and ranges according to following consonant. [z] has the strongest correlation with the tensest (i) vowels, though this is perhaps an influence of morphology, as [z] most often appears in *–es* suffixes, which as shown above, also correlate with tenser (i) vowels.

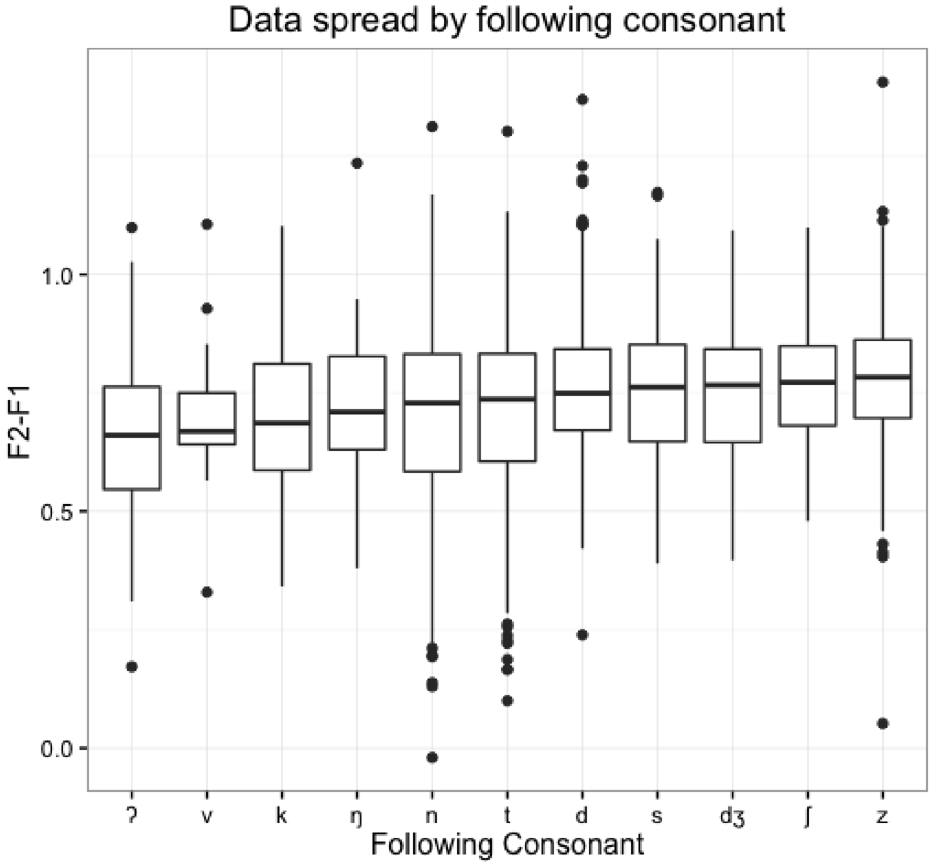


Figure 33: Boxplot of (i) measurements according to following consonant

Other following consonants were also dictated by word type. In this dataset, and in English more broadly, the /t/ of *it* may be realised as the voiceless alveolar plosive [t] or the voiceless glottal plosive [ʔ]. Running a regression model using only the 398 tokens of *it* was not possible due to the size of the dataset, but the boxplot in Figure 34 and Table 19 demonstrates the differing averages and ranges of (i) measurements for tokens of *it* according to whether they had [t] or [ʔ].

The (i) vowels realised before glottal stops have a lower average and range of F2-F1 measurements as compared to (i) vowels realised before [t], suggesting that glottalised variants of *it* are more likely to use a laxer (i) vowel than alveolar variants in this dataset. Of the 126 tokens altogether that were followed by [ʔ], only eight of them were not also tokens of *it*, so it is not possible to conclusively say whether a following glottal plosive favours a laxer (i) vowel in all contexts, or just in *it*.

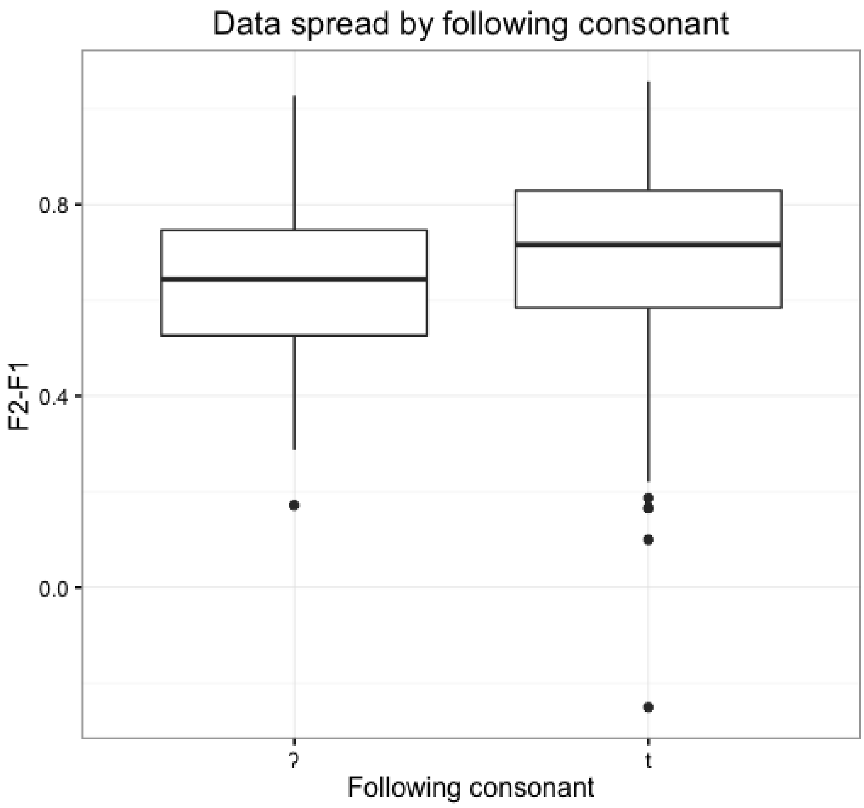


Figure 34: Boxplot of (i) measurements according to whether the following consonant is [ʔ] or [t]

Following consonant	# of tokens	Mean F1	Mean F2	Mean F2-F1	Median F2-F1
t	280	0.8191429	1.507429	0.6882857	0.7160
ʔ	118	0.8507966	1.486932	0.6361356	0.6435

Table 19: Acoustic measurements of (i) vowels according to whether the following consonant is [ʔ] or [t]

6.4.3.1 Discussion of linguistic factors

This section elaborates on the patterns illustrated in §6.4.3, considering their phonetic motivations and implications, and the links between them. Discussion centres on the preceding consonants, and ties these patterns to those of word type and preceding vowel.

i. Preceding consonant

The linguistic factor most frequently and robustly highlighted as significant across the regression models was the phonetic quality of the consonant segment that directly precedes the (i) vowel. This feature also demonstrated the most variation in the raw data measurements, suggesting it is the most important predicting factor influencing the phonetic quality of (i) in a word.

It is a fundamental of phonetic theory that adjacent segments have coarticulatory effects on one another. C-to-V coarticulation has been studied according to a variety of different parameters. Thomas (2011, p. 101) outlines the effects that consonantal place of articulation of preceding (and following) consonants has on the transitions of vowel formants, which is summarised in Table 20. In summary, all consonants have a lowering transitional effect on F1 aside from pharyngeals, which raise F1; bilabials, labiodentals, uvulars and pharyngeals lower F2 at transition points; palatoalveolars, palatals and velars raise F2 at transition points; and dental, alveolar and retroflex segments raise transitional F2 in the context of (central and) back vowels, and lower it in the context of (mid and high) front vowels.

Place of Articulation	Effect on	
	F1	F2
Bilabial	Lowered	Lowered
Labiodental	Lowered	Lowered
Dental	Lowered	Raised next to back rounded vowels, lowered next to front vowels
Alveolar	Lowered	Raised next to central and back vowels, lowered next to mid and close front vowels
Retroflex	Lowered	Raised next to back vowels, lowered next to front vowels
Palatoalveolar	Lowered	Raised
Palatal	Lowered	Strongly raised
Velar	Lowered	Raised
Uvular	Lowered?	Lowered
Pharyngeal	Raised	Strongly lowered

Table 20: Natural coarticulatory effects of surrounding consonants on vowels (from Thomas, 2011)

These effects are usually limited to the transitional periods between consonants and vowels, and do not necessarily persist across the (stressed) vowel, as demonstrated by the spectrograms in Thomas (2011, p. 99). Having delineated (i) vowels outside of these transitional areas and taken measurements from the mid-point of the (i) vowel, the measurements analysed here should have avoided the majority of these effects. However, (i) vowels are unstressed, and by their nature both shorter in duration and with a less defined acoustic target, making them more susceptible to influence from surrounding context (Fabricius, 2002). It is important to keep these considerations in mind during analysis.

Thomas (2011) states that all preceding consonant contexts (aside from pharyngeal consonants, not analysed here) lower F1. Figure 35a shows a boxplot of (i) vowel F1 figures according to preceding consonant place of articulation. The boxplot shows variability in the ranges and median F1 values for (i) vowels, though the predicted lowering effect for all contexts would not be evident from this graph, as there is no baseline against which to measure lowering. However, the regression model run on F1 measurements alone (see Table 15) demonstrates significant raising effects predicted for F1 when preceded by a [+sonorant] or [+continuant] segment. These phonetic categories are supra-place, suggesting analysis using these categories captures variation in F1 measurement which cannot be explained by transitional consonantal effects alone.

The relationship between F2 and adjacent consonant place of articulation stated by Thomas (2011) is more complex than for F1. According to Thomas' descriptions (see Table 20) alongside the close front (i) vowel, F2 would be lowered in bilabial, labiodental and alveolar consonant contexts, and raised adjacent to palatoalveolars, palatals and velars (of the contexts found in the dataset). According to the median F2 values presented in Figure 35b, this

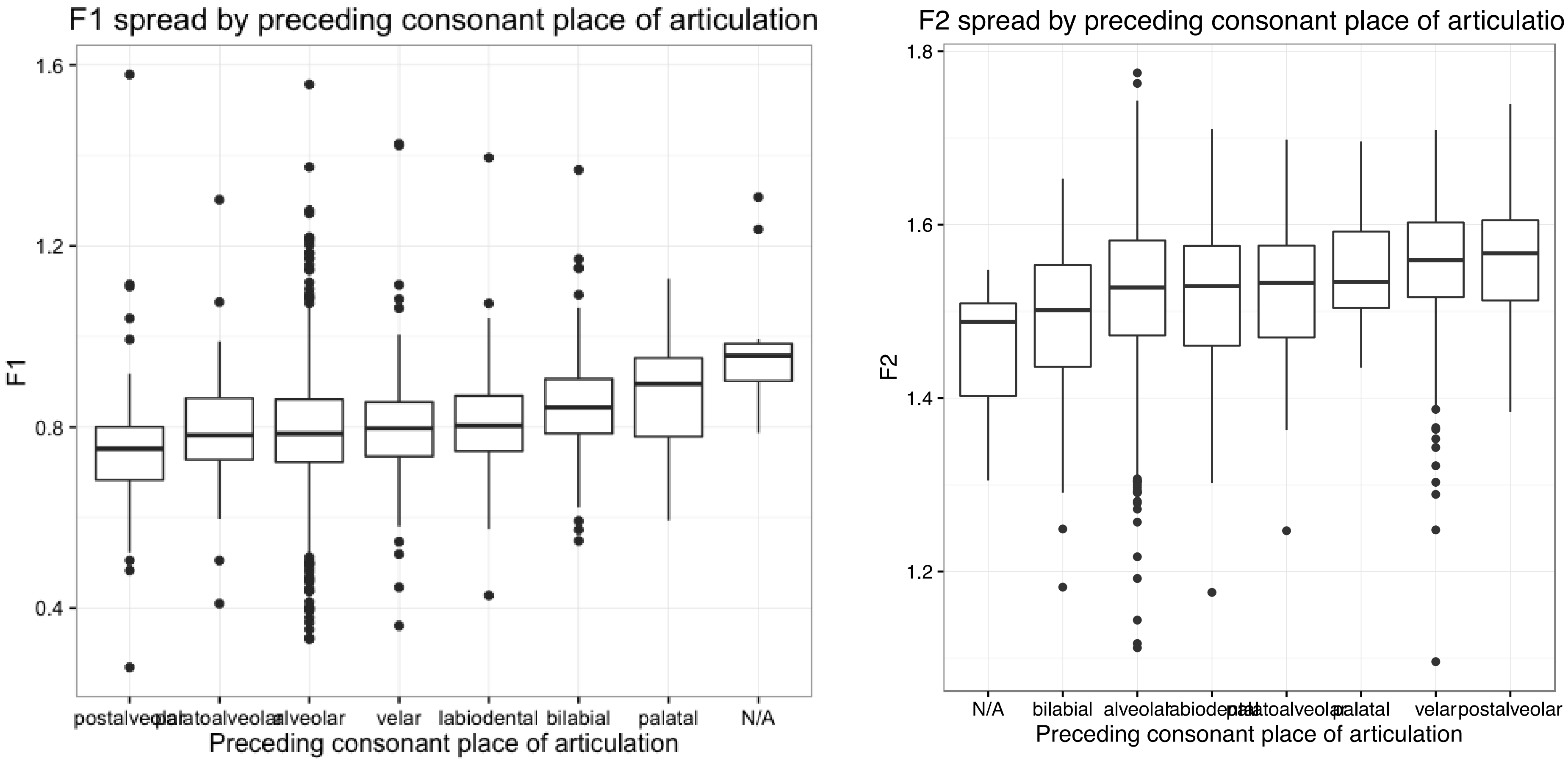


Figure 35: Effect of place of articulation on (i) vowel F1 [left] and F2 [right]

pattern is borne out, with bilabials, alveolars and labiodentals towards the left of the figure with lower median F2 measurements, and palatoalveolars, palatals and velars (and postalveolars) towards the right, with higher median F2 measurements. Additionally, the regression model for F2 measurements highlighted a significant pattern of [+coronal] and [+dorsal] consonants predicting a rise in F2 and [+continuant] consonants lowering F2. This suggests the relationship between F2 and preceding consonant *is* affected by place of articulation, but this is not the only factor that should be considered. [26] As shown in §6.4.3, place and manner of articulation alone do not adequately demonstrate the relationship between (i) measurement and preceding consonant in this dataset.

Building on previous research including Recasens (1990), Recasens et al. (1997) develop a theory of coarticulation based on lingual engagement in articulation. The theory, which is applied in the same way to both consonants and vowels, assigns a degree of articulatory constraint (DAC) of between 1 and 3 to segments based on their articulatory gestures, centred on the engagement of the tongue dorsum, "based on information obtained from experimental production data, e.g. data on articulatory displacement and linguopalatal contact" (Recasens et al., 1997, p. 545). Maximally constrained segments are those with considerable engagement of the dorsum in articulation (such as [ʃ ɲ i k][27]), or multiple articulatory gestures which entail movement or adjustment of the dorsum (such as dark l [ɫ]) – these segments receive a DAC of 3. Minimally constrained gestures involve no lingual articulation (such as [p ə]) and are assigned a DAC of 1, while an intermediate score of 2 is given to segments "for the production of which the tongue dorsum is not directly involved in closure or constriction formation but is subject to coupling effects with the primary articulators", such as [n s a] (Recasens et al., 1997, p. 545).

[26] Stevens and House (1963) and Hillenbrand et al. (2001) also observed a downward shift in F2 for front vowels following bilabials and a tendency towards lower F1 values in all vowels adjacent to voiced consonants. However, the vowels remained perceptually stable.
[27] All phonetic exemplars of DAC scores are from Recasens et al. (1997).

Recasens et al. (1997) took electropalatographical measurements of linguopalatal contact (as the proportion of activated palatal electrodes to total palatal electrodes, termed *Qp*) and F2 measurements across symmetrical Catalan VCV sequences comprised of [i] and [a] and a variety of consonants [ʃ ɲ k ɫ p n s]. The maximal displacement of *Qp* and F2 from the flanking vowel steady states, whether positive or negative, was used as the measurement of coarticulatory affect (Recasens et al., 1997, pp. 547–548). For C-to-V coarticulation, their results demonstrated a relationship between the DAC figure for the corresponding C and V segments, dependent on "their trajectories being compatible or antagonistic", as follows.

i. When a vowel has the same DAC as a preceding consonant, coarticulatory effects are negligent when the gestures are articulatorily compatible. This was the case for [i] when adjacent to [ʃ ɲ k], which all have a DAC of 3 and are all "articulated with a similar degree of tongue-dorsum height" (Recasens et al., 1997, p. 550).
ii. When a vowel has a higher DAC than a preceding consonant, negligible coarticulatory effects are observed. This was the case for [i] when adjacent to [p] as regards *Qp* scores, but the authors note that [p] considerably lowered F2, which they attribute to lip-rounding (Recasens et al., 1997, p. 550).
iii. When a vowel has a lower DAC than a preceding consonant, "C-to-V effects increase with the degree of gestural antagonism involved" (Recasens et al., 1997, p. 559). If the segments are mutually incompatible or involve opposing articulations, coarticulation increases. This was not applicable to [i], as it has the highest DAC score possible.
iv. Manner of articulation may contribute to a segment's DAC, as evidenced by the intermediate scores for [s] despite dorsal engagement. The authors attribute this to "fricatives requiring the formation of a precise medial groove which causes the tongue-dorsum surface to occupy an intermediate position between that

for high and low consonantal articulations" (Recasens et al., 1997, p. 559)

v. Finally, there are cases in which a vowel and consonant may have the same DAC score but antagonistic articulatory trajectories. In these cases, contrary to the findings of previous research, maximal coarticulation is enacted "to ensure that the consonantal gesture is successfully realised" (Recasens et al., 1997, p. 559). This is the case with [i] and [ɫ]; both have a DAC of 3, but the vowel gesture requires a raising of the dorsum while the consonantal gesture requires tongue tip raising and retraction of the dorsum. The authors state "the requirements for a highly constrained consonant override those for a highly constrained vowel when the two phonetic segments are produced with antagonistic lingual gestures".

Mean F2-F1	Segment	DAC score	Antagonistic trajectory?	[+/-sonorant]	[+/-continuant]	[+/-coronal]	[+/-dorsal]	[+/-anterior]	[+/-voice]
0.8528113	dʒ	3		-	-	+	-	-	+
0.7894429	tʃ	3		-	-	+	-	-	-
0.7684399	t	2		-	-	+	-	+	-
0.7522129	k	*3*		-	-	-	+	-	-
0.7373287	d	2		-	-	+	-	+	+
0.7367794	s	*2/3*		-	+	+	-	+	-
0.7317805	ʃ	*3*		-	+	+	-	+	-
0.7292917	g	3		-	-	-	+	-	+
0.7131565	z	2/3		-	+	+	-	+	+
0.7116966	n	*2*		+	+	+	-	+	+
0.6966393	v	1		-	+	-	-	-	+

0.6897714	f	1		-	+	-	-	-	-
0.6883600	p	*1*		-	-	-	-	-	+
0.6829706	ɹ	2/1		+	+	+	-	+	-
0.6764286	b	1		-	-	-	-	-	+
0.6682174	j	2		+	+	-	+	-	+
0.6227714	w	2		+	+	-	+	-	+
0.6060758	l	*3*	y	+	+	+	-	+	+
0.5895000	m	1		+	+	-	-	-	+

Table 21: Mean F2-F1 measurements of (i) vowels according to preceding consonant, its Degree of Articulatory Constraint (following Recasens, 1997) and distinctive features

Table 21 lists the preceding consonantal contexts in the oral history dataset in order of the mean F2-F1 of the adjacent (i) vowel; those higher in the table are correlated with tenser (i) realisations overall, and those lower are correlated with laxer (i) realisations. Each consonantal context is also labelled with its DAC score (following Recasens et al. (1997) where the consonantal contexts overlapped, italicised in the table, or allocated by me according to their theory), and whether it has an antagonistic articulatory trajectory as compared to the close front vowel (i). Recasens at al.'s (1997) theory of coarticulation seems to explain the relationship between (i) vowel measurements and preceding consonant in this dataset. There are, however, complications and problems in their theory.

The (i) vowel, being close and front in the region of [ɪ ~ i:], has a DAC of 3, as it involves raising the tongue body in articulation. As such, the main coarticulatory effect from neighbouring consonants will be *lowering* of the tongue body, resulting in a laxer vowel quality. Of the consonants which also have a DAC of 3 - [dʒ tʃ k g ʃ j l] - all but [j] and [l] correlate with a tenser F2-F1 measurement for (i), as shown in Table 21. The segments [dʒ tʃ k g ʃ] have compatible articulatory trajectories to (i), involving raising of the tongue body/dorsum, so within Recasens et al.'s (1997) theory, it makes sense that these consonants do not have any coarticulatory lowering effects on (i). The lowering effect of [l] is accounted for by Recasens et al.'s stipulation that a consonant with a highly constrained but antagonistic articulatory trajectory can result in maximal coarticulation on a vowel. In this case, the constraints of [l] outweigh those for (i) and the antagonistic trajectory results in lowering of the vowel quality, reflected in the average formant measurements demonstrated in Table 21.

The story for [j] is more perplexing. Recasens et al. do not investigate the effect of [j] in their Catalan sequences (nor any other approximant consonants), and so do not assign it a DAC. Considering its dorsal engagement in articulation, it could be assigned it a DAC of 3. However, even though the dorsum is the primary articulator, [j]'s status as an approximant suggests the dorsum does not move as close to the palate as for [i], or a palatal stop, for example. Its relationship with laxer (i) vowels overall, then, is better explained if it were given a DAC of 2 - in this dataset it is correlated with a laxer (i) vowel realisation, despite having a complimentary articulatory trajectory to (i).

Considering Recasens et al. (1997) do not include any approximants in their theory of coarticulation, it could be the case that this theory works appropriately for most consonant segments, but not for approximants. The approximants [ɹ w j] consistently correlate with laxer (i) vowels in this datatset, suggesting something about the quality of approximants has a lowering effect on this close front vowel.

The consonants with a DAC of 2 [s z n ɹ w] correlate with F2-F1 measurements which place them around the upper-middle of the range of averages in Table 21. Recasens et al.'s theory suggests these consonants should not have had a lowering effect on (i) because of the vowel's higher DAC makes it resistant to coarticulatory effects. The fact that the majority of these consonants (aside from [ɹ] and [w]) correlate with (i) vowels similar to those adjacent to consonants with a DAC of 3 supports this theory. The anomalous results for [ɹ] and [w] may again be linked to their status as approximants.

Recasens et al.'s theory suggests that consonants with no tongue body engagement, and therefore a DAC of 1, do not exert coarticulatory force on vowels with a higher DAC, such as (i). However, the low-DAC consonants in this dataset [v f p b m] all correlate with laxer (i) vowels on average, suggesting there is a lowering effect. It is important to note that Recasens et al.'s (1997) research considered coarticulatory effects using electropalatographical data alongside F2 measurement, and discovered that while linguopalatal contact was not displaced for [p] + [i], there was a considerable lowering of F2, which the authors attributed to lip-rounding. In my data, which considers formant measurements alone, the same effect of lip rounding/protrusion could account for lowered F2-F1 measurements for (i) alongside these labial consonants. Indeed, Thomas (2011) makes clear that bilabial and labiodental consonants can have a lowering effect on F1 and F2 of adjacent vowels.

However, I would suggest that it is the precise lack of lingual articulation in these labial consonants that makes them somewhat antagonistic to (i) articulation, as a vowel with maximal lingual movement. Far from being 'neutral' contexts (as suggested in Recasens (1990)), the lack of lingual articulation in bilabial consonants has a lowering effect on close front vowels due to the opposition in articulatory gestures. Recasens et al. (1997) open their article by saying that previous research has shown "the extent to which a vowel falls short of its target (i.e. the amount of undershoot) increases with the distance between the articulatory targets for the vowel and for the adjacent consonant" (Recasens et al., 1997, p. 544), which, combined with DAC theory, sums up the relationship between the consonants and vowels in my dataset: the smaller the distance between the articulatory targets of the preceding consonant and (i), or the more complimentary the articulatory gestures of the preceding consonant and (i), the tenser the realisation of (i), and vice versa. As such, lingual consonants such as [dʒ tʃ k g ʃ] correlate with tenser (i) vowels due to their compatible articulatory trajectories, while non-lingual consonants such as [v f p b m] correlate with laxer (i) vowels, because their articulatory trajectories are antagonistic.

A combination of the considerations of place of articulation, manner of articulation and degree of articulatory constriction almost fully explains the relationship between preceding consonant segment that and the F1 and F2 measurements of (i). The only relationship not captured by these theories is the statistically significant prediction of lowered F2-F1 adjacent to [+sonorant] and [+continuant] consonants.

As regards [+sonorant] consonants, consideration of the gestural makeup of [i] would suggest that its close front articulation would favour consonants which also have a close approximation. The [+sonorants] [j w l m ɹ] may correlate with laxer (i) vowels because of their more open approximation, or lack of lingual engagement in the case of [m].

As [+continuant] consonants are by their nature longer in duration than [-continuant] consonants, their increased coarticulatory lowering effect may be a result of a longer duration providing more time for coarticulation to occur. However, this is only a hypothesis.

iii. Word type (and preceding consonant)

An effect of word type was frequently highlighted as significant across the regression models, and the raw data analysis suggested consistent differences between (i) vowels in different word contexts, with *–es* and other suffixed words correlating with the tensest (i) vowels, and *–ing* and *it* contexts correlating with the laxest. As previously suggested in Leach (2012), the effect of word type may be closely linked to the effect of preceding consonant.

There are three allomorphs of the plural or third-person singular present tense suffix in British English: [s], [z], and [ɪz]. In contexts where the stem ends in a vowel or most consonants, the allomorphs /z/ or /s/ are added depending on the voicing of the preceding segment (e.g. *trees*, *walks*, *hens*, *stars*, *curls*). The [ɪz] allomorph only appears after certain stem-final consonants: [s] as in *misses*, [z] as in *buzzes*, [ʃ] as in *brushes*, [ʒ] as in *rouges*, [tʃ] as in *reaches* and [dʒ] as in *urges*. This prevents impossible phonotactic combinations such as *[tʃs] by adding an epenthetic [ɪ].

A similar rule is applicable to past tense suffixes in British English. The suffix is usually [t] or [d], once again depending on the voicing of the preceding segment, as in *walked* [wɔ:kt] or *egged* [ɛgd]. However, in stems which themselves end in [t] or [d], the allomorph [ɪd] is used, as in *wanted* [wɒntɪd] or *needed* [ni:dɪd]. It is in these [ɪz] and [ɪd] allomorphs that variation between [ɪ] and [i:] occurs for Stoke-on-Trent speakers.

As explained above, certain consonants correlate with a tenser (i) vowel most likely because of their articulatory compatibility, specifically the lingual engagement. These consonants include the six which may precede an *–es* suffix, [s z ʃ ʒ] and particularly [tʃ dʒ], and those which precede an *–ed* suffix, [t d]. If these consonants favour a tenser (i) vowel overall, it follows that the (i) vowels in *–es* and *–ed* suffixes are likely to have consistently tense (i) vowels, due to this articulatory compatibility. These suffixes were also shown to consistently resist KIT/schwa drift in RP speakers, retaining an [ɪ] vowel while others shift to [ə] (Fabricius, 2002; Gimson, 1984). It is highly likely this is for the same reasons: the articulatory compatibility of [ɪ] or [i] with [s z ʃ ʒ tʃ dʒ t d] results in a consistently tenser*–es* and *–ed* vowel for RP speakers and Stoke-on-Trent speakers alike.

The boxplot in Figure 26 demonstrates that, in this dataset, there is not a categorical use of [i:] in *–es* suffixes, as the range of measurements incorporates some lower F2-F1 scores. However, the range is narrower than for all other word types and has a higher average, showing that the majority of *–es* tokens are tenser and realised as [i:]. The younger speakers investigated by Leach (2012) had a near-categorical distinction between tense (i) vowels in *–es* suffixes, including a productive pattern in nonsense words, and lax (i) in other contexts, suggesting that the suffix was phonologised as [i:z] into their variety, following perceptual reinforcement (Ohala, 1981). While the same categorical distinction is not apparent in this dataset, the tendency towards tense (i) vowels in *–es* suffixes could be indicative of the initiation of this phonologisation, as the speakers in this dataset are two to three generations behind the young speakers in Leach (2012).

Additional evidence for this appears when the –*es* suffixes are removed from the dataset. Figure 36b is an F1-by-F2 scatter plot of the average (i) measurements according to preceding consonant, similar to Figure 32 (reproduced adjacently as Figure 36a, for clarity), only with the –*es* tokens removed. The same correlation between consonant and tenseness of (i) is maintained, with [tʃ dʒ] towards the top left of the figure and [m l w] towards the bottom right. However, the pattern is not as distinct and does not represent the same degree of variation in the vowel space as Figure 36a, particularly for [tʃ dʒ]. While the relationship between preceding consonants and (i) measurement is mirrored in non *-es* tokens, again owing to the articulatory compatibility (or antagonism) of the segments, the strength of the effect of the –*es* suffixes alone suggests a correlation that goes beyond coarticulation and moves towards phonologisation.

Indeed, in Figure 36b, [s] and [z] in particular no longer correlate with particularly front (i) vowels as compared to the averages presented in Figure 36a. Considering the relationships between distinctive features and quality of (i) explained in §6.4.3, the [+continuant] quality of [s] and [z] would suggest their adjacent (i) vowels would not be as tense as those adjacent to stops. In the full dataset, it appears the influence of their appearance next to –*es* suffixes mitigates this effect, drawing them towards the top left of the vowel space. In the dataset without –*es*, this effect is absent, meaning they do not correlate as strongly with tense (i) vowels. This again suggests a phonologisation of the suffix [i:z] which supercedes simple coarticulatory constraints.

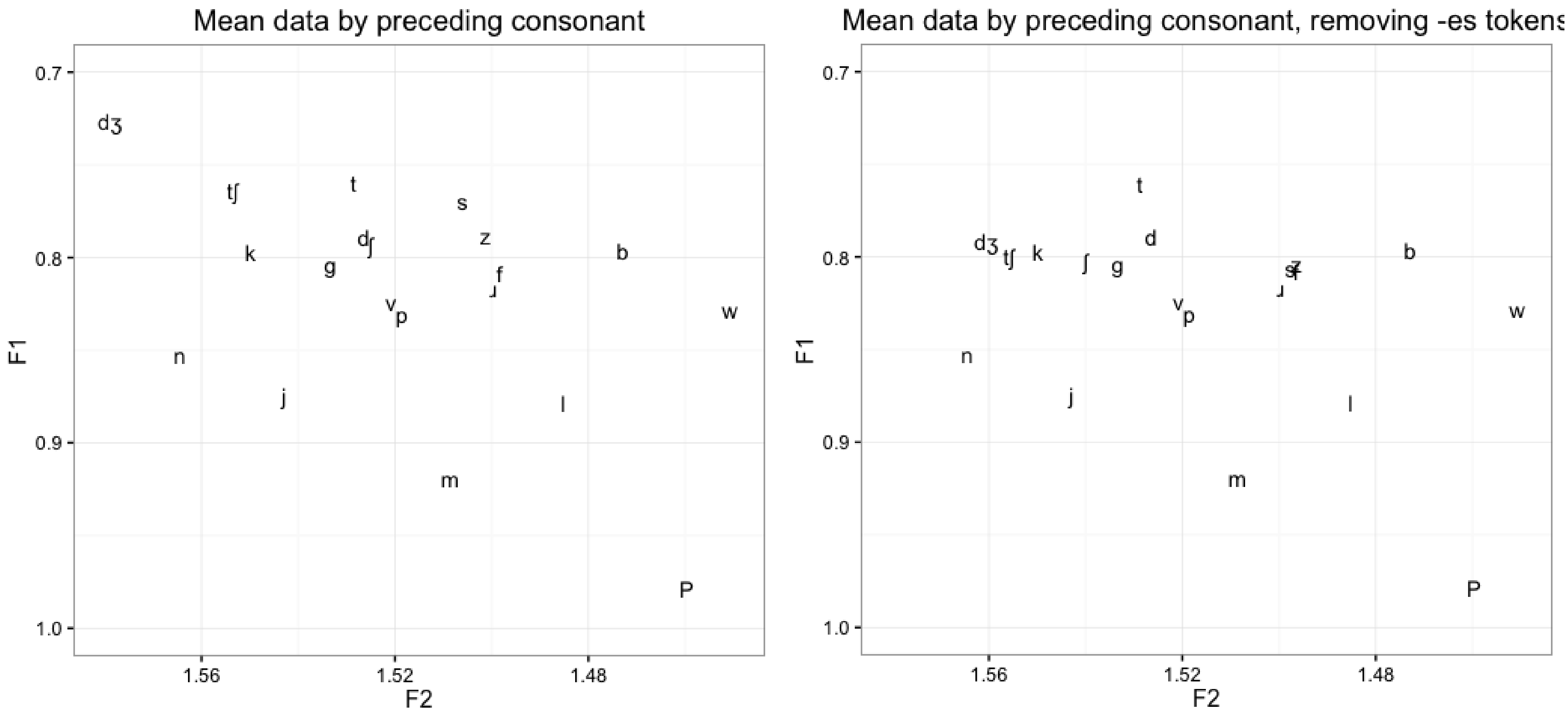


Figure 36: Scatter plot of mean (i) measurements according to preceding consonant [left], and the same data with -es tokens removed [right]

The fact that *–ing*, *it* and opaque words correlate with laxer (i) vowels on average may be explained by the fact that the preceding consonant in these cases is unrestricted. While (i) vowels in these contexts may be preceded by one of the articulatorily compatible consonants with no lowering effect on the vowel, they may also be preceded by any of the consonants which do potentially have a lowering effect on (i), or encourage centralisation of the (i) vowel due to lack of lingual articulation. While Figure 36b shows the coarticulatory effects are still operational, it is likely that the (i) vowels in these contexts remain variable because of the lack of consistent reinforcement by an articulatorily compatible preceding segment, which is present in *–es* tokens.

Additionally, it was observed in §6.4.3 *ii* that (i) measurements in *it* contexts are the laxest overall, both in range and average. A contributing factor could be the morphological separation of these (i) tokens from preceding segments. In all other contexts, (i) vowels appear in the same morphological lexeme as the preceding consonant and vowel noted in this analysis; for *it* contexts this is not the case, and the preceding consonant and vowel are taken from the preceding morphological lexeme. While temporally there may not be much difference, with the (i) vowel produced in equally close proximity to the preceding segments, this morphological distinction may influence the (i) vowel used. I would hypothesise that a strong morphological break before the (i) vowel may 'reset' the vowel context, making it less susceptible to coarticulatory effects.

iv. Preceding vowel (and consonant)

It was not possible to test for statistical interactions between categories of preceding vowel closeness and frontness and preceding consonants due to the small dataset, so it is unclear if the two factors are linked. However, there are consistently significant effects of preceding vowel closeness (and, to a lesser extent, frontness) highlighted in both the regression models and the raw data analysis. Close and mid-close preceding vowels predict a rise in F2-F1, a lowering of F1 and rise in F2 of (i) vowels, suggesting a preceding close vowel or mid-close diphthong correlates with a closer and fronter (i) vowel. This is phonetically logical, and represents natural coarticulation in VCV segments previous observed by, for example, Öhman (1966) and Magen (1997). Considering the separate significant effects of both preceding consonant and preceding vowel, it is logical to assume that (i) vowels in the context of a preceding consonant and vowel (and word context) which correlate with a rise in F2-F1 measurement would have the highest chance of being realised as tense [iː], in a word such as *teaches,* for example.

However, the relationship between preceding stressed vowel and (i) is not strong or consistent enough to suggest a harmonic relationship like those previously observed in varieties of Scots English (Fitzgerald, 2002; Oddie, 2012; Paster, 2004). While the formant measurements observed here suggest speakers in this dataset variably use [iː] and [ɪ] vowel qualities in (i) tokens, the evidence does not suggest a binary distinction between the two (i) vowel qualities, nor one that is related to preceding vowel, as observed in Scots English. Tokens with low and back preceding stressed vowels were frequently articulated with tense (i) across the dataset, and vice versa.

The linguistic factors influencing the quality of (i) vowel are complex and interlinked, with phonetic factors influencing morphological factors, and these combined potentially initiating a change in progress in this variety. Social factors, on the other hand, do not appear to have as strong an influence on (i) quality, as explored in the following section.

6.4.4 Social factors

Neither gender nor department (nor the additional social variable of age) reached a level of significance as a predictor variable for F1, F2 or F2-F1. The patterns (or lack thereof) regarding these social factors are therefore visually demonstrated in this section, using the raw data.

i. *Age*

Figure 37 shows the spread of F2-F1 measurements for the various ages of the speakers in the dataset. If the potential change in progress from the more

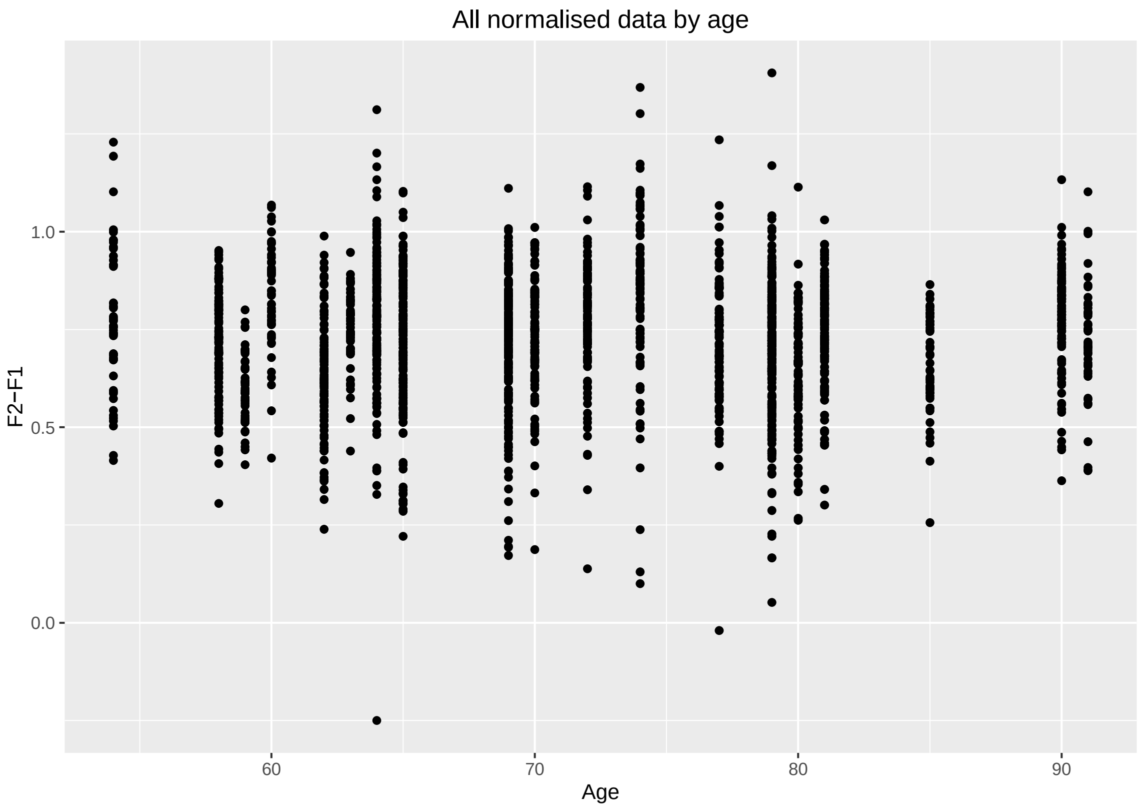


Figure 37: Scatter plot of all (i) measurements according to speaker age

frequent use of a tense (i) vowel in older speakers to the less frequent use of a tense vowel (i) vowel in younger speakers hypothesised in Leach (2012) were visible here, we would expect to see a positive correlational pattern in this graph, so that younger speakers had more low F2-F1 measurements, while older speakers had more high F2-F1 measurements. This is not evident in the graph, and there appears to be no discernible correlation between the age of the speaker and their vowel quality in this dataset. The regression model also tested for interactions between age and gender, and age and department, but neither interaction produced results approaching significance.

This is not necessarily to say that a change in progress is not evident, as it could be a recent change starting with the generation after the one analysed here. However, the difference between this data and that of Leach (2012) could be the consequence of generational change rather than a progressive change, with older speakers more likely to use the local variant than younger ones.

Additionally, all these speakers are aged 55 and over, and as such may represent a fairly homogenous speech group. Relatedly, Leach & Montgomery (2013) suggested that a change in the conceptualisation of the Stoke-on-Trent dialect may hinge on the collapse of the pottery industry itself, with a divide in perceptions of the accent divided between those who worked in or were familiar with the industry and younger people brought up with little involvement with or knowledge of the industry. If production differences mirror these perceptual ones, we would not expect to see much of a difference in this group of speakers, all of whom have direct industry engagement.

ii. Gender

Figure 38 is a boxplot of the F2-F1 measurements for the (i) vowels, divided according to the gender of the speaker. There is very little difference between the average F2-F1 of the (i) vowels used by male and female speakers; the medians demonstrated by the boxplot are 0.742 for females and 0.740 for males, while the mean figures are 0.722 for females and 0.729 for males. This clearly indicates that gender is not a significant factor in the realisation of tenser or laxer (i) vowels in this dataset, as confirmed by the regression

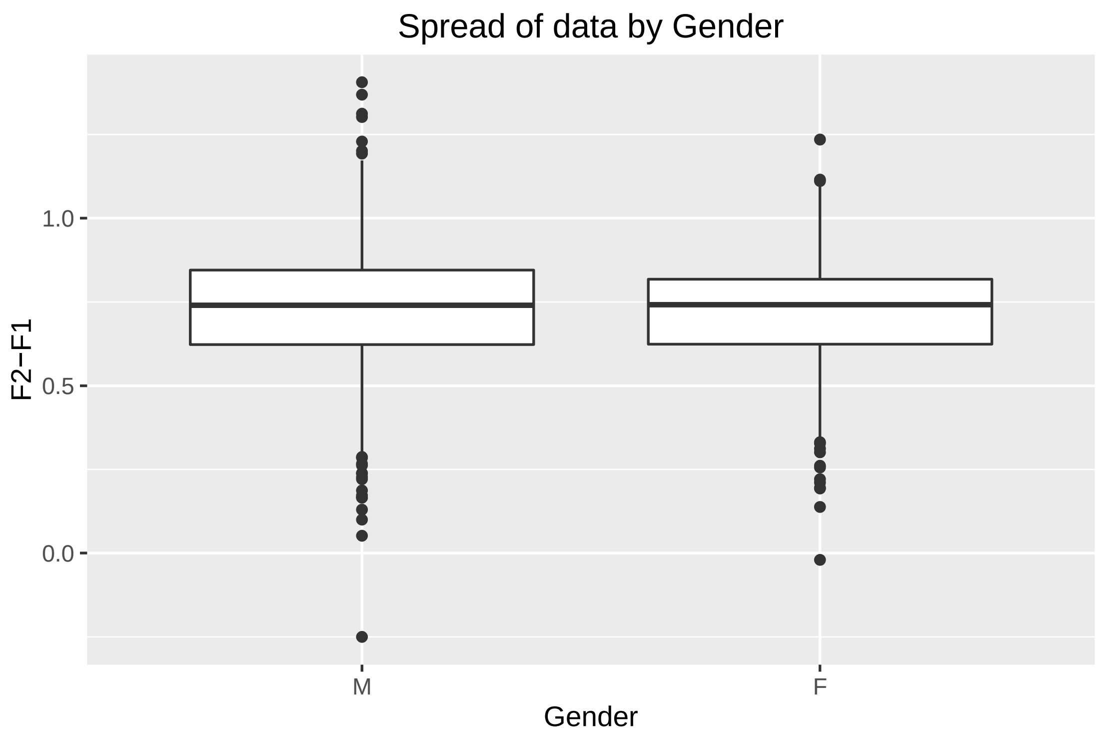


Figure 38: Boxplot of (i) measurements according to speaker gender

models.

Figure 39 shows the spread of (i) vowel measurements according to the gender of the speaker in the dataset. This graph also shows no categorical distinction between the genders when it comes to the realisation of the (i) vowel. The localisation of a tense (i) vowel to Stoke-on-Trent and parts of the English West Midlands means we can consider [ɪ] the standard variant and [i:] the non-standard or local variant. In this case, according to prevailing sociolinguistic findings regarding gender, it might be expected that female speakers would have a preference for or tendency towards an increased use of [ɪ] as the standard variant, as female speakers' linguistic and social lack of security often results in an avoidance of non-standard features (Trudgill, 1974). This trend is not in evidence in this dataset, and the measurements suggest that both male and female speakers use both [ɪ] and [i:] vowels for (i). However, the variable examined here may not be stable and may be part of an emergent change in progress (§6.2), so the typical gender-based patterns may not be in evidence.

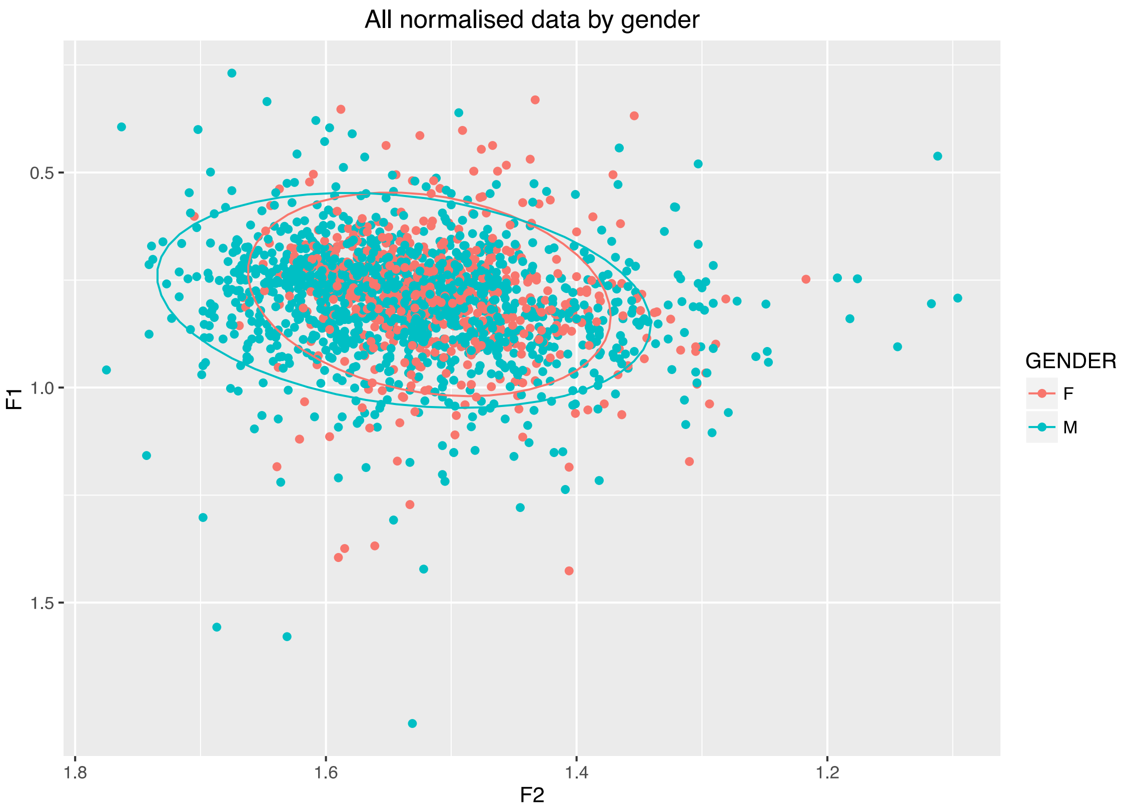


Figure 39: Scatter plot of (i) measurements according to speaker gender

The typical linguistic gender divide also may not be in evidence here because, unlike most other working class communities, most of the women in this dataset were also engaged in manual labour similar to that of the male workers. While their departments and, according to Jones (1961), their social lives, were distinct, the occupation of both genders in the pottery industry could account for their shared use of this local feature.

Figure 39 shows that female speakers have a slightly narrower articulatory target for (i) than their male counterparts in this dataset, and male speakers have more variability in their articulations of (i), particularly on the F2 plane. This may be because of the uneven numbers of male and female speakers in the dataset (nine female speakers to seventeen males), meaning that natural interspeaker variability is higher for the male speakers.

However, it could suggest that the female speakers in this dataset have a slightly more specific target for the articulation of the (i) vowel, and male speakers have a more variable target. The male speakers have a more variable F2 for (i) than the female speakers, suggesting more fronted articulations of (i). Taking [ɪ] as the standard variant, these extremely fronted (i) articulations could be considered hyper-localised articulations. As such, while both genders have access to and make use of localised variants of (i), it could be that male speakers more often use hyper-localised variants.

iii. Department

Figure 40 is a boxplot of the (i) vowel F2-F1 measurements divided according to the department of the pottery industry in which the speaker worked. As with gender, the regression models didn't identify department as a significant predictor of (i) F1, F2 or F2-F1 measurement. Figure 40 confirms this lack of distinction between any departments when it comes to the acoustic properties of (i) vowels, with the ranges and medians similar across all sectors.

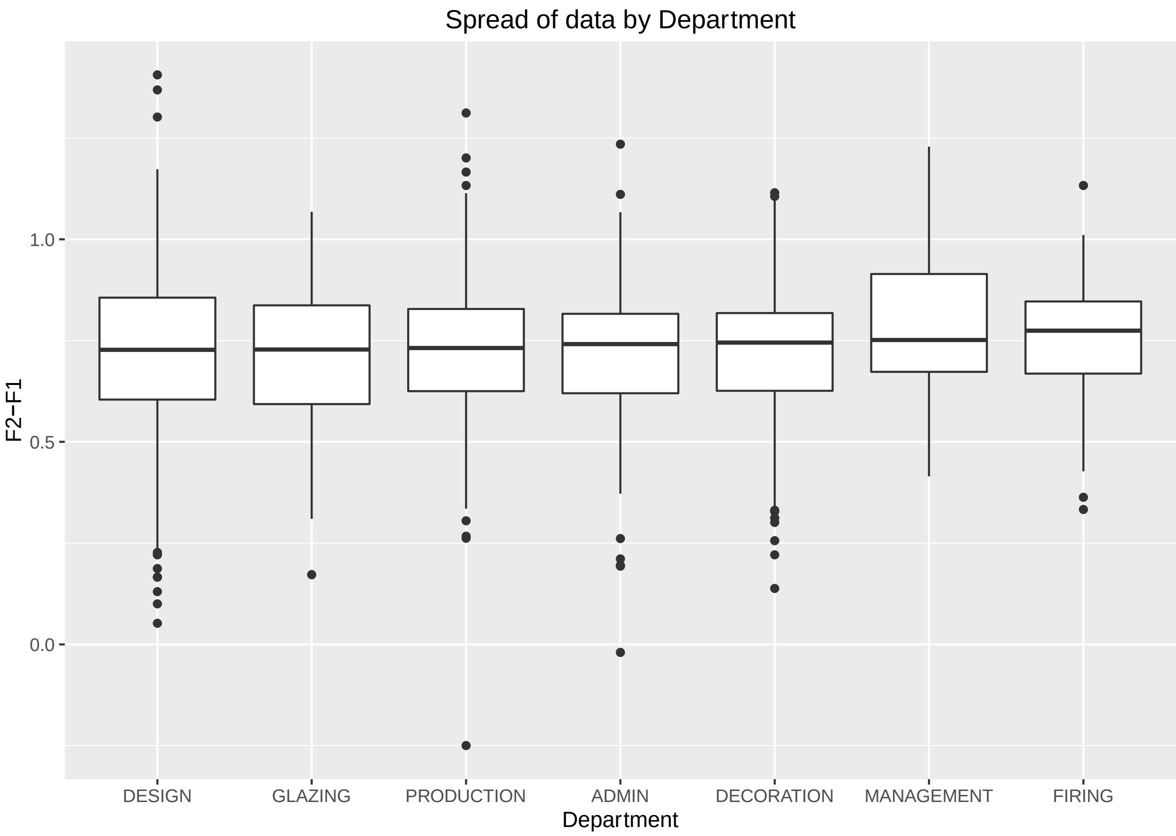


Figure 40: Boxplot of (i) measurements according to speaker department

Figure 41 shows the departments' average (i) vowels according to both F1 and F2. The differences between departments are minimal, which is to be expected when investigating such a small area of the vowel space, but also confirms that the role a speaker occupies in this industry doesn't correlate categorically with their articulation of a local variant of (i). However some small differences are evident, and the actual figures for the mean F1 and F2 measurements displayed in Figure 41 can be found in Table 22, alongside the mean and median F2-F1.

The firing department stands apart from the other sectors, with a higher F2 measurement on average. The decoration department also stands apart, with a lower F2 and slightly lower F1 on average. Interestingly, the administration department, which is a less manual sector in which women work, is closer to the other male, manual sectors (glazing, design and production) on average than the other female department (decoration).

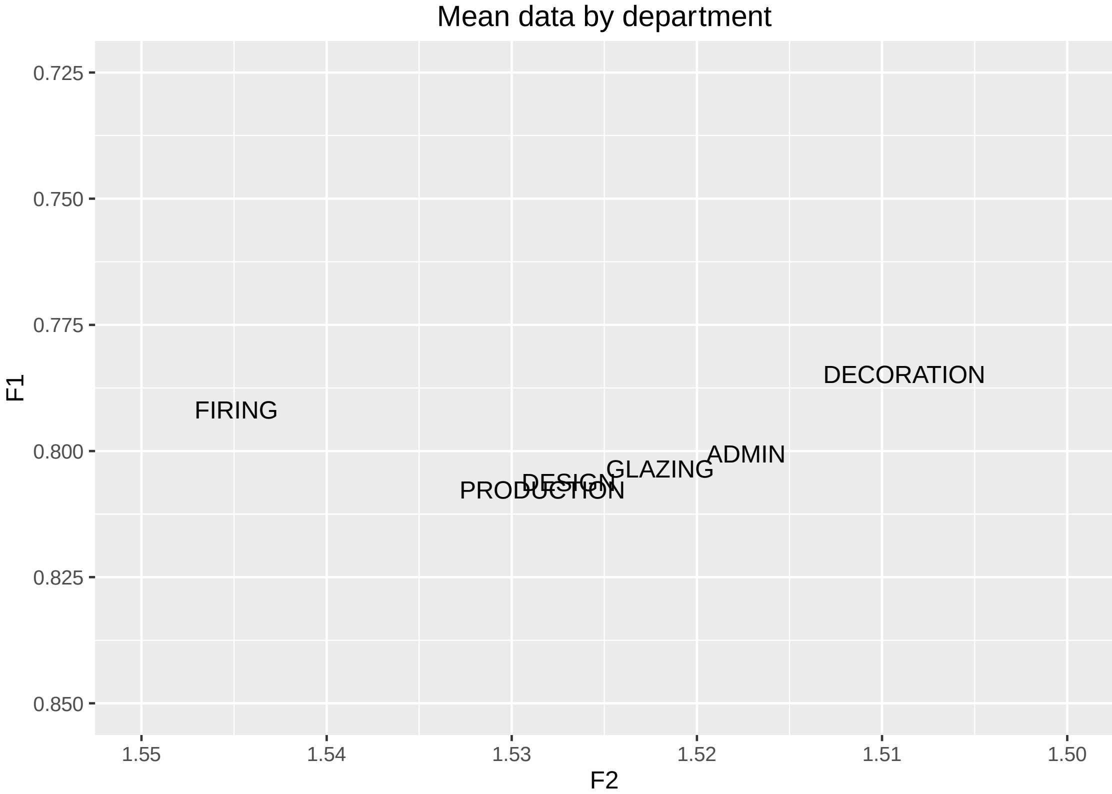
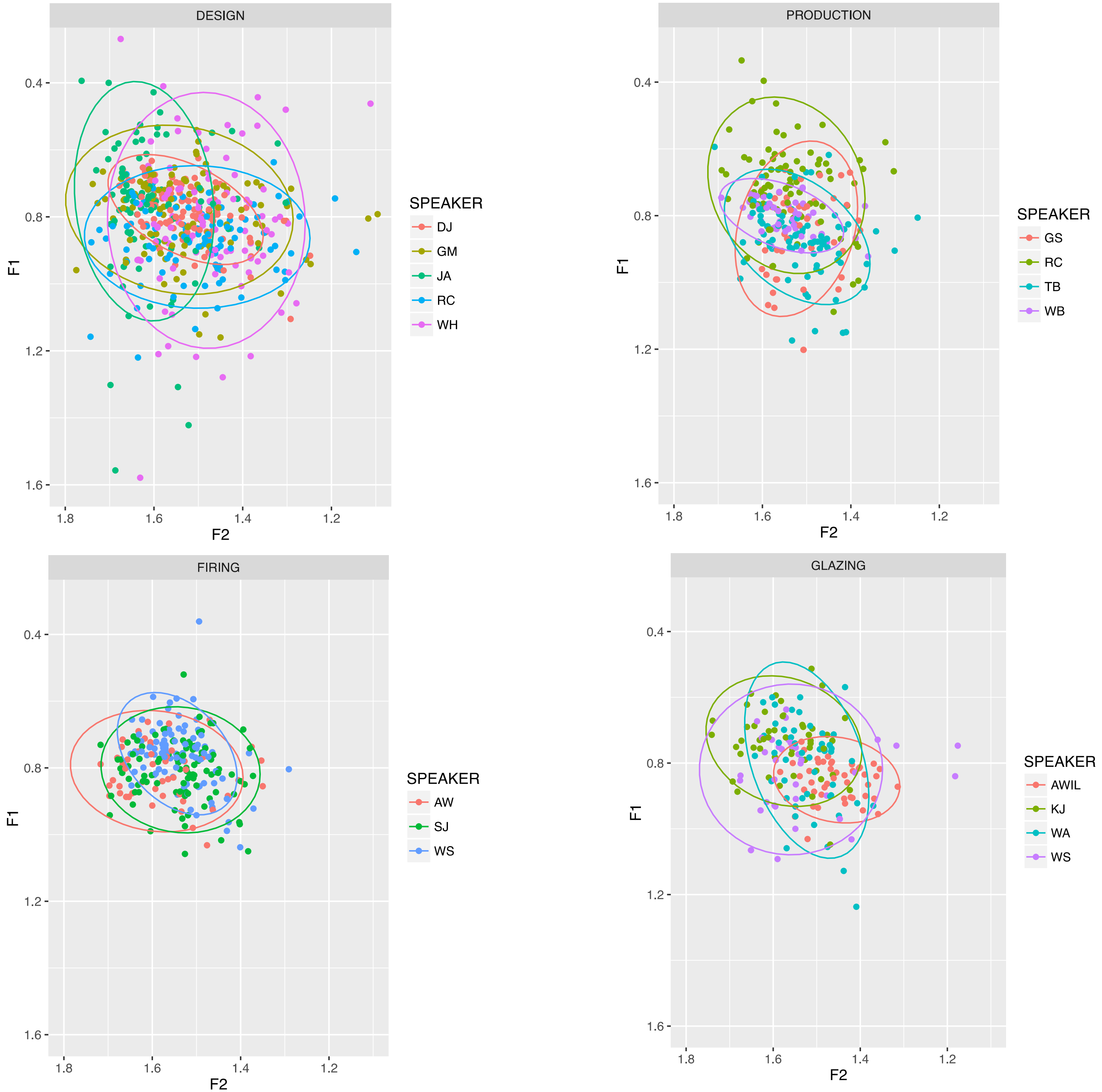


Figure 41: Scatter plot of mean (i) measurements according to speaker department

While these mean values give an indication of trends within and across the departments, the average values obscure the nuance of the actual vowel spread. While a graph demonstrating all the (i) values divided by department (as Figure 39 for gender) is too crowded to illuminate patterns further, Figure 42 shows the (i) values for each department in turn.

DEPARTMENT	# of vowels	Mean F1	Mean F2	Mean F2-F1	Median F2-F1
DESIGN	487	0.8061253	1.526906	0.7207803	0.7270
PRODUCTION	268	0.8075896	1.528325	0.7207351	0.7315
FIRING	242	0.7917686	1.544864	0.7530950	0.7745
DECORATION	411	0.7847616	1.508791	0.7240292	0.7450
GLAZING	181	0.8034972	1.521972	0.7184751	0.7280
MANAGEMENT	52	0.8075577	1.574288	0.7667308	0.7515
ADMIN	198	0.8004949	1.517338	0.7168434	0.7415

Table 22: (i) measurements according to speaker department


DESIGN
PRODUCTION
FIRING
GLAZING
F1
F2
0.4
0.8
1.2
1.6
1.8
1.6
1.4
1.2
SPEAKER
DJ
GM
JA
RC
WH
GS
RC
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WS
AWIL
KJ
WA
WS

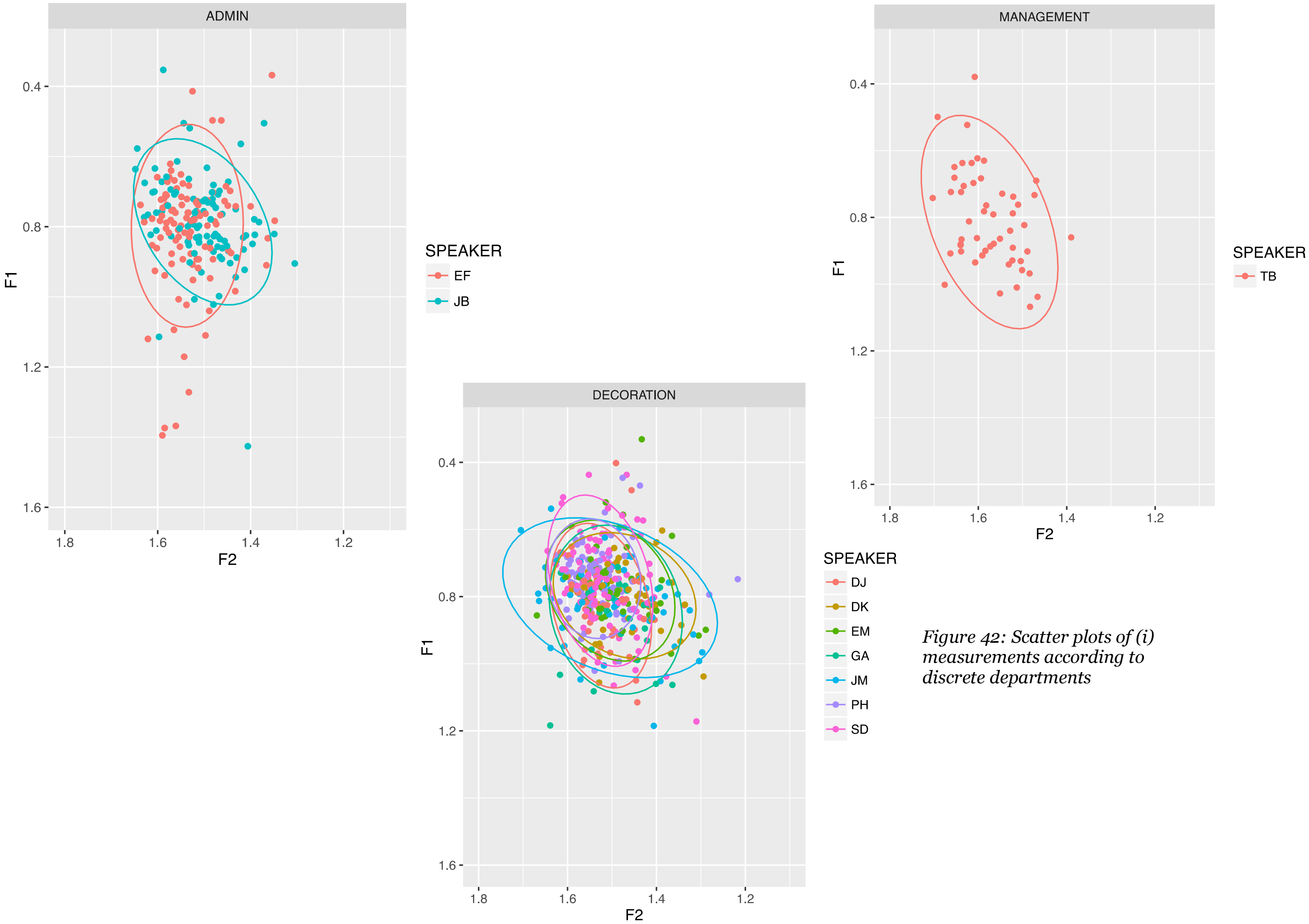

Figure 42: Scatter plots of (i) measurements according to discrete departments

Figure 42 suggests that there may be differences between the patterns in different departments which were not reflected in the statistical analysis because of the wide range of measurements analysed. The design speakers have the widest range of (i) vowel measurements, both by virtue of occupying more of the F1/F2 space than the other departments, and by the individual speakers having wider ranges (represented by the ellipses) than most other speakers. The firing speakers show the most consistent and smallest range of (i) measurements, with all three speakers' ellipses overlapping with few outliers beyond them, with the decoration and admin speakers also showing a great deal of in-group consistency. The design, production and glazing departments show much more disparity between speakers, with less overlap between the ellipses in Figure 42. These social patterns are discussed in the next section, and explored in more detail in the following chapter.

6.4.4.1 Discussion of social factors

The regression models and raw data do not show any significant correlation between (i) vowel measurements and the social categories of whether age, gender and department. While there are robust statistical results for linguistic constraints on the vowel, it appears to not be broadly socially stratified within this dataset, unlike /h/ (see Chapter 5).

Montgomery (2003) found some social stratification in the (i) vowel in tokens of it in his small dataset, with WC males using the most local [i:] variants and MC females using the most standard (ɪ). However, the dataset studied here is taken from speakers working in an environment which is, in itself, commonly perceived as a working class industry. While some speakers have more skilled or esteemed roles in the pottery industry, the main class distinction was between the factory workers and the factory owners, who were more archetypally middle or upper-middle class.

It could also be the case that the (i) vowel is not stratified according to the hierarchies of the pottery industry because it is on a lower level of linguistic awareness than /h/-dropping, which has been the subject of overt widespread stigma for several centuries (Mugglestone, 2007). The local variant of [i:] is mentioned in Gibson's (1955) analysis of the region and in Leigh's (2011) dialect literature, and by a small number of respondents to

Leach & Montgomery (2013), but it is by no means as recognised or stigmatised a feature as /h/-dropping. While the links between /h/ variation and stigmatised social characteristics means it can be used to mark local-level social distinctions in this dataset, the lack of social variation in (i) suggests it is not available for this kind of social work.

Additionally, as all speakers demonstrate relatively similar qualities of (i) in various linguistic categories, it could be the case that, this variable signals occupation within the pottery industry. It doesn't matter at what pay grade or in what role a person works, or their gender, the use of a local (i) vowel may simply signal affiliation with the pottery industry of Stoke-on-Trent.

However, despite the fact that all speakers have access to and use local (i) vowels, individual speakers do show variation in their (i) vowel quality. Figure 42 demonstrates that speakers in some departments have a small range of measurements for (i), and some departments have a much wider range.

The firing speakers have the smallest range of measurements, with all speakers using consistently similar (i) vowels with few tokens straying from their consistent patterns. The design speakers on the others hand have the broadest range of measurements, with speakers using quite varied (i) vowels, often with many outliers. It is interesting to note that the design and firing departments have the largest range of roles in the industry: the design department consists of modellers, who have advanced art degrees and design the original produce from scratch, and the mouldmakers, who use these models to manually make dozens of plaster of Paris moulds a week. The firing department consists of the fireman, who is in charge of the structure and temperature of the kiln and had one of the most highly-paid and skilled jobs in the industry, and the placers, who manually stack the ware into the kiln under the fireman's supervision.

We might, then, have expected both of these departments to have speakers with varied ranges of (i) articulations, owing to their varied roles. However, while the design department seems to reflect this variation, the firing department does not – all firing speakers have consistently similar measurements for (i). Additionally, as demonstrated by Figure 42, the firing speakers, on average, have a (i) measurement that is fronter on the F2 plane than all other speakers, and this is relatively consistent for all three members of the department featured here.

While both departments have a wide range of roles represented in this dataset, the departments differ in that the disparate roles in the firing department worked together all the time, with the placers taking direct orders from the fireman. However, the modellers were often separated from the mouldmakers, working alone in a separate studio. The consistency of interaction between the people in the firing department may account for their similar use of (i) vowels, while the lack of frequent direct communication between those who worked in the design departments may account for their lack of coherency as a group.

6.5 Summary

The results discussed in this chapter suggest that, according to the formant measurements extracted for (i) tokens in this dataset, these speakers have access to two types of variant for (i) – a more standard [ɪ] and a more local [i:]. However, there is not a binary distinction between two variants, and the realisation may be variable, and appear on a gradient between [ɪ] ~ [i:].

The raw data and statistical models show robust patterns for the linguistic conditioning of tense and lax (i) variants, which support the findings of Leach (2012) and suggest strong links to other unstressed vowel patterning in English, as discussed by Gimson (1984) and Fabricius (2002). Coarticulation, mutual compatibility and tongue dorsum engagement appear to be the most important factor in influencing (i) realisation, which has links to the words in which a tense variant is most likely to appear, and may have led to phonologisation of a tense variant in *-es* suffixes in younger speakers (Leach, 2012).

The (i) variable is not stratified by the social categories examined here (age, gender, department), which suggests it has too low a level of linguistic awareness to be used for broad social work, or is instead a linguistic indicator of shared occupation in the pottery industry itself. However, some individual speakers do have different ranges and spreads of (i) tokens, and intra-speaker patterns and their relation to topic and stance are explored in the following chapter.

Chapter Seven

Exploring social meaning, style and topic

7.1 Overview

It is common practice in variationist sociolinguistic studies of the last twenty years for researchers, having established and examined links between linguistic variables and macro (region, gender, age) and local social categories (communities of practice, social networks), to look closely at language in practice, Sociolinguists have often been able to observe meaningful micro-level variation in linguistic variables according to the topics covered in talk, shifts in style between interactions, and stances taken or affect expressed in particular interactional moments.

This chapter explores variation of this kind in the oral history archive dataset. It begins with an overview of previous related literature that establishes the framework for analysis in this chapter (§7.2). I then present evidence for topic- and style-based variation in /h/ (§7.3) and (i) (§7.4). The evidence presented for interaction-level social meanings of these variables is exploratory, relying on qualitative analysis and knowledge drawn from my understanding of the data and background knowledge of the industry. As such, observations and conclusions are tentative. The chapter concludes with an evaluation of the findings in §7.5.

7.2 Background

Language variation according to style generally covers all aspects of intra-speaker variation – that is, variation within the speech of individuals, as opposed to across individuals in a coherent group or groups. That is not to say it is unrelated to inter-speaker variation; many of the same factors which explain and model inter-speaker variation are at play in intra-speaker variation (Schilling-Estes, 2004) – for example, the variation exhibited by Eckert's (2000) observed 'burnout' community of practice reached higher levels in its most extreme members (the 'burned out burnouts'), particularly when they discussed particularly rebellious activities.

Theories of linguistic variation according to style and topic have evolved with the discipline of variationist sociolinguistics, broadly moving from conceptualising change in style as a consequence of passive, speaker-external factors to seeing style construction as a process speakers engage in to do identity work. This section outlines this evolution in a broadly chronological fashion, beginning with theories of style and Attention to Speech in §7.2.1, followed by style and Audience Design in §7.2.2 and style and Speaker Design in §7.2.3.

7.2.1 Style and Attention to Speech

In traditional and early investigations of language variation according to style, language use is frequently conceptualised as a cline between vernacular and standard, and style a cline between formal and informal, or careful and casual. Labov (1972) designed the classic sociolinguistic interview to explicitly elicit what he considered careful and casual speech, incorporating informal group talk, structured interviews, reading tasks and word lists in order to compare language elicited in different formal and informal speech styles. Labov theorised that the language observed in the most casual/informal settings is in the most vernacular style, because the speaker is paying the least attention to their speech in these settings. It follows that, in the word list and reading tasks, greater attention is paid to speech, and as such it is likely that more standard forms will be used.

This was shown to be the case in many studies, such as Labov (1972), with standard variants increasing in use in more formal, careful speech settings, in accordance with increased attention to speech. Moreover, the pattern was recursive across social groups; most groups showed the same change between styles, with the level of standard variants used overall decreasing towards the lowest social group. (However, middle-class speakers did exhibit what Labov termed a "crossover effect", using more standard features in the most formal speech styles than the group above them.) Style as Attention to Speech was thus considered to be "derivative of social class variation" (Schilling-Estes, 2004, p. 379), with intra-speaker patterns a direct reflection of inter-speaker patterns (Bell, 1984, p. 151).

The influence of topic is considered in early work on language and style, but often not in great detail. Ervin-Tripp (1964) observed Japanese-English bilingual women, the "war wives" of American men in San Francisco. Comparing them to Japanese and American English monolinguals, he noted that the bilingual women were closer linguistically to English monolinguals when discussing typically 'American' topics, and closer to Japanese monolinguals when discussing typically 'Japanese' topics (1964, p. 97).

Blom & Gumperz (1972) examined variation between standard (Bokmål) and local (Ranamål) Norwegian features, broadly observing that "meetings between friends and kin implying shared local identities must be carried on in the [local] dialect" (Blom and Gumperz, 1972, p. 476). However, in moments and conversations where both local and non-local issues were at play, the authors studied specific interactions and observed two speakers switching to standard forms when addressing (specifically, talking down to) a group outsider, as well as a speaker of standard Norwegian beginning to use local dialect features when discussing "local anecdotes" intended to "provide local colour [and] indicate humour" (Blom and Gumperz, 1972, p. 431). Both these studies demonstrate the importance of local topics to the use of local linguistic features, which may also be relevant in the oral history data examined here.

Labov (1972, p. 92) included in his sociolinguistic interviews what has become known as a 'danger of death' question, one which encourages the speaker to recount a time at which their life was in danger. Labov states that, when answering such a question, the speaker "becomes involved in the narration to the extent that…signs of emotional tension appear". This, he claims, means the true vernacular speech of the individual is revealed, as the speaker is completely unfocussed on their speech, instead absorbed by the emotional topic. Deliberately provoking this kind of response has questionable ethical implications, and has fallen somewhat out of favour in recent years; for example, Mendoza-Denton (2008, p. 224) explains how danger of death questions were highly inappropriate for the gang members she interviewed (alongside, for example, explanations of their tattoos) and such stories were only for close friends, lest the speaker risk being labelled a snitch. Nevertheless, the content of oral history interviews may involve emotional or sensitive topics by nature, and particularly sensitive moments may be a potential locus for linguistic variation to be observed.

7.2.2 Style, accommodation and audience

Critics of the Attention to Speech model have cited, among other things, the restrictions of the casual/careful and vernacular/standard dichotomies, and of the sociolinguistic interview itself, which does not capture all potential intra-speaker variation. Additionally, Giles critiqued the egocentricity of Labov's Attention to Speech model, suggesting – based on psychological underpinnings – that interaction is very frequently governed and affected by the listeners and interlocutors.

Giles' (1973) Accommodation Theory suggested that changes in language can be attributed to speakers accommodating to features and styles associated with particular addressees. Informal and casual styles then are less linked to a speaker's attention to their own speech but to the speech of others, or the social norms associated with those styles. Accommodation Theory accounted for speakers moving toward the use of a variant used by their interlocutor (convergence), but also moving away from the use of a variant as compared to an interlocutor (divergence), both maintaining focus on the effect of audience.

Findings from studies such as Trudgill (1986) and Coupland (1980) corroborated the hypotheses of Giles' Accommodation Theory. Having conducted an extensive study of his home town of Norwich, Trudgill (1986) examined his own use of local variants in his sociolinguistic interviews, finding that he used more local features when speaking to people who used high levels of local features, and vice versa. Coupland (1980) studied recordings of a travel agent based in Cardiff as she interacted with her clients. Coupland found that the subject's phonological features converged in line with those used by her clients – with speakers who used more standard features, she too increased her standard usage, and with speakers who used fewer standard features, she did likewise. This was noted as efficiency on the travel agent's part in aiding communication and building solidarity (though see below for further inspection of this study).

Giles' Accommodation Theory was based in social psychology, and evidence for it often came from speech elicited in very controlled conditions (Meyerhoff, 2006, p. 42). Bell (1984) built on the foundations of Accommodation Theory to develop the model of Audience Design, which was more directly linked to the field of sociolinguistics. Audience Design states that intra-speaker variation can be conceptualised as convergence towards or divergence away from a speaker's audience, and develops Accommodation Theory by considering variation according to both real and hypothetical audiences. Bell's model accounts for speakers adjusting their language in response to interlocutors (addressees), nearby assumed listeners (auditors), and other potential non-present, unratified listeners (overhearers, eavesdroppers and referees). This developed upon the purely-responsive Attention to Speech model to incorporate, even on a small scale, initiative variation on the part of the speaker, though always with reference to a real or imagined audience (Schilling-Estes, 2004, pp. 385–386).

Bell (1984, pp. 179–80) also considered topic effects on linguistic variables to be related to, and constrained by, his Audience Design theory. Bell stated that whilst a change in topic can encourage a style shift, this will always be in addition to and will never exceed style shift based on audience design. Bell's hypothesis states that variation according to topic is an extension of variation according to interlocutor; a presumed yet "abstract" (1984, p. 182) interlocutor, related to the topic in question, encourages associated language use. For example, topics such as work life might encourage the kind of variants appropriate when talking to a colleague or employee, while more intimate topics "elicit speech appropriate for intimate addressees" (Bell, 1984, p. 181).

Rickford and McNair-Knox (1994) showed strong influences of both interlocutor and topic on vernacular variability, the latter exceeding the former in some cases. Their interviewee, Foxy Boston, an African American woman, demonstrated higher rates of African American Vernacular English (AAVE) features such as absence of habitual *be* (e.g. “He a teacher”) and absence of –*s* agreement (e.g. “she think you don’t care”) when speaking to an African American interviewer than a white interviewer, lending support to Bell’s Audience Design theory. However, the authors (1994, p. 258) also found that Boston’s shift in use of AAVE variables was often larger between topics in the same interview than between interviews, and this was consistent regardless of the ethnicity of the interlocutor.

Rickford and McNair-Knox highlight a specific topic shift between conversations about Boston’s college and career plans to her peers’ relationship drama (1994, p. 261). Examining these passages in detail, they observe that, when talking about college and her career, Boston uses “a relatively detached information-presenting style, the kind that one might use when talking to a teacher or stranger”, characterised by an absence of reported speech, absence of invariant habitual ‘be’ and low zero copula rates. However, when talking about relationship drama, Rickford and McNair-Knox note that Boston becomes “extremely animated and involved, frequently quoting the remarks of real and hypothetical teenagers”, and produces far more tokens of invariant habitual *be*. The shift in topic does not only influence the content of the talk, but the types of constructions used and the speaker’s investment in and performance of the topic. Rather than speaking to Bell’s hypothesised imagined audience of her peers in the relationship drama talk, Rickford and McNair-Knox show that she is “dramatically re-enacting the speech *of* teenagers” (1994, p. 261, emphasis orginal), which appears to influence her use of AAVE features. Additionally, her change from a more informative communication purpose in talking about college to a more affective and involved one when talking about relationship drama suggests variation may not just be influenced by topic alone, but by a speaker’s engagement with or stance towards/away from the topic in question.

Several linguistic researchers have found a correlation between occupational topics and vernacular variability. Douglas-Cowie (1978) observed rural Northern Irish speakers in various speech contexts and with insider and outsider interlocutors. Several speakers shifted to a more standard linguistic style when discussing work topics (as well as education), which Douglas-Cowie attributes to them being "reminded of the values associated with the work situation and adjust[ing] their linguistic behaviour accordingly", switching to the formal styles that are expected of them in the workplace (Douglas-Cowie, 1978, p. 44). However, one speaker shifted towards a less standard linguistic style when talking about his occupation. This particular speaker was a farmer, and Douglas-Cowie notes his humility, dismissal of the role and lack of social ambition, linking his shift towards non-standard features in work topics to his "base image of this occupation" (Douglas-Cowie, 1978, p. 46).

Coupland (1980, 1981) also included analysis and discussion of topic changes in his analysis of the Cardiff travel agent, broadly dividing work and non-work topics and investigating these alongside audience and communication channel. In the speaker's casual, non-work speech she used more local Cardiff variants than in her more formal, work speech, which was usually used to address clients rather than co-workers (Coupland, 1980, p. 7). However, Coupland also notes the restrictions of topic as a motivator of style shifting. Having played the speaker's extracts to various listeners and asked them to note perceived shifts in style, several listeners categorised shifts mid-topic. Coupland notes that these perceived changes in style often correlated with a change in the role of the speaker during the interaction (from dominant to submissive) or the evaluative stance of the speaker (from unhelpful to encouraging). Coupland suggests that, through these examples, "[w]e are beginning to see the dynamic potential of style-shifting, where manipulation of style carries social meaning and contributes to the speaker's control and the hearer's interpretation of the encounter" (1980, p. 11), suggesting a more nuanced view of style-shifting than has been pursued in more contemporary research.

7.2.3 Style and Speaker Design

A major criticism of both the Attention to Speech and Audience Design models is that they are responsive; speakers react to changes in speech setting and/or audience. In a responsive model, the speaker is passive, rather than agentively negotiating their position in interactions. The Speaker Design model (so termed by Schilling-Estes, 2004) offers an alternative, framing language variation according to style as a means by which individuals both utilise and construct social meanings in interaction. Speaker Design finds its foundations in social constructionist theories, in which language and society are considered "co-constitutive" – language use is reflective of but also shapes societal orders and relationships in discourse (Silverstein, 2003).

Linguistically, through selection, avoidance and combination of variables, speakers may use extant social meanings associated with particular variables to index and create new styles and social meanings in talk. Silverstein's (1976) theory of indexicality is commonly employed in Speaker Design research because it frames how meanings come to be associated with variables. His theory states that a linguistic feature is correlated with a social meaning or group, creating an n-th order indexical link between the two. This n-th order link is then ideologically reinterpreted by the speaker or hearer, linking it to a further social meaning and creating an n+1st order indexical link. This n+1st order link can either work alongside the n-th order link or supplant it, making it available for further n+1st order indexicalities to be created. The relationship between the n-th order and n+1st order indexical links is not linear or hierarchical, and an n+1st order indexical link may always be "latently present and in competition with the n-th order" (Kirkham, 2013, p. 33).

The Speaker Design model developed alongside evolving methods in sociolinguistics. Research that uses a Speaker Design framework has frequently incorporated ethnographic methodologies, in studies such as those by Mendoza-Denton (1997), Schilling-Estes (1999), Eckert (2000), Bucholtz (1999), Kiesling (1998), Moore (2010), Kirkham (2013) and Gates (2017), among others. Researchers spend extended periods of time (sometimes years) observing and embedding themselves within a community, to enable them to both deeply understand its social relations and mitigate their status as an outsider when acquiring recordings.

Speaker Design studies are frequently interested in the combination of various linguistic features rather than features in isolation, conceptualising style as “a socially meaningful clustering of features within and across linguistic levels and modalities” (Campbell-Kibler et al., 2006). Alongside segmental phonological and morphosyntactic variables, researchers such as Mendoza-Denton (1997) and Podesva (2007) have examined discursive, pragmatic and suprasegmental variables in style variation. Moreover, linguistic style is frequently considered alongside other aspects of personal style such as dress, cultural practices and media consumption (e.g. Eckert (2000) and Mendoza-Denton (1997)).

Speaker Design research also moves beyond the idea that certain linguistic variants belong to certain social groups. Studies examine the social meaning of variables in interaction – how a speaker uses a variant and its concurrent social meanings to replicate indexical values in a locally-meaningful way in a specific instance, or to create new meanings. Speaker Design studies posit that linguistic variables are “associated not with … categories themselves, but with stances and characteristics that constitute those categories” (Eckert, 2008, p. 453).

As well as aggregating variation of linguistic tokens across and within styles, Speaker Design studies often analyse a small number of tokens in specific detail in order to understand the function of a particular variant in a specific interactional moment. For example, Mendoza-Denton (1997) examines discourse markers used by Latina girl gangs, and Kirkham (2013) examines phonetic variation among ethnically-distinctive communities of practice in a Sheffield high school. These interaction-level stylistic moves ultimately “connect the linguistic sign systematically to the political economy and more specifically to the demographic categories that both emerge from and constrain local practice” (Eckert, 2008, p. 456). As such, “the use of a variable is not simply an invocation of a pre-existing indexical value but an indexical claim which may either invoke a pre-existing value or stake a claim to a new value” (Eckert, 2008, p. 464).

Bucholtz and Hall (2005) and Coupland (2007) conceptualised different levels of social meaning in order to illuminate how social meaning can be invoked at both the discourse level as well as at the macro social level. These levels have been codified in various ways across previous research, and the labels I have opted to use in this chapter are summarised as follows. A particular linguistic variable may be associated with a stance taken by the speaker in a particular interactional moment or stretch of talk. This may involve alignment with or against a particular person, group, ideal or activity, and, when linked to emotion, these alignments have also been conceptualised as 'affect' by Eckert (2010). Repeated instantiations of a stance can accrue into a persona, a locally salient social category reflective of behaviours including and outside of the single linguistic variable under examination. Personae may map on to certain social types, recognisable macro-social categories with broad applications (Moore et al., 2009). The collection of all these potential social meanings associated with a variable at different levels is known as its indexical field (Eckert, 2008).

For example, in Eckert's (2000) study of Belten High School, certain speakers used more negative concord than others, particularly when expressing a positive stance towards rebellious and antisocial behaviours. This, along with other linguistic and non-linguistic features, contributed to the locally-salient "burnout" persona, which in turn was broadly linked to being working class: a social type. In Podesva's (2007) analysis, Heath's increased use of falsetto at a friend's barbecue was linked to expressive, excitable and image-conscious stances, contributing to a diva persona which itself was linked to, but not solely reflective of, his social type of gay man. The combination of these social meanings represents the indexical field for each variable.

Several Speaker Design studies have explored correlations between shifts in topic and patterns of variation and considered how this contributes to the construction of personae by speakers in specific discourse moments, and the impact of these findings on exemplar theory and episodic memory.

In investigating rhoticity in New York's Lower East Side, Becker (2009) observes systematic and statistically significant variation between higher levels of rhoticity for non-neighbourhood topics (such as food, religion and schooling) and lower levels of rhoticity for topics relating to the Lower East Side specifically (housing, changes in the neighbourhood, etc.). This change is observed in specific interactional moments, where speakers with higher levels of rhoticity overall become particularly non-rhotic when discussing the neighbourhood, and across sociolinguistic interviews, where the patterns holds across the entire interview content (Becker, 2009, pp. 650–651). Because non-rhoticity is the localised variant, Becker considers its increased use in neighbourhood topics to be part of the creation of an authentic Lower East Side persona, with the speakers "actively engaged in meaning making" (Becker, 2009, p. 651) when they shift towards non-rhotic use in neighbourhood topics within interview speech.

In observing the language used by young males in Glasgow, Lawson (2009) noted that a retracted /æ/ vowel was common in those who identified or were identified as 'neds' – those who engaged in anti-social behaviour, among other things. Lawson also observed that this variable was more common when these young males spoke about violence than in other topics.

Love and Walker (2012) observed increased rhoticity (via F3 lowering/raising) in British and American speakers when they talked about American football as compared to English soccer. While shifts were small, they were statistically significant, and showed interesting interactions between task (American English speakers shifted more during an elicitation task, suggesting sensitivity to particular lexical items, whereas British speakers showed a broader overall shift), exposure (those who had more exposure to both dialects showed more shifting) and affiliation (British speakers who were fans of both sports showed more topic shift than those who were fans of soccer alone). These interactions led to Love and Walker (2012, p. 14) suggesting that "this may be further evidence that in order to observe a topic shift, participants must have different topic-associated identities to switch between".

While the previous studies have demonstrated general shifts in articulation based on topic, some have highlighted that topic shift may be very context-dependent. Traditional prevocalic /r/ in New Zealand English was observed by Gordon et al. (2004) to appear more frequently in topics surrounding mining and farming, which index 'settler lifestyle'. However, on further investigation, Gordon et al. (2004, p. 281) discovered that instead of a generalised shift towards rhotic realisations during discussions of farming and mining, it was specific mining and farming terminology which were realised with rhoticity, regardless of topic. When speakers talked about traditional topics, specific terminology was realised with rhoticity 87.5% of the time while the rate was only 8.3% for non-specific terminology. This suggested a lexical effect related to topic, but not dictated by topic alone.

As outlined in §2.6, research by Devlin (2016, 2014) has observed both generalised and lexicalised topic shifts in the speech of East Durham coal miners. While all speakers used more traditional variants of MOUTH and START vowels when talking about mining, suggesting "exposure to the mining dialect is more important than speaker identity in terms of these vowels", only ex-miners used more traditional variants of FACE and GOAT when discussing mining topics, suggesting that "in terms of the variants with a long time-depth, speaker identity is a crucial factor in conditioning topic shift" (Devlin, 2014, p. 241). Devlin links this to the exemplars stored in the memories of ex-miners relating to specific historical topics.

An exemplar theoretic account of sound variation states that, as well as generalised information, fine-grained phonetic and social information from variation experienced throughout a speaker's life is stored and can be retrieved (Pierrehumbert, 2002). This is relevant for topic shift as, if a speaker heard more instances of a certain variable in their early life and/or while engaged in a particular cultural practice or employment, "this traditional pronunciation might be preserved or stored in speaker memories to be reactivated with the trigger of a traditional conversation topic" (Devlin, 2014, p. 234). Hay and Foulkes (2016) extend this theory to consider the effect of episodic memory. Episodic memory is the recalling of specific past events, in contrast to broader, generalised memories from the past, "broadly speaking, what is 'remembered' versus what is 'known' about the past" (Hay and Foulkes, 2016, p. 33). They suggest that topic influence on speech may be the result of triggering episodic memories grounded in specific places, times and experiences, which in turn trigger exemplars associated with these times.

As mentioned in §7.1, the remainder of this chapter presents an analysis of style and topic variation in /h/ and (i) tokens in the oral history archive dataset. This analysis is exploratory and conclusions are tentative, but I have endeavoured to ground any observations in the existing language and style methods and theory presented in §7.2.1-7.2.3.

7.2.4 Framework for analysis

As this project used an extant oral history archive, my analysis was necessarily restricted by its pre-existing structure. The archive interviewer's process was to begin with an interviewee's early childhood life and pursue questions about schooling, family life, the local neighbourhood and related topics. Talk about the pottery industry and the interviewee's role was usually exclusively covered in a separate interview. This created a natural topic divide between work and non-work (or 'home') topics in separate interviews for half of the speakers in the dataset (see §3.2.4), which I was able to carry over into the analysis presented in this chapter. This, in turn, allowed me to ground my findings on the previous research of, for example, Douglas-Cowie (1978), Coupland (1981), Gordon at al. (2004) and Devlin (2014), who all observed style shifting between work and non-work topics. However, if the speaker was more reticent in their non-work topics, the interviewer pursued work topics in the first (and often only) interview, often interweaving work and non-work topics. As the topics were often indiscriminate and were not divided as for speakers with multiple interviews, I did not pursue analysis of a broad home/work topic distinction in the other half of the speakers in the dataset.

Additionally, while coding my tokens according to broad (home/work) and narrow, emergent topics, following Hay & Foulkes (2016), I also coded each token for whether it appeared in a specific or generalised memory (see §7.2.3). According to their exemplar theoretic account of topic variation, tokens recounted in a specific memory of the past may trigger the use of a specific local exemplar.

Not all speakers were analysed in qualitative detail. The analysis of /h/ variation presented in Chapter 5 concluded by noting several outlying speakers. These speakers were ideal candidates for further exploration; as near-categorical /h/-dropping was the norm for most of the speakers in the dataset (see §5.4.1), speakers with variable /h/ usage showed potential for stylistic work. In §7.3 I explore the specific instances of retained and dropped /h/ throughout their interviews.

The analysis of (i) variation presented in Chapter 6 concluded with little distinction between speakers' patterns of use: speakers across the dataset used variable realisations of the (i) vowel, mostly constrained by linguistic context. However, some speakers had a wider range of measurements than others, and it is these speakers who are explored in detail in §7.4. Following Podesva (2008) and Kirkham (2013), I sought out and analysed the most acoustically extreme tokens of (i) for these speakers. For each speaker, I isolated the five tokens of (i) with the highest F2-F1 score (representing the acoustically tensest tokens) and the five tokens with the highest F2 score (representing the acoustically frontest tokens, as the F2 plane seemed to be the most salient for intra-speaker variation, see §7.4). These ten tokens, approximately 10% of the speakers' overall spread, represented the tensest (i) vowels used by each speaker. I also isolated the five tokens with the lowest F2-F1 and F2 scores, representing the acoustically laxest and backest (i) tokens for each speaker. These tokens were the ones analysed in detail for correlations with topic and stance.

Naturally, tokens may be affected by linguistic factors (particularly (i) tokens, as demonstrated in Chapter 6), but as §7.4 shows, tensest and laxest tokens were observed across a variety of linguistic contexts. Additionally, not all acoustically extreme tokens are clearly linked (according to my own interpretation) with explicit social meaning in interaction, but I endeavour to explore all potential meanings of all tokens in as much detail as possible.

The analysis presented in this section is grounded in Silverstein's theory of indexicality (1976, 2003), follows Bucholtz and Hall (2005) and Coupland (2007) in categorising levels of social meaning into stance, persona and social type, and uses Eckert's (2008) framework of the indexical field to bring together the social meanings explored for each variable. I explore intra-speaker variation in this dataset according to all three main theories of language and style detailed in §7.2.1-7.2.3, as from my analysis it became clear that all were relevant at different junctures. In the speech of outliers in relatively homogenous occupational groups, Attention to Speech theory provided the best explanatory framework (see §7.3.2), whereas in more atypical occupational groups (those singled out in §5.4.3.1 and §6.4.4.1), such as design and administration, Speaker Design research provided the nuanced techniques required to interpret potential social meanings of variant use (see §7.3.5).

Additionally, as theories of language and style (Speaker Design in particular) are still being expanded upon and developed, the analysis presented in the following sections also moves beyond current frameworks to discuss aspects of language and style variation observed in this dataset which may not yet be fully explained by the extant literature – in particular, style variation according to emotional topics (see §7.3.6).

7.3 /h/ variation according to style and topic

This section analyses intra-speaker patterns of /h/ variation, linking them to theories of language and style. The section begins with an overview of the whole dataset, which singles out speakers with anomalous patterns of /h/ use compared to their peers (§7.3.1). The subsequent sections examine patterns of use by individual speakers in interactional moments according to style and topic (§7.3.2-7.3.4).

7.3.1 Overview

The overall average level of /h/-dropping in this dataset is 76%. Nineteen of the twenty-six speakers analysed have higher than average (over 78%) /h/-dropping, with three speakers (Firing_AW, Glazing_KJ and Production _WB) having 100%. These figures, and the previous literature on Stoke-on-Trent (Leach and Montgomery, 2013; Leigh, 2011; Orton and Barry, 1970; see §2.4 for details), suggest a high level of /h/-dropping is standard in Stoke-on-Trent.

However, there are seven speakers in this dataset with lower than average levels of /h/-dropping. Two speakers have a middle-range level, Production RC with 49% and Admin EF with 59%, while the remaining five (Admin_EF, Admin_JB, Decoration_DJ, Design_RC, Design_WH, Management_TB and Production_RC) all have levels of /h/-dropping below 35%, with the lowest – speaker Design WH – having just 16% /h/-dropping.

Figure 43 shows the rates of /h/-dropping according to open vs. closed class words for each speaker in the dataset. Of those with high levels of /h/-dropping overall (>78%), if variability is demonstrated between word classes, more /h/-dropping is seen in closed class words and very small levels of /h/-retention occurs in open class words. Considering the fact that open class words are generally shown to be less susceptible to /h/-dropping, due to their status as 'content' words and increased likelihood of being polysyllabic and stressed (Wells, 1982b, p. 254), it is unsurprising to see some small levels of /h/-retention in open class tokens even in speakers with high levels of /h/-dropping overall.

Figure 43: Level of /h/-dropping in individual speakers according to word class

However, in the speakers with lower levels of /h/-dropping overall – Admin_EF, Admin_JB, Decoration_DJ, Design_RC, Design_WH, Management_TB and Production_RC – it is not the case that /h/-retention is restricted or focussed on open class words. Several of these speakers have high /h/-retention in closed class words, with Design_WH, at 63%, showing the highest level. Retaining /h/ in such tokens has been suggested to be an affect of the hyper-sensitivity of middle-class speakers (Wells, 1982b, p. 254). While the speakers in this dataset are broadly working class, the use of /h/ in closed class tokens by the seven named speakers above is perhaps motivated, if not by "genteel anxiety", then by some other social factor. (Linguistic factors such as preceding segment and syllable stress may still have an effect, but the likelihood of linguistic factors being responsible for such a large

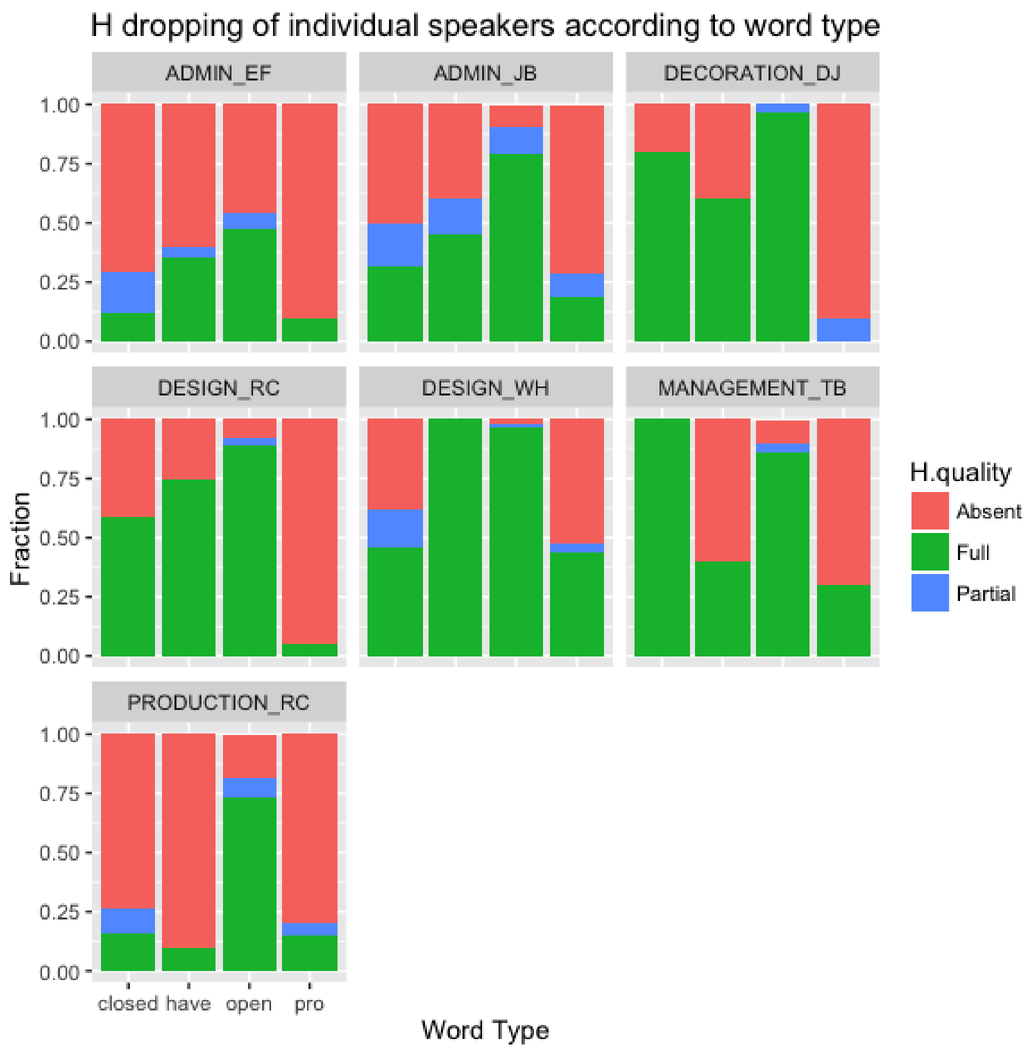

Figure 44: Level of /h/-dropping by word type for 7 intermediate speakers

difference between speakers is relatively small, as we can expect a spread of linguistic contexts in the speech of all interviewees.) For these seven speakers with more variable levels of /h/-dropping, it is possible that the variable is available for social and stylistic work.

Figure 44 focuses on the seven named speakers with particularly low levels of /h/-dropping, demonstrating the use of /h/ across all open and closed class word types. As mentioned in §5.4.3, the lower /h/-dropping levels for the administrators (Admin_EF and_JB), manager (Management_TB) and modellers (Design_RC and_WH) are perhaps linked to their roles in the industry, which involved working away from the factory floor in less manual jobs with more interaction with management and factory owners. The lack of consistent reinforcement of /h/-dropping from factory floor workers (who we may predict, based on this dataset, have higher levels of /h/-dropping), alongside a potential pressure to use more standard variants when interacting with management or customers, may encourage these five speakers to have lower /h/-drop levels overall. Indeed, the fact that /h/-retention is also frequently apparent in their closed class words suggests attention to this variable goes beyond mechanical dropping of /h/ in favourable contexts, and the speakers are sensitive to social meanings linked to /h/ retention.

However, for speakers Decoration_DJ and Production_RC, their job roles do not differ from that of their departmental peers, and both involve a factory-floor manual job. As such, they may not be subject to the same social or professional pressure as the other five speakers. The following section explores these two speakers and investigates reasons behind their anomalous levels of /h/-dropping as compared to their departmental peers.

7.3.2 /h/ and Attention to Speech

Speaker Decoration_DJ, as demonstrated in Figure 44, has categorical /h/-retention in open class words, high levels of /h/-retention in tokens of ‘have’ and other closed class words and near-categorical /h/-dropping in pronouns. This makes her very distinct from her decoration peers; she has only 29% /h/-dropping, and all other decoration speakers have >78%. In fact, she has a higher level of /h/-retention than the administration speakers, despite her role not including the likely social pressures that theirs do. Listening to this sound file, this speaker is particularly conscious of the recording situation and, as such, pays attention to her speech in the Labovian (1972) sense. This may explain her frequent retention of full /h/.

The following is an excerpt of DJ's interview, the first exchange she has with VM, the interviewer. I have transcribed the extract orthographically, and included phonetic notation for her articulations of [h] and Ø for instances of /h/-dropping. Articulations of word-final /t/ and the PRICE vowels in the tokens of <my> are also shown, as they vary between full and reduced forms. This notation aids the subsequent discussion.

Extract 1: Decoration_DJ date of birth

VM: Can I just start off by asking you your date of birth and where you were born?

DJ: I was born on eleventh of November 1935 and er I was born a[t] the Lyme's [h]ospital

VM: Where did you live at the time?

DJ: Erm, I believe m[aɪ] parents were living at Mount Pleasan[t] in a little fla[t], and then after tha[ʔ] they moved because it wasn't very convenient with the stairs and the pushchair so they moved to a little terraced [h]ouse at [h]eron Cross

VM: Do you remember the [h]ouse at [h]eron Cross very well?

DJ: Oh very well, yes [a] do, very well

VM: Could you describe it for me, let's say you're walking in through the front door

DJ: Er, from the front, yes, [aɪ] remember very well th[iː] red steps at the front which me mum used to redden, you know – [whisper] oh I've got tha[ʔ] wrong Øaven't [a], I'm sorry, they were whi[t]e steps, with the step stone, sorry about tha[t]

Of the nine women interviewed in the dataset, eight interviews start with VM asking explicitly for the interviewee's date of birth. Seven of the eight women respond with a date alone; DJ is the only speaker to respond using a full sentence starting "I was born…" (line 3). She then repeats this phrase to introduce where she was born, despite combining the two responses in the same utterance – the phrase could have been elided without losing the sense of the utterance. This is the first of many examples of DJ appearing to favour responding in full sentences to the interviewer's questions, suggesting she is paying particular attention to the interview setting, her own speech and the way she is presented.

In this opening utterance (line 3-4) and the one that follows (line 6-9), DJ articulates 3 tokens of /h/ with full [h]. She also, in the same utterances, articulates three tokens of word-final /t/ as full [t] (and one as glottal [ʔ]) as well as a token of <my> as full [maɪ], as opposed to [ma], which is consistently found for tokens of <my> in DJ's and others' speech. The clustering of these standard variants (full [h], non-glottal /t/ and diphthongal PRICE) in this speaker's full-sentence responses suggests DJ is paying attention to her speech and is aware of the recorded interview setting.

This suggestion is reinforced by the combination of non-standard features in DJ's aside in line 15-16, "oh I've got tha[ʔ] wrong Øaven't [a]", which expresses a mistake. In continuous speech, asides and parentheticals "are often marked out linguistically", potentially due to the "secondary status of, and thus reduced attention to, the parenthetical with respect to the speaker's overall attention to their main point" (Local, 1992; Sharma, 2018, p. 13). Sharma (2018), for example, demonstrates evidence of a speaker diverting from a consistent American English style to his native and vernacular Indian English style during asides.

In DJ's case, the aside is articulated in a whispered/breathy voice quality that differs from the assured, full-voice of her previous answers, reflecting a change from her structured statements to a less-rehearsed utterance. Within this short utterance, DJ drops the /h/ in <haven't>, uses a glottal plosive for word-final /t/ and a short, monophthongal [a] for PRICE. This moment of self-correction may reflect DJ breaking from her more attentive responses into unselfconscious speech, which coincides with three non-standard variables in quick succession. This is followed by a reversion to modal voice in the following phrase (lines 16-17), and two fully-articulated tokens of /t/, as she refocuses her attention on the interview situation once more.

Once again, this lends support to this speaker being particularly sensitive to the recording context in which she is placed and her own speech, particularly as she returns to full sentences and standard variants immediately after the aside. This attention to her recording situation is maintained throughout her interview, which may influence her particularly low levels of /h/-dropping. While this speaker maintains a high level of /h/-retention in tokens of *have* and other closed class words, she does have near-categorical /h/-dropping in pronouns. However, the majority of her pronouns appear in stretches of particularly emotional talk, which appears to affect their /h/ articulation. This is explored further in §7.3.6.

Like Decoration_DJ, Production_RC has anomalously low levels of /h/-dropping as compared to his occupational peers, with 49% /h/-dropping compared to 92%, 96% and 100% from the other production staff in the dataset. However, unlike Decoration_DJ, his /h/-retention is concentrated on open class words, and he has near-categorical /h/-dropping in all closed class word types. In this respect, he has what may be considered as a classic /h/-dropping pattern, in that /h/ is mostly dropped on grammatical words – Wells (1982b) suggests that only elision in open class words counts as /h/-dropping proper.

However, there may still be some effect of attention to speech, and attention to the recording situation, that contributes to his retention of /h/ in open class words (and some closed class). Throughout Production RC's hour of interview content, the interviewer asks him 12 questions; the rest of the time is filled with continuous unprompted stories and anecdotes from his life. For comparison, Decoration_DJ is asked 65 questions over her hour of interview. Production_RC is very forthcoming with stories from his life, which he retells in a somewhat theatrical manner. While he doesn't appear to have the same need to assert knowledge or authority as Design_RC (see §7.3.5), he does appear conscious of his position as reminiscer and storyteller. One such anecdote is below:

Extract 2: Production_RC hospital

RC: but when I was one er (.) we were down in Northwood Park (.) and I got a kick to me left leg (.) which was nothing at the time but (.) started to swell up (.) well in them days you didn't need appointments to go doctors or anywhere so my mother took me down the doctors and ∅e said "oh it's nothing to worry about (.) it'll [h]eal" (1) and (.) that was that but it swelled up more (.) and me mother became concerned and she took me back down the doctors and [h]e said "I've told you before it'll [h]eal it's nothing to worry about" (.) and I was two then (.) so mother was not satisfied so she took me to the [h]ospital [intermediate conversation elided] and ∅e diagnosed me as ∅aving a diseased bone (.) which was called a TB bone in them days (.) and I was taken into [h]ospital when I was two and I came out when I was five

This section demonstrates the kind of personal, anecdotal stories that Production_RC tells in his interview, often with a very wide intonational range and multiple instances of direct speech, and in this case building up to a dramatic reveal. This consistent tone is reflective of attention to speech and the interview situation. For Decoration_DJ, this comes across as ensuring she speaks 'correctly', while for Production_RC it comes across as ensuring he is a captivating interviewee. For both speakers, this appears to correlate with increased presence of full /h/, and as full /h/ is the standard variant their patterns appear to reflect Labov's (1972) theory of increased attention to speech being associated with more standard language use.

7.3.3 Broad patterns of /h/ and topic

I have observed so far likely links between Decoration_DJ and Production_RC's anomalously low levels of /h/-dropping and their attention to speech and awareness of the recording situation. I have previously observed that the five other speakers with lower levels of /h/-dropping – Admin_EF, Admin_JB, Design_RC, Design_WH and Management TB – likely have these levels because of the demands and expectations of their jobs and their frequent interactions with senior management. This section illuminates this further using topic data.

The logistic regression models run on the /h/ data and explained in full in §6.4 highlighted an overall significant link between whether a token appeared in an utterance that recounted a specific memory, or a generalised recollection. The results suggested that specific memories favoured more /h/-dropping, as is displayed by the raw data in Figure 45 – generalised topics had 71% /h/-dropping, whereas specific topics had 85% /h/-dropping. Following Hay & Foulkes' (2016) suggestion that tokens in specific memories may be representative of exemplars stored at the time of the event being recalled, this could suggest a link between /h/-dropping and past historical events for the speakers in this dataset.

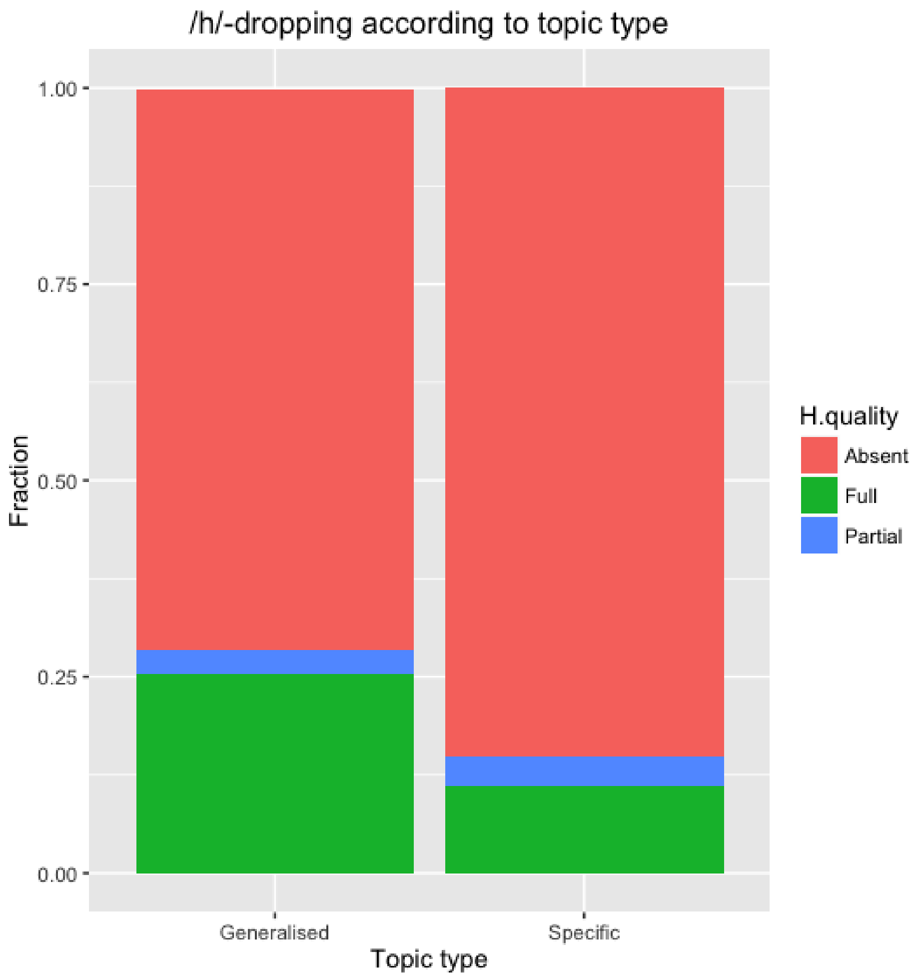

Figure 45: Level of /h/-dropping according to specific vs. generalised topics

With the exception of Management_TB, the four other anomalous speakers all have half an hour of interview data dedicated to work topics, and half to non-work or 'home' topics. This allows for an exploration into whether this variable shifts stylistically in line with talk about occupation, which was shown to be the case for work and non-work topics by Douglas Cowie (1978), Coupland (1981), Gordon et al. (2004) and Devlin (2014).

Figure 46 shows that for Admin_EF, Admin_JB and Design_RC there is a higher level of /h/-retention in work-based topics than home-based topics. Admin_EF shifts from 29% /h/-retention in non-work topics to 38% /h/-retention in work topics; Admin_JB shifts from 48% /h/-retention in non-work topics to 60% /h/-retention in work topics; and Design RC shifts from 56% /h/-retention in non-work topics to 78% /h/-retention in work topics. Design_WH shows a small shift in the reverse direction, shifting from 84% /h/-retention in non-work topics to 76% /h/-retention in work topics.

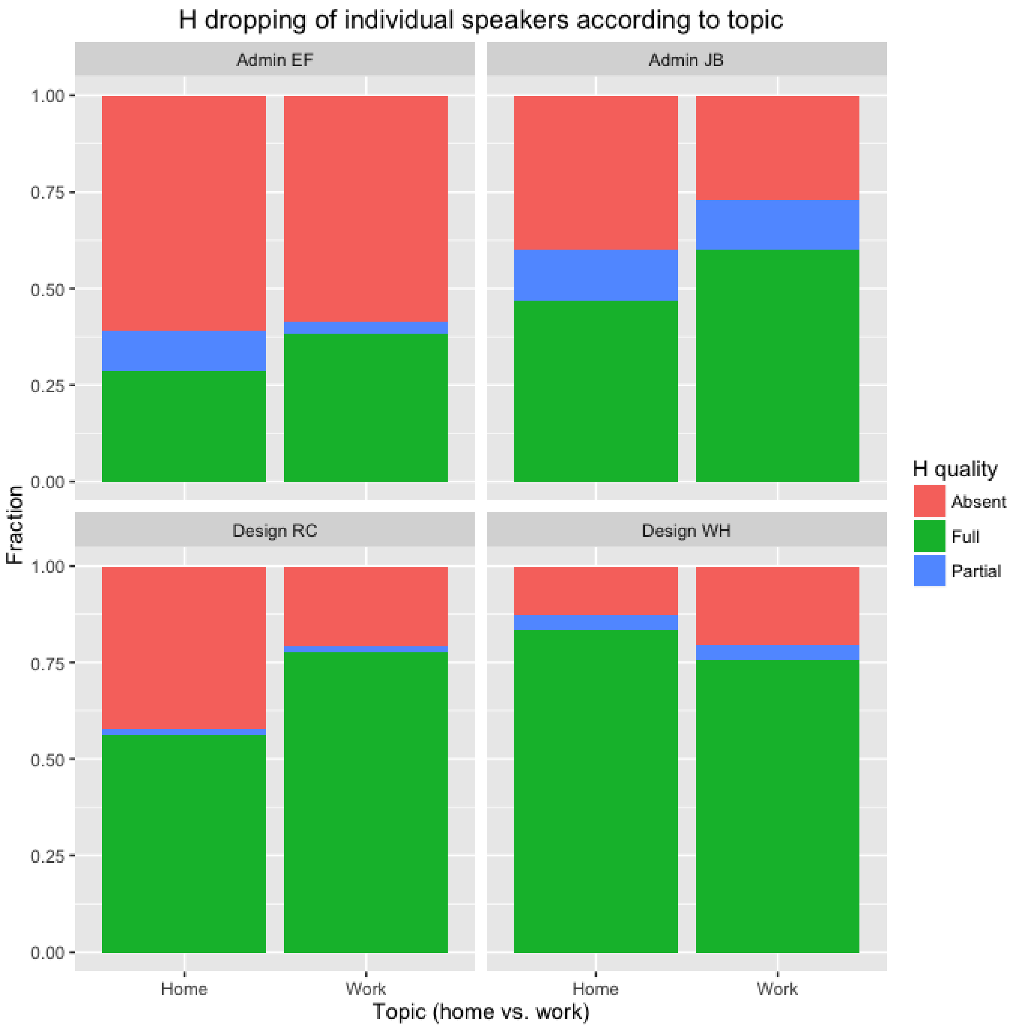

Figure 46: Level of /h/-dropping in speakers Admin_EF, Admin_JB, Design_RC and Design_WH, according to home vs. work topics

These speakers' work-based talk in particular is more likely to be associated with /h/-fullness. The indexical link between manual, working class activity and /h/-dropping (Mugglestone, 2007) may be less apparent for these speakers, as they hold less typical working class roles. By working away from the factory floor, they are likely to have been less exposed to higher levels of /h/-dropping in their work environment. Their frequent interaction with management (all four speakers) and customers (administration speakers only) may bring an expectation of more standard language use, and exposure to /h/-fullness from senior management (who may have been privately educated and/or non-local, as is the case for the other management speaker in the oral history archive, see §3.4).

All of this may encourage more /h/-fullness in their work topics. I interrogate these patterns in the following sections, examining each speaker in detail, and using interactional extracts to illuminate the potential social meanings of /h/.

7.3.4 Audience-related /h/ style shifting

Speakers Admin_EF and Admin_JB both show a shift towards more /h/-retention in work topics compared to home topics. This section explores these topic shifts for each speaker according to word type, and examines some examples in order to illuminate how the particular demands of their roles may affect their variable /h/ usage.

Figure 47 shows Admin_EF's topic shift in more detail, incorporating information about the contexts in which /h/ is dropped and retained. Admin_EF shows a small shift in /h/-retention overall between home and work topics (9%), and Figure 47 demonstrates that this shift is concentrated on the open class words and tokens of *have* – open class words rise slightly from 41% to 53% /h/-retention, while *have* tokens rise from 20% /h/-retention to 50%. While a shift is evident, the numbers are quite small. There are ten tokens of *have* in each interview, 2/10 with full /h/ in home topics and 5/10 with full /h/ in work topics. Additionally, in Admin_EF's open class words, the number of dropped /h/s is consistent across topics; the change in

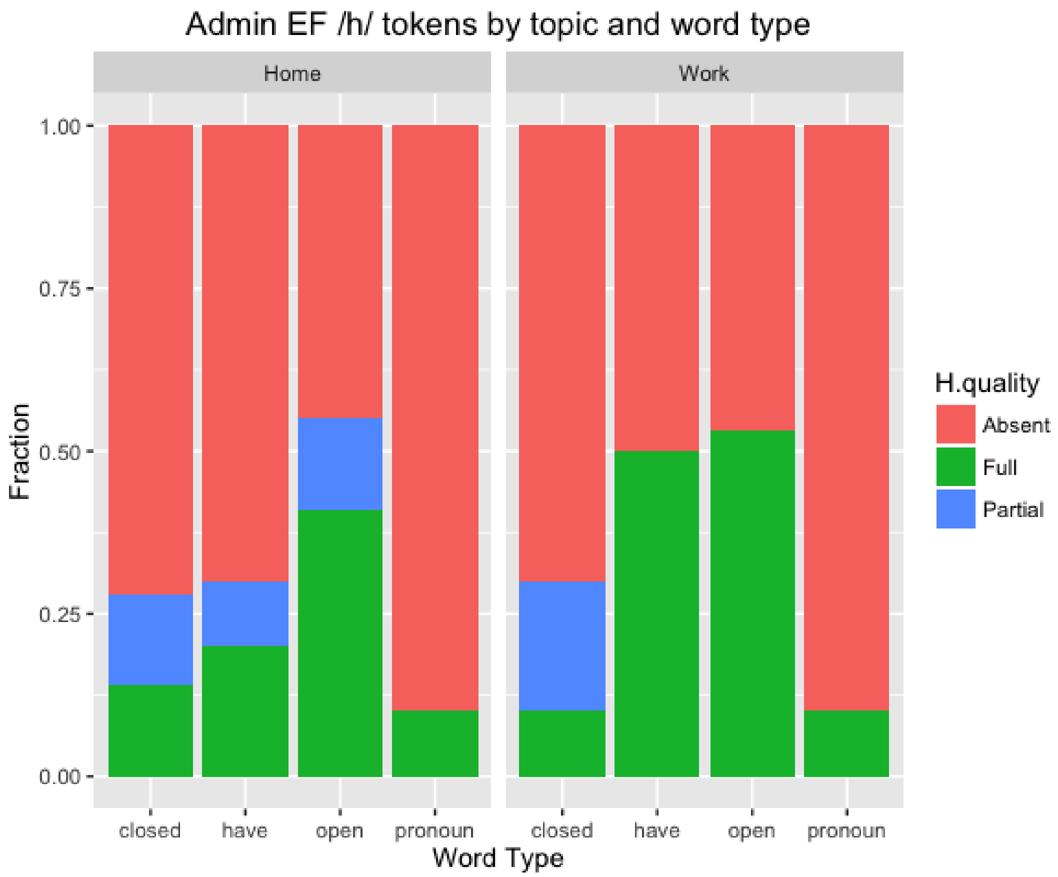

Figure 47: Speaker Admin_EF's level of /h/-dropping in home vs. work topics and word types

figures is due to the speakers' use of fewer partial /h/ realisations. The numbers for other closed class words and pronouns remain constant, suggesting a smaller topic shift overall.

As demonstrated by Figure 48, Admin_JB's 12% topic-based shift in /h/-retention occurs more consistently across all contexts (aside from *have* tokens). The number of tokens with retained /h/ rises from 16% to 40% in miscellaneous closed class words, 72% to 84% in open class words and 10% to 27% in pronouns. While /h/-dropping still dominates in Admin_JB's closed class tokens, the consistent shift towards /h/-retention across these three contexts suggests a consistent effect of work topic on her speech.

It is interesting that of the speakers with non-manual jobs it is the males (Design_RC and Design_WH, explored in §7.3.5 and §7.3.6) who show the highest levels of /h/-retention, rather than these female administration speakers. As full [h] is the standard variant, it would perhaps be expected that the female speakers would have the highest levels, as the pressure to assert and maintain social status through linguistic means is assumed to be greater for women for stable variables (Trudgill, 1974), and may be expected to be particularly great for women in these roles.

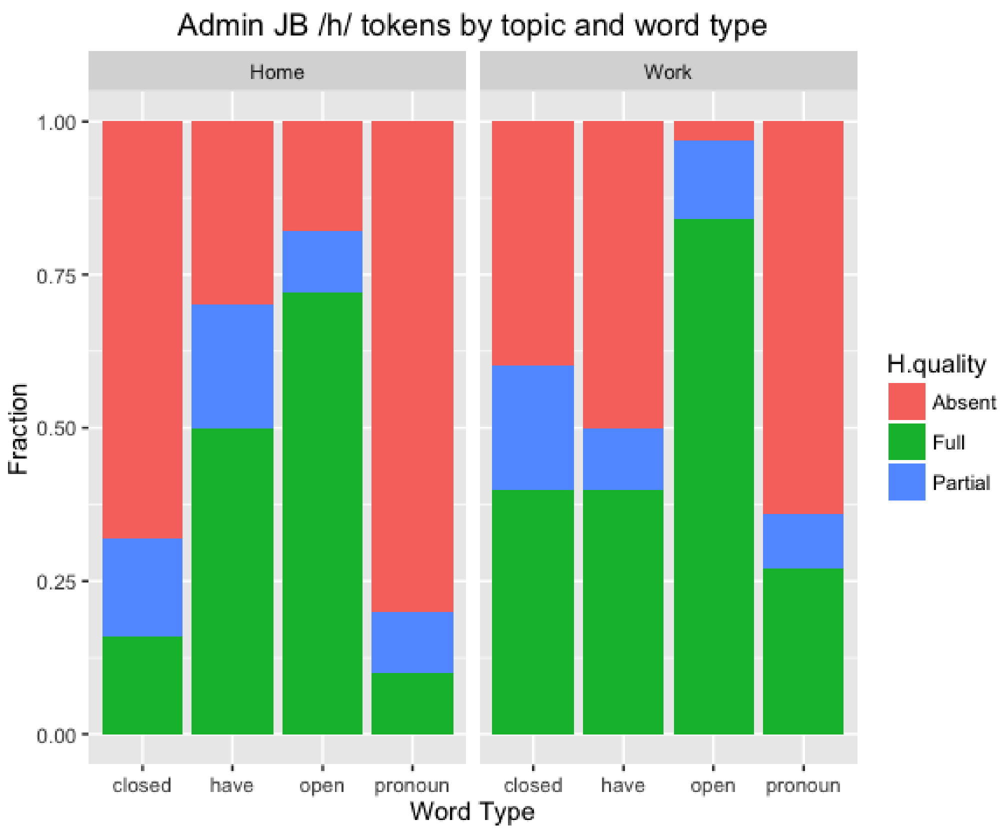

Figure 48: Speaker Admin_JB's level of /h/-dropping in home vs. work topics and word types

However, both Admin_EF and Admin_JB make clear throughout their interviews that while they worked in offices near to the senior managers of the factory, and spent time with them both during the day and on social occasions (for instance, at Christmas parties), they also spent a good amount of time with factory floor staff. Both speakers would collect and distribute wage packets and visit all members of factory floor staff on a weekly basis. They also formed friendships with factory floor staff: Admin_EF talks of how she and her husband bought their first house from someone who worked on the factory floor, and her comments include "it was a nice homely atmosphere, because everybody seemed to know each other", "the people in the office were friendly with the people on the factory floor" and "everybody chatted to each other and you knew everyone by their Christian name". Admin_JB adds "We were one big family really, because erm, everybody knew everybody else, even on the factory." However, Admin_EF and Admin_JB's interactions with factory floor staff are less consistent than those who work on the factory floor themselves, being infrequent and routinized. These speakers' intermediate levels of /h/-dropping (compared to the high levels of factory floor staff and the low levels of the modellers and manager in the dataset) is perhaps indicative of their varied interactions, and may demonstrate an ability or tendency to style shift in different situations, potentially for different audiences (Bell, 1984).

The specific instances of [h] and Ø used by the administration speakers according to their topics and conversational referents may shed light on this hypothesis. The extract below is taken from Admin_JB's interview, where she talks at length about the Beswick family, who owned and managed the factory she and Admin_EF worked in.

Extract 3: Admin_JB Beswick family

VM: could you just explain to me who of the Beswick family were there and how they were all linked to one another?

JB: Well erm (1) the directors were [forename] Beswick, [forename] and [forename] Beswick (2) er [forename] Beswick (.) was in our office but [h]e was uncle to [forename] Beswick although I think [h]e was younger (1) than [forename] Beswick (2) [ɦ]e never got married (.) bought a [h]ouse up at [h]illsdon and I did quite a lot of the letters for that (.) erm, well Black Lake it is, it's now a nursing [h]ome, it was called erm (1) was it called the cottage, when Øe erm, you know when it was [h]is [h]ome (1) we used to go up sometimes and pick bilberries in the woods at the back of the [h]ouse

[five second pause]

JB: [h]e [h]ad a [h]ousekeeper (1) I've forgotten Øer name, I used to have to stamp Øer card for the insurance

In this extract there are eight examples of pronoun tokens – note that not all of these counted towards the ten tokens used in Admin_JB's statistical measures, because I was wary of using several tokens from one extract where possible (see 4.3.2). However, I consider them all here as the clustering of tokens is particularly interesting.

Six of the pronoun tokens refer to the factory manager and two refer to his housekeeper (unnamed). Five of the six pronouns that refer to Mr Beswick are realised with full [h] (though one is more of a voiced glottal fricative than unvoiced), while both of the pronouns used to refer to the housekeeper, presumably below him in the social hierarchy, are realised without [h].

It is perhaps telling that Admin_JB uses full [h] when referring to her boss, Mr Beswick, but does not when referring to his housekeeper, even when both referents appear in the same utterance (as in lines 13-14). This shift from consistent /h/-full pronouns when referring to more senior members of staff to /h/-dropped tokens when referring to lower-level staff may exemplify the kind of topic shift suggested within Bell's (1984) theory of Audience Design. Bell suggests that discussion of a particular topic or person may encourage the use of variants associated with that situation or person, even if the direct audience is not present. If Admin_JB associates /h/-retention with her senior management colleagues (who would have been more likely to use this standard variant), invoking them in this exchange may have encouraged her to use full /h/s in pronouns referring to them. As pronouns are notoriously susceptible to /h/-dropping (both in English more generally and in this dataset, see §5.4.2), this consistent /h/-fullness is particularly marked, especially followed by immediate /h/-dropping in pronouns that refer to someone else.

Alternatively, Admin_JB's use of /h/ in management-related pronouns may not be a direct invocation of Bell's Audience Design, but a reflection of the speaker presenting herself as respectful and deferent to her seniors. While her commentary in this extract (and detail from the remainder of the interview) suggests she maintained a friendly relationship with the Beswick family, her use of full /h/ when referring to them implicitly maintains the power dynamics between them. As Admin_JB's job involved maintaining professional and social relationships with workers in all areas of the factory, the interaction in extract 3 may be an example of a sophisticated ability to style shift between standard – when talking to or about management – and non-standard – when talking to or about non-senior employees – variants of /h/.

If this is the case, Admin_JB may show the ability to use the broad social meanings associated with full /h/ (as outlined in Mugglestone, 2007, see §5.2.1) to present herself as professional, respectful and deferent. In the latter case, she could use the social meanings of dropped /h/ to present herself as approachable, friendly and non-threatening. Such a nuanced ability to switch between variants has been demonstrated by previous studies such as Podesva (2007), Lawson (2009), Kirkham (2013) and Devlin (2016a), among others.

7.3.5 Curating a 'skilled' persona through /h/-variation

Figure 49 shows Design_RC's pattern of topic shift in greater detail. Like Admin_JB, the shift towards more /h/-retention in work topics is consistent

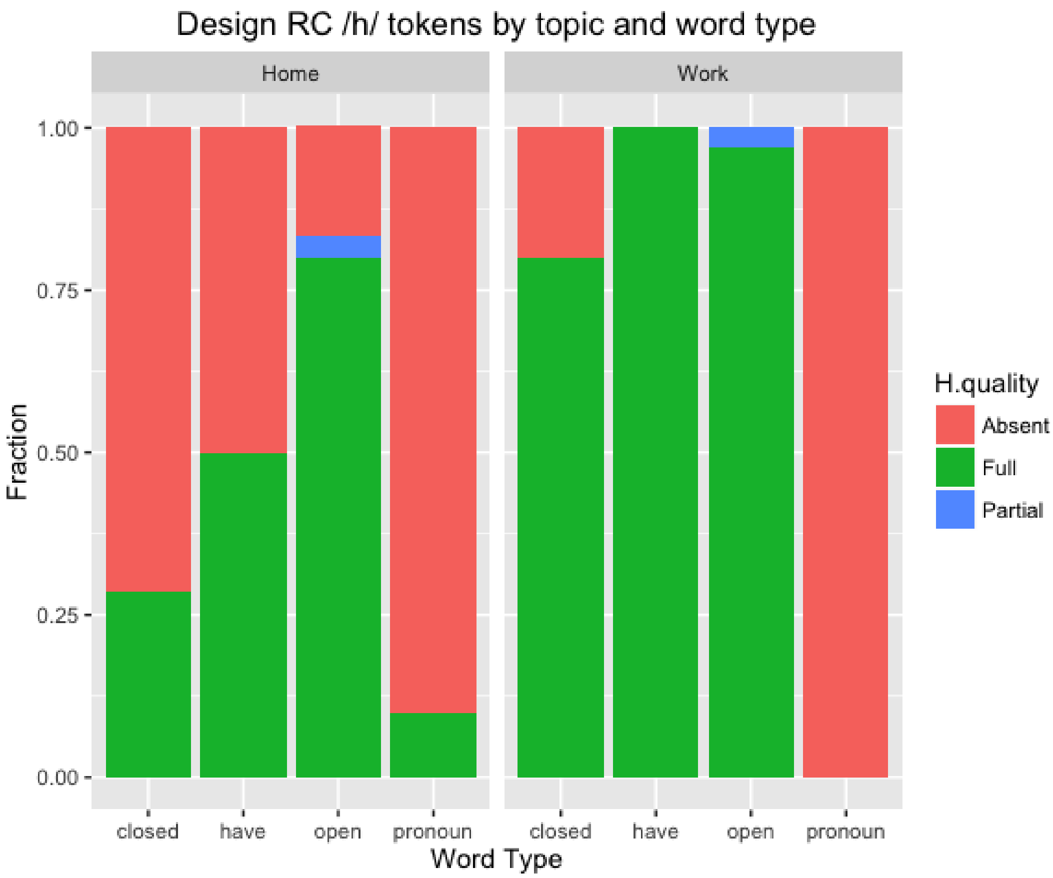

Figure 49: Speaker Design_RC's level of /h/-dropping in home vs. work topics and word types

across three of the four word types; miscellaneous closed class words shift from 28% /h/-retention in home topics to 80% /h/-retention in work topics, tokens of *have* shift from 50% /h/-retention in home topics to 100% /h/-retention in work topics, and open class words shift from 80% /h/-retention in home topics to 97% /h/-retention in work topics. His use of full [h] in pronouns remains low, in fact decreasing from 10% in non-work topics to zero in work topics.

Design_WH's pattern is more consistent across topics, as demonstrated in Figure 50. He retains (near-)categorical retention of full [h] in open class words and tokens of *have* in home and work topics, and demonstrates higher levels of /h/-retention in home topics in closed class words and pronouns, as compared to work topics.

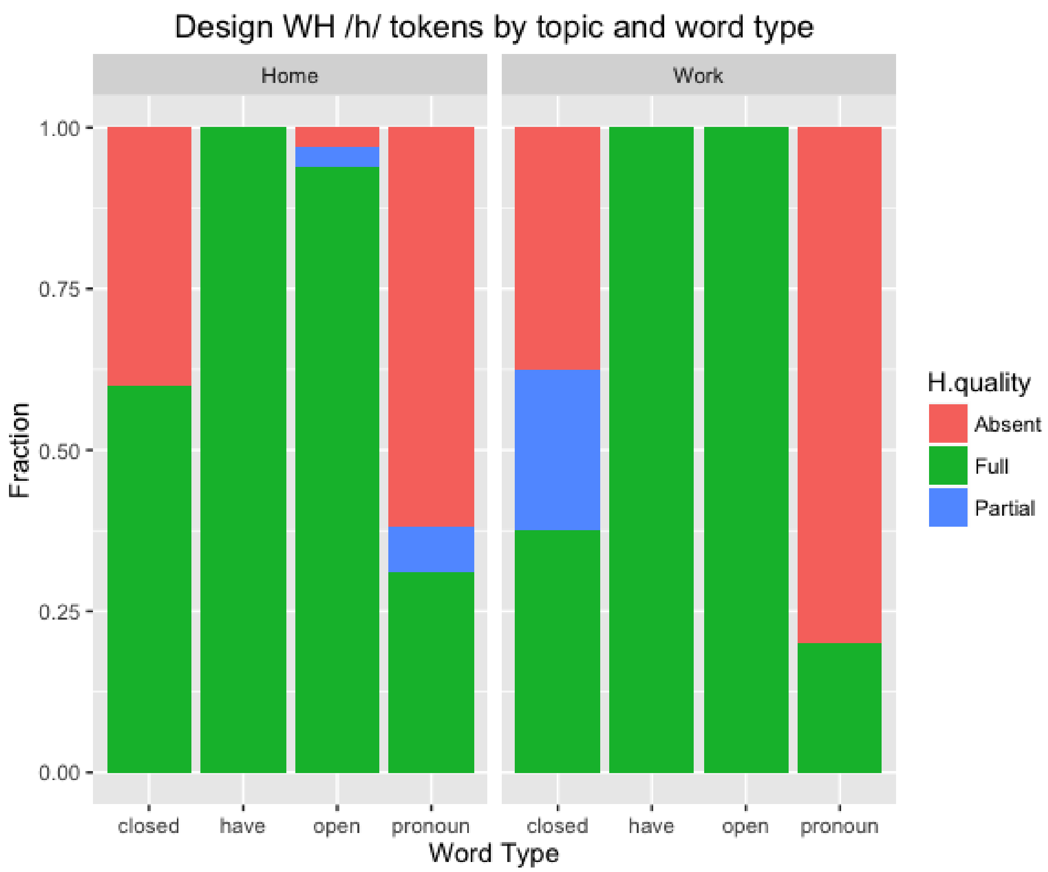

Figure 50: Speaker Design_WH's level of /h/-dropping in home vs. work topics and word types

These two speakers display, overall, the highest levels of /h/-retention in the dataset. In their roles as modellers, as has been mentioned, they were highly trained and skilled, worked alone and away from the factory floor, and frequently interacted with management. Their day-to-day linguistic input may have lacked the reinforcement of consistent /h/-dropping, and their atypical working-class roles (i.e. non-manual, highly skilled, solo work) may have discouraged the use of the zero realisation of /h/ in their speech. Indeed, the fact that they will have interacted less with factory floor workers on a regular basis than the administrators perhaps suggests why they have the lowest /h/-dropping levels overall.

However, while Design_RC shifts towards more /h/-retention in work topics, Design_WH has the opposite pattern (to a smaller degree). The difference between Design_RC and Design_WH's topic shift patterns may be illuminated by examining the type of talk elicited in each topic section.

In their work topic section, both speakers are asked to describe the process of modelling a new piece, from start to finish. Design_WH responds to this question in the first person, explaining what he did at each stage and what was required. An example of his style is below:

Extract 4: Design_WH modelling process

WH: and so (2) I make the original clay model then and erm (2) that's, again, that's approved and erm (1) then I have to (.) because the moulds are very specialised for these metal dyes because you've got to get narrow projections in between the lengths and so forth (1) then I make the moulds myself

In response to the same question, Design_RC consistently talks in the second person, repeatedly using the phrase "you have to…", almost as if delivering a lecture or tutorial. He also speaks in full sentences with somewhat theatrical pauses between utterances and a wide intonational range (noticeably wider that Design_WH), and the tone of his talk seems performed, even rehearsed. An example of this style is outlined in the extract below.

Extract 5: Design_RC modelling process

RC: I mean the beauty of this job is if you if you [h]ave a free reign (.)
if you can have a free reign to (.) do what you want you can come up
with something that you're very [h]appy with (3) but that is not the
modeller's lo[t] [laugh] that is er a dream really (1) what you [h]ave is
a design with which you [h]ave to make the very very best with what
you [h]ave

VM: can you just explain to me how you would model an item

RC: how [[you would do it]]

VM: [[from the start]] mmm

RC: The first thing you need (.) is an idea (2) you may [h]ave i[t] (1)
someone else may [h]ave i[t] (3) the [h]ardest job if you're dealing
with a designer (.) someone [hu:] is responsible for the end product (1)
is to get inside Øis head (2) to understand what someone else is after
(.) and if it's impractical to point this ou[t] from the beginning (.)
otherwise you won't end up with anything so that's the first thing (1)
then you need (.) a sketch or an idea on paper (.) from which you as a
modeller should produce (.) and sometimes it's given to you already
accomplished (.) but if it isn'[t] from the sketch you'd produce a
working drawing.

In their sections of talk about work, the interviewer asks 17 questions to Design_WH, and only 3 to Design_RC. Design_RC's work talk is more of a monologue, and he talks without being prompted for almost a full half hour about the processes involved in modelling. He uses and explains complex terminology, expresses the skill level involved in his work, mentions frustrations with having to work with people who didn't know what they were doing, and states "there's no other job on the factory in any other department that equals this job… for job satisfaction, sense of achievement and…being important, an important cog in a wheel… there's nothing to beat it".

It is evident from listening to Design_RC's interview that he is proud of his job and work, and keen to stress its importance and the technical knowledge it involves. He appears to be using the interview setting to evangelise these points and educate the interviewer (and future listeners) about the complexity of his role. Because of these things, he speaks in a style that is not particularly natural, and instead is performed and self-conscious – a style that is not consistently found in his home interview. This may be a contributing factor to his high levels of /h/-retention in work topics.

The stances Design_RC takes in relation to his work – a slight pretension about its importance and skill level, judgement about those who make his work difficult, pride in his skill and creativity – appear consistently though his work interview. Through these, Design_RC constructs and maintains the persona of a knowledgeable, occasionally hard-done-by, orator – something akin to the trope of the tortured artist. In doing so, perhaps drawing on the broad social links between /h/-retention and authority, education and importance (Mugglestone, 2007), he uses increased levels of full /h/ compared to non-work topics.

In the extract outlined above, this speaker also consistently uses full [t] word-finally. /t/ release has been linked to various social groups and meanings in linguistic studies – with nerd girls by Bucholtz (1999), gay men by Podesva et al. (2002) and Orthodox Jewish boys by Benor (2001). Interestingly, Benor (2001) found that /t/ was even more likely to be fully released if the speaker was "making a strong point in an intellectual argument" (Eckert, 2008, p. 468), similarly to its use by Design_RC in asserting his authority. Eckert (2008, p. 469) summarises the potential social meanings of released /t/, including stances such as emphatic, clear, careful and formal, mapping onto personae such as educated, articulate and prissy, and co-constructing social types such as nerd girl and gay diva.

Design_RC's consistent use of released /t/ suggests h-fullness is not the only indicator of this performance style, and hyperarticulation broadly is a feature of Design_RC's work talk. This potentially draws on what Eckert (2008, p. 468) describes as the "association of hyperarticulation with care and hypoarticulation with laziness". By using particularly high levels of full /h/

and /t/, the speaker uses links between ‘standard’, hyperarticulated speech and carefulness, power and authority to maintain his position as the knowledgeable, dominant speaker in the exchange. This combination of full /h/ and released /t/ in Design_RC’s work topics mirrors the clustering of features found in, for example, Podesva’s (2007) study, which finds his speaker combining /t/-release, falsetto voice setting and exaggerated pitch contour in the creation of a ‘diva’ persona. The co-occurrence of these features could constitute a persona for Design_RC of a knowledgeable, authoritative and skilled worker.

7.3.6 /h/ and ‘emotional’ talk

I have discussed how Design_RC differs to his peer Design_WH in that he creates a stylised persona around his work talk, which Design_WH does not appear to do. Design_WH has consistently high levels of /h/-retention across all topics, and his speech style is mostly very naturalistic, suggesting /h/-retention is typical for him. However, he does show an increase in /h/-retention in his non-work topics. This phenomenon is examined here, with reference to another speaker (Decoration_DJ) and their discussion of ‘emotional’ topics.

Linguists have consistently investigated, if not taken into account, the effects of emotions, cognitive load and affect on speech. Labov (1972) designed his “danger of death” question to distract the speaker from the interview situation and encourage the production of the most vernacular speech styles (see §7.2.1). Braber (2006) observes changes in the use of German modal particles and tags depending on the emotional investment or distance in the topic at hand (in this case, the fall of the Berlin Wall). Eckert (2010) probes the link between fronted and backed variants and their association with positive affect and ‘pure’ personae in the former case, and negative affect and more rebellious personae in the latter, suggesting a potential link with sound symbolism. Additionally, Sharma (2018) examines shifts in a bidialectal speaker towards his dominant or primary ‘lect’ (in this case Indian English) according to audience, but also in moments of higher cognitive demand. Sharma (2018, p. 3) asserts that “[w]hen a speaker’s attention is significantly focused on some target other than speech design during interaction, this should put pressure on their ability to simultaneously control and design their stylistic output … If an individual has a clear first- learned or dominant vernacular, this style might emerge at such moments”.

Speaker Design_WH maintains high levels of /h/-retention overall, and has an 8% rise in /h/-dropping in home topics as compared to work topics (see Figure 50) – in opposition to the pattern displayed by the speakers in sections 7.3.4 and 7.3.5. He also differs from the other speakers in that some of the stories and anecdotes he recounts in his home topics are quite traumatic and emotional. An example is outlined below, although for ethical reasons I have chosen a stretch of the interview that, while sensitive, does not represent the most emotional content the interviewee divulges.

Extract 6: Design_WH home life

VM: so how many people was there living in the house

WH: well during my childhood (.) there’s be just the three my father myself and my father’s (.) common law wife (.) [h]e married (1) twice actually actually and both [h]is first wife and my mother /is second wife died fairly (1) early and (.) so I was brought up actually by this common law wife [hu:]’d left a [h]usband Øu: lived in the next street (.) and er (.) there was quite a (.) bit of bother about that which (.) upset me sometimes [nervous laugh] we [h]ad [h]er relations coming and falling out because she’d left Øer [h]usband

In this section, and throughout the home interview, Design_WH speaks slowly, somewhat falteringly, with many pauses and instances of his talk descending to a whisper or mumble, in both amplitude and voice quality. The speaker appears to be very measured, careful and slow when talking about these sensitive topics, as if struggling to articulate them (despite, according to the interviewer, bringing the topics to the interview himself). There are three pronoun tokens realised with full [h] and one with Ø in this extract, as well as all h-full tokens of *have* and open class words.

As explained in §7.3.2, speaker Decoration_DJ has very high levels of /h/-retention throughout her interview, and appears very conscious of the recording situation. Despite her high level of /h/-retention in almost all contexts, Decoration_DJ has almost categorical /h/-dropping in pronouns. I observed in §5.4.2 that pronouns are overall more likely to be susceptible to /h/-dropping in this dataset, due to a combination of their lack of nuclear word stress and monosyllabic nature. However, Decoration_DJ does retain /h/ in the majority of instances of closed class words in the dataset, several of which are monosyllabic (e.g. *have*). That her pronouns should be so frequently articulated without /h/ is perhaps counterintuitive considering her overall pattern of use. The excerpt below exemplifies the section from which most of the speaker's pronoun tokens were extracted (given a lack of them elsewhere in the interview):

Extract 7: Decoration_DJ family job

VM: What did they go on to do?

DJ: Er my sister went to [h]untbatches as a window-dresser and did all her training and worked there for for a good many years. And my brother was in er electrical wiring, but erm Øe left there and went to work at English Electric in Kidsgrove (2) but erm all that (.) Øe's just been made redundan[t] now that the firm (.) it changed [h]ands and er the firm Øas closed down now so (.) Øe's erm Øe'll be sixty in June so of course Øe's (.) sort of forced retiremen[ʔ] really (.) because Øe doesn't think Øe'll get another job now a[t] Øis age

In this section of talk, Decoration_DJ explains that her brother was recently, unexpectedly, made redundant from his long-time job. The sensitive nature of this information and her close relationship to the subject of the talk – her brother – is clear throughout this extract. Unlike in the preceding and following sections of talk, in this stretch (lines 3 to 9) her tone is less confident and she pauses more frequently, suggesting sensitivity and some difficulty in articulation. She also categorically drops /h/ in all pronoun tokens in this extract, in contrast to the /h/ tokens in the remainder of her interview.

While both speakers examined here demonstrate similar linguistic reactions to emotionally-provocative topics (slow and faltering speech, reduction in amplitude, change in voice quality, increased pausing), their /h/ use appears to be affected in different ways. While Design_WH uses more full /h/ in these emotional stretches (and in his home interview more generally, which consistently covers very emotional topics), Decoration_DJ drops more /h/ tokens in this extract, in contrast to her otherwise high levels of /h/-retention in her interview.

Labov's (1972, p. 92) attention to speech model suggested that the affective responses invoked by the "danger of death" questions would elicit more vernacular and non-standard speech. However, while Decoration_DJ's speech fits this hypothesis, Design_WH's does not.

I would suggest the pattern is more indicative of the kind of style shifting highlighted by Sharma (2018). Rather than style shifting being categorised into vernacular and standard speech, she conceptualises a Lect 1 and Lect 2 (in cases where only two lects are relevant). Lect 1 represents the speaker's most natural speech style, most likely their native lect, and Sharma suggests it "may still have subtle cognitive primacy, i.e. may still function as a sort of default vernacular ("a form of language first- learned, most perfectly acquired, which we use automatically and unthinkingly', (Labov 2013: 3)" (Sharma, 2018, p. 3)). In her research, an individual speaker shows a sophisticated ability to shift between Lects 1 and 2 according to the audience he is addressing, or the persona he wishes to convey, but nevertheless he consistently reverts to Lect 1 "when managing increased attentional distraction or cognitive load" (Sharma, 2018, p. 3).

For the speakers examined here it could be the case that their Lect 1s differ in /h/ usage, according to their individual life trajectories. For Decoration_DJ, her Lect 1 includes dropped /h/, and she reverts to this in instances of emotional speech (or asides, as discussed in §7.3.2). The remainder of the time, when not under excessive emotional and cognitive load or distracted from the situation, her enhanced awareness of the interview setting encourages /h/ retention, a feature of her Lect 2.

Design_WH's Lect 1 may, in contrast, include retained /h/ - he has the highest levels of /h/-retention overall in the dataset, suggesting the standard variant is more typically used. As such, in similar moments of high emotional and cognitive load, he reverts to his most natural lect, and as such shows a shift towards /h/-retention in his emotionally-laden home topics. Moreover, if speaker Design_WH's Lect 1 includes full /h/, his work topics, wherein he uses slightly more dropped /h/, could exemplify a work-based style, and a small shift towards the kind of /h/-dropped speech that would be associated with a working class manual labourer.

7.3.7 Summary

The majority of speakers in this dataset have consistent and near-categorical /h/-dropping. The small level of /h/-retention they display is usually restricted to open-class words, themselves less susceptible to /h/-dropping, and as such, these instances can be explained linguistically. Because of the consistent lack of /h/ presence across contexts and topics, these speakers are less likely to be able to employ variation between [h] and Ø stylistically.

However, for the seven speakers with more intermediate and low rates of /h/-dropping, the variable becomes available for stylistic work. Speakers Decoration_DJ and Production_RC are anomalous among their occupational peers for their low levels of /h/-dropping, but this feature may be ascribed to their heightened awareness of the interview situation and increased attention to speech (Labov, 1972), or even an awareness of the direct and potential audiences of the interview itself (Bell, 1984). This may include the interviewer herself and the potential audience who may be watching the recording in the future, taking into account that the interviews were both audio and video recorded, and speakers were aware that they were being recorded for an oral history archive (see §3.4.2).

For speakers Admin_EF, Admin_JB, Design_RC and Design_WH (and Management_TB), their lower levels of /h/-dropping were previously (see §5.4.3.1) attributed to the specific demands and expectations of their roles in the industry, which were not shared with other speakers. Close analysis of intra-speaker variation of /h/ according to topic and style revealed patterns of use that were distinct for each speaker, but all appeared to draw on established social meanings of /h/ variation.

The administration speakers both had mid-to-high levels of /h/-retention consistent across home and work topics, with Admin_JB showing more of a shift towards h-fullness in work topics. Both speakers worked in the same factory and spoke independently about the family-like atmosphere that prevailed on the factory floor, as well as their frequent interactions and personal relationships with both senior management and factory floor staff. While the demands of their job may have required them to use or exposed them to more /h/-fullness, this appeared to be relatively unmotivated by topic, perhaps because their work personae did not need to be any different from their non-work personae, due to frequent interactions with staff at all levels. That said, for Admin_JB specifically, /h/-retention in pronouns was particularly frequent when the referent was a senior manager, and absent when talking about speakers of lower status. Deference towards management, or an indexical link between the topic of management and h-fullness, may explain this pattern of alternation.

Speakers Design_RC and Design_WH have the highest levels of /h/-retention in the dataset, and are both highly-skilled modellers. Design_RC has a marked shift towards h-fullness in his work topics, which may be related to the authoritative, skilled persona he maintains throughout that portion of his interview. Design_WH, while having high levels of /h/-retention overall, shows a small increase in /h/-retention in his non-work topics. Owing to the extremely sensitive nature of his non-work interview, his increased use of full /h/ in these emotive topics may be a reversion to his most natural lect due to the cognitive load involved (Sharma, 2018).

Using the frameworks outlined by Bucholtz and Hall (2005) and Coupland (2007), and formatting consistent with Moore & Podesva (2009), I posit an indexical field (Eckert, 2008) for /h/-retention in this dataset, and the pottery industry of Stoke-on-Trent (as much as it is represented in the data analysed here), in Figure 51. I choose to provide an indexical field for retained /h/ because dropped /h/ is something of a default among the dataset, and individual instances of /h/-retention appear to be used for stylistic and social work among speakers with more changeable levels of variation. This indexical field aggregates the observable social meanings that retained /h/ indexes (Silverstein, 2003) in this dataset, as outlined in previous sections, at micro-, meso- and macro-social levels (Coupland, 2007), creating a field of potential social meaning for this variable. However, as it is based on a restricted dataset and my own analysis, the field presented will only be partial; as is the case for all language and social meaning studies, it is not possible to capture all meanings linked to a particular variable.

At the interactional level, /h/-retention may be associated with various fleeting orientations or positionalities on the part of the speaker, categorised as stances by, for example, Bucholtz and Hall (2005), or types of affect by Eckert (2010). In Figure 51, these are represented by unformatted text. For speakers Decoration_DJ and Production_RC, /h/ is linked interactionally with attentiveness, and recognition of the speech situation. For the administration speakers, /h/ is used when referring to management, but not to peers, suggesting deference and recognition of social hierarchy.

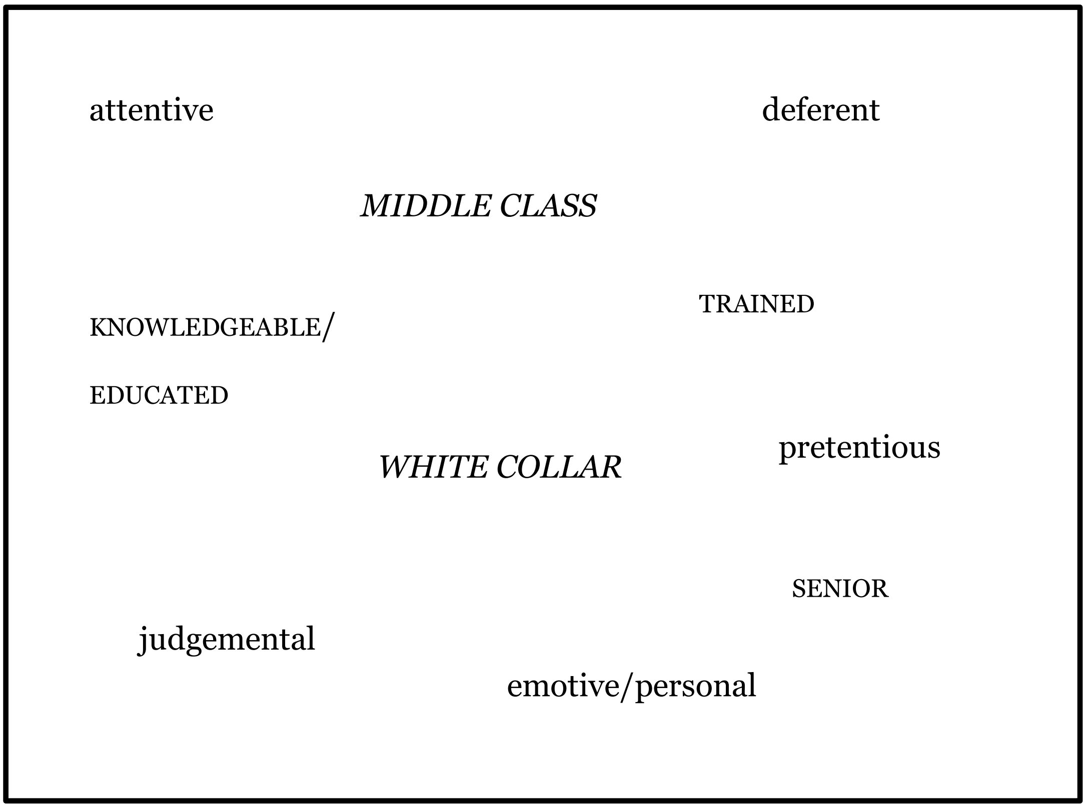

Figure 51: Lexical field for /h/-retention

Throughout Design_RC's work interview, where he has a marked increase in /h/-retention, he is frequently judgemental of those who make his job difficult, and – for want of a less loaded term – pretentious in the assertion of his skilled and senior status. Additonally, for Decoration_DJ, /h/-retention appears to be associated with emotional or personal talk – though it should be stressed that the opposite is the case for Design_WH.

These stances, among others, may accrete over longer stretches to create personae (Rauniomaa, 2003) that are locally recognisable, and somewhat generalizable across multiple speakers. These are represented in Figure 51 by the text in small capitals. The management, design and administration speakers who all share a higher level of /h/-retention compared to the remainder of the dataset all occupy roles that both require them to be, and single them out as, more knowledgeable and/or educated than the archetypal pottery worker. The roles are often senior, or at least adjacent to seniority and management, and usually involve further training outside the potbank itself.

Finally, these more local level social meanings draw from and map onto broad social types associated with the same variable (that is, retained /h/). These are represented by the italicised and capitalised words in Figure 51. In creating something of a separation between manual and non-manual workers through the use of this variant, these speakers may draw on links between /h/-retention, its use by the middle classes, and by extension associations between the middle classes and white collar occupations, recursively enacting this class distinction on a locally meaningful level (Irvine and Gal, 2000). While the designers and administrators examined here would probably not be classed as white collar workers on a broader scale, due to their occupation in a very blue collar industry, the associations between /h/-retention and white collar occupations allows a local-level distinction to be maintained. Additionally, the association between /h/-retention and careful and self-conscious speech contributes to its link with both consciousness of the recording situation, and its association with particularly deferent or emotional speech. All of these social meanings may be drawn upon at various levels in the discourse, for use or creation of new indexical meanings when using (or indeed, not using) /h/.

7.4 (i) variation, style and topic

This section investigates topic-based and intra-speaker patterns of (i) variation, beginning with an overview of the whole dataset in §7.4.1. Owing to the variable potentially having a lower level of linguistic awareness (according to research and feedback from local speakers, see §6.2.3) and not being associated with broad social meanings in the same way as /h/ (see §7.3), the observations made here are more exploratory than for /h/. However, some speakers do appear to be using this variable stylistically, and these speakers are explored in turn through §7.4.2.

7.4.1 Overview

As demonstrated in Chapter 6, inter-speaker variation in (i) is less polarised than with /h/. Some speakers have high and low levels of /h/-dropping, whereas, as demonstrated in Figure 52, all speakers in the dataset have variable (i) realisations, but no single speaker demonstrates a clearly distinct pattern of variation. Measurements for all speakers suggest they articulate (i) variably as [iː]~[ɪ], usually overlapping with both FLEECE and KIT vowels (as demonstrated in Figure 52).

Nonetheless, there are some individual tendencies to be observed in Figure 52. Some speakers' (i) vowels are not as low as their KIT vowels on the F1 plane – such as Decoration_GA, Decoration_PH, Decoration_JM, Firing_SJ, Firing_SJ, Firing_WS and Production_TB, whose KIT vowels have consistently higher F1s than their (i) vowels. However, all speakers' (i) vowel measurements overlap with their FLEECE vowels. Additionally, all speakers' (i) vowel F2 measurements may be as high as (or higher than) the highest FLEECE vowels, or as low as (or lower than) the lowest KIT vowels, suggesting the vowels maybe articulated as front as FLEECE and as back as KIT. They therefore spread over more of the F2 of the vowel space than KIT and FLEECE vowels individually, suggesting a less-specified articulatory target for this unstressed vowel than the core stressed vowels.

Figure 52: Scatter plots of individual speakers' (i) vowel measurements, alongside KIT *and* FLEECE

There are also some speakers whose (i) vowels are articulated in a very tight cluster (for example, Production_WB and Decoration_PH), and some which are articulated much more variably (such as Design_WH and Design_RC). As with /h/ variation, it could be the case that the variable is available for social and stylistic work for these speakers with a wider range of measurements.

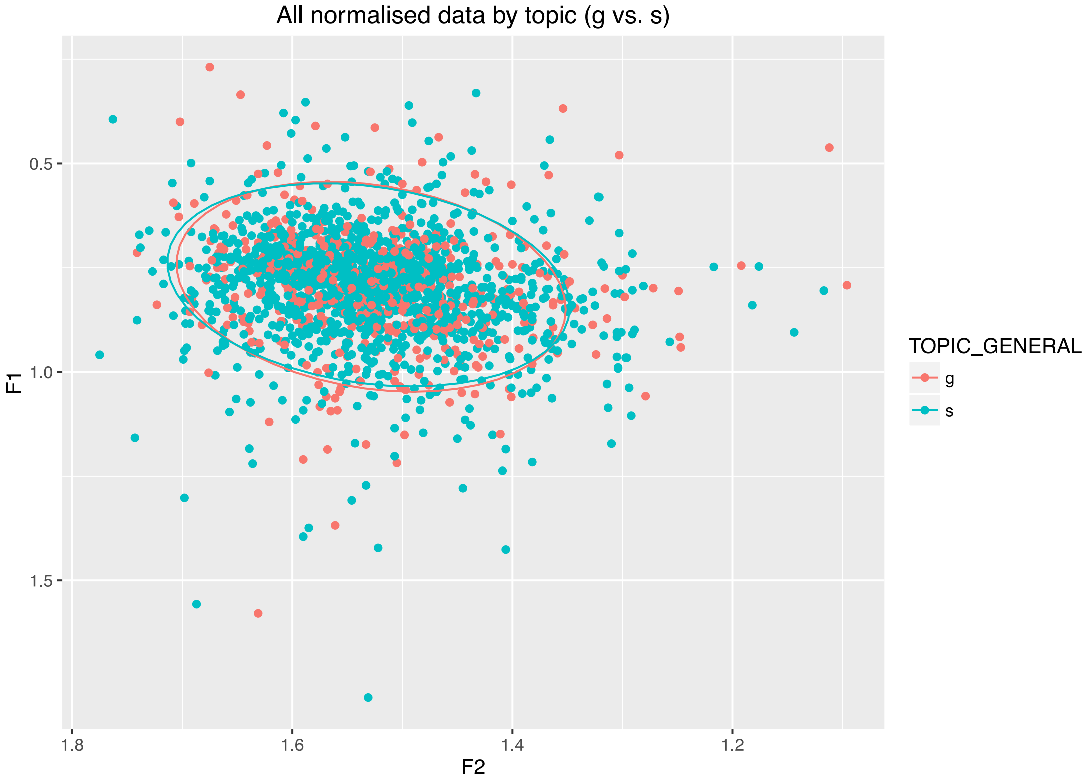

Figure 53: Scatter plot of (i) measurements according to specific vs. generalised topic

All tokens of (i) in the dataset were coded for whether they appeared in an utterance that recalled a specific or generalised memory – that is, a recollection of a specific individual event from the past or a generalised account of "the way things were". This, as explained in §3.4.2, follows the work of Hay & Foulkes (2016), who found evidence for more localised forms articulated in talk about specific memories on a particular topic, rather than generalised ones. This was linked to an exemplar theoretical account of phonetic variation, with specific memories triggering the use of specific, localised exemplars.

However, as Figure 53 demonstrates, there was no significant or visible difference between the (i) vowels articulated in specific memories rather than generalised ones, with the tokens overlapping in the vowel space completely. While this does not support the findings of Hay & Foulkes' (2016), once again it could be that this variable has a lower level of linguistic awareness, and as such may not show variation according to these parameters.

A subset of the data (14 of 26 speakers) was also analysed for a home/work topic distinction. The aggregate realisations of the (i) vowels according to these topic categories is in Figure 54, and once again demonstrates no significant or visible difference between the (i) vowels articulated in work topics and the (i) vowels articulated in home topics – aside from, overall, the (i) tokens in home topics being slightly more variable than work topics (demonstrated by the wider ellipse).

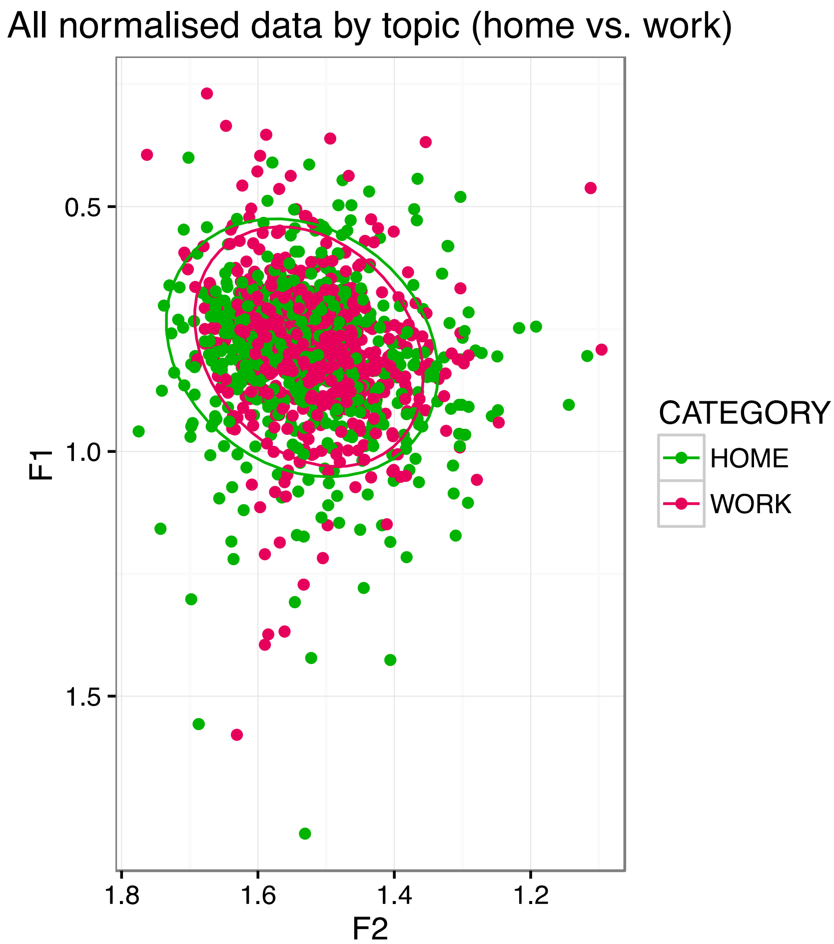

Figure 54: Scatter plot of (i) measurements according to home vs. work topics

Figure 55 shows the variation in (i) vowels according to broad work/home topic for each individual speaker in this subset of the data. The majority of speakers do not appear to make a distinction between work and home topics, with the ellipses for their home and work tokens completely overlapping. However, 3 speakers – Firing_SJ, Design_RC and Design_WH – show some distinction between home and work tokens.

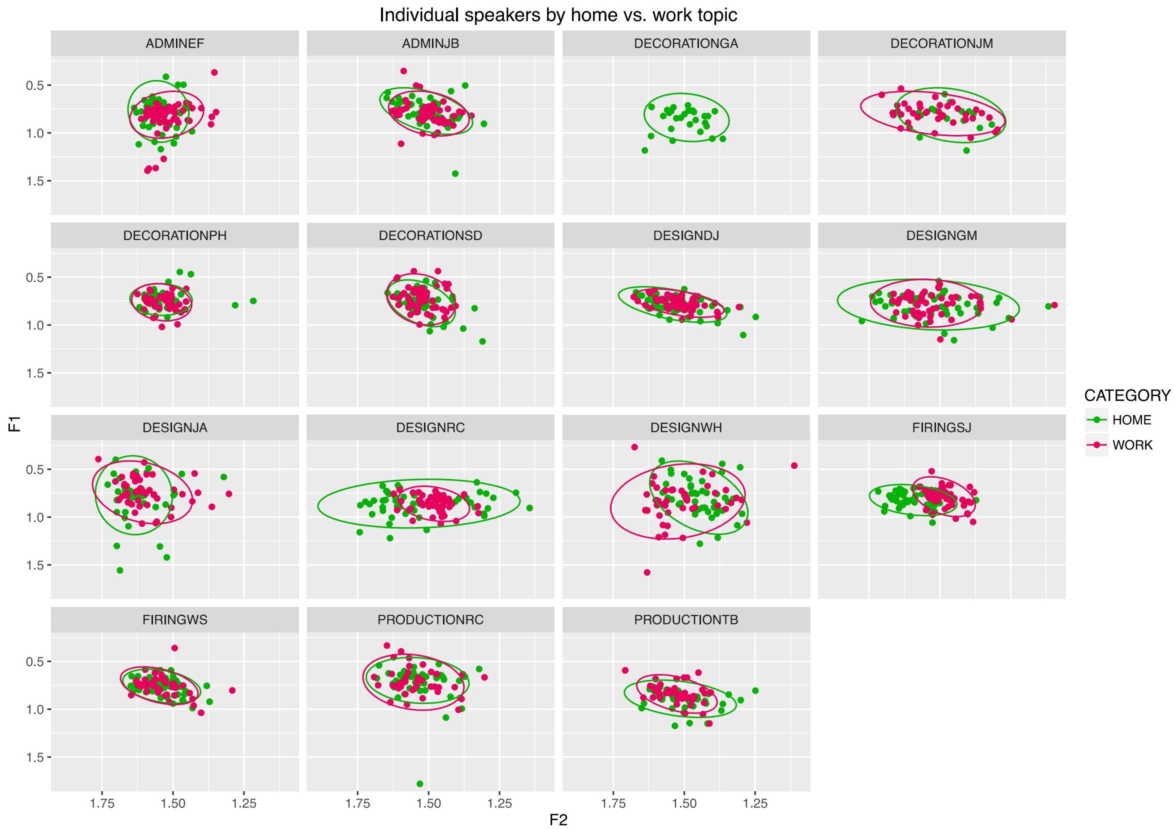

Figure 55: Individual speakers' (i) vowel measurements according to home vs. work topics

The individual patterns of use for (i) for these three speakers is studied in the remainder of this chapter, with each speaker analysed in turn. I first consider their home/work patterns in more detail, examining the individual tokens as well as the measurements to consider linguistic effects. I then pursue an analysis of the most acoustically extreme tokens for each speaker, following Kirkham (2013). The relative merits of this methodology are covered in §7.2.4, and I take into account the methodological limitations in my analysis. I isolated the five tokens with the highest and lowest F2-F1 for each speaker (10% of the speakers' total tokens), which represents the acoustic correlate of the tensest and laxest (i) tokens in articulation; a high F2-F1 score is indicative of a low F1 and high F2, suggesting a close and front vowel, while a low F2-F1 score is indicative of a high F2 and low F1, suggesting an open and back vowel. I also isolated the tokens with the highest and lowest F2 alone, as F2 appeared to be more variable than F1 across the dataset, and for the individual speakers.

These tokens are explored according to their discursive context, examining whether there are common topics, stances or other social meanings between tokens and between speakers.

7.4.2 Case study: Firing_SJ

Speaker Firing_SJ has the most consistent difference in (i) articulation according to topic. As Figure 56 demonstrates, his work topic tokens are consistently more retracted on the F2 plane, as demonstrated by the purple

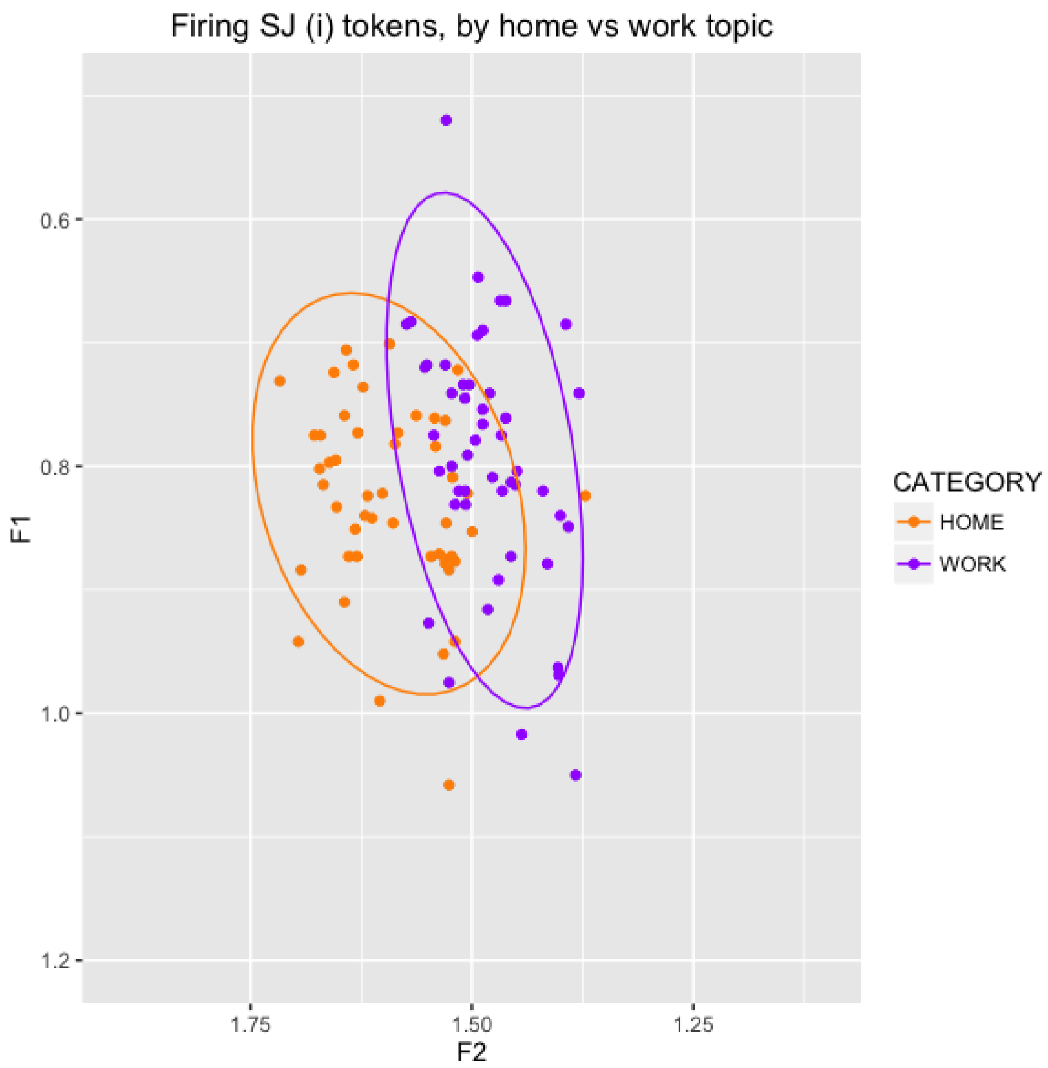

Figure 56: Speaker Firing_SJ's (i) measurements according to home vs. work topic

data points, and his non-work topic tokens are more advanced, as demonstrated by the orange data points, with some overlap.

It was demonstrated in §6.4.3 that the type of word in which the (i) vowel was contained is consistently the strongest predictor of its vowel quality. *–es* and other suffixed tokens consistently had the tensest (closest and frontest) (i) vowels, *-ing* tokens had fronted but open (i) vowels and tokens of *it* had the laxest (most open and backed) (i) vowels. Figure 57 shows the same tokens, this time labelled with the carrier words themselves. On the F1 plane, the distribution of tokens again shows similarities to the overall patterns for the dataset. Many of the closest tokens of (i) are in suffixed words (*wanted*, *pieces* and *shrinkages* in the work topic and and *inches* in the non-work topics), while the majority of the more open tokens are instances of *it* and –

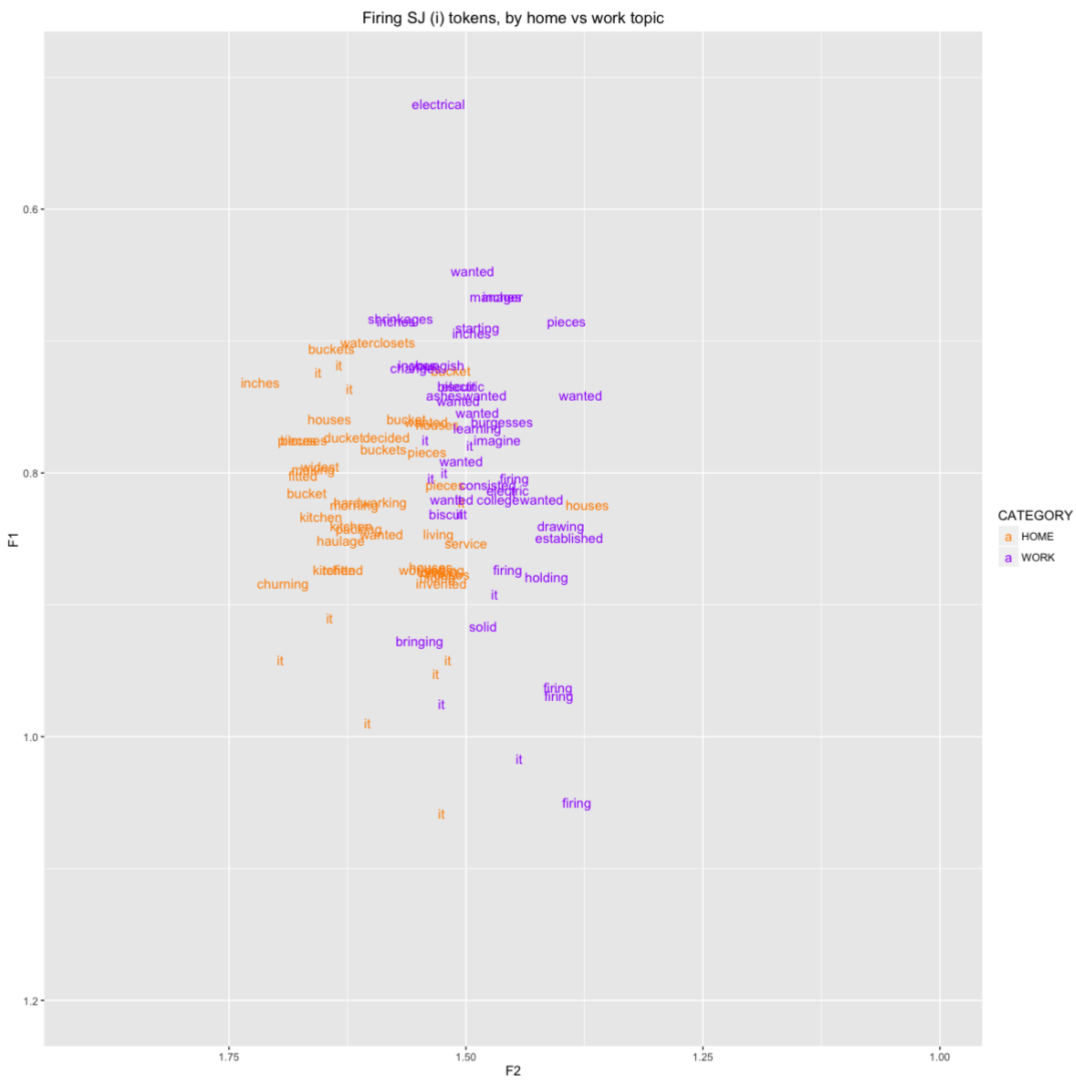

Figure 57: Speaker Firing_SJ's (i) measurements according to home vs. work topic, labelled with carrier words

ing suffixes – though in the home topics in particular, the speaker has several tense tokens of *it*. For this speaker, the different types of word appear to be distinguished by the closeness of the (i) vowel (or the combined F2/F1 relationship), whereas the topic distinction is maintained on the F2 plane.

I isolated the most acoustically tense and acoustically lax tokens in Firing_SJ's data according to the method outlined in §7.4.1. These are summarised in Table 23 below, along with a summary of the specific topic under discussion in each instance. Entries highlighted in the same colour represent the same token, identified as extreme by both F2-F1 and F2 measurements. Almost all of the acoustically tensest and frontest tokens come from the home topics, and almost all of the laxest and backest tokens come from the work topics, which makes sense alongside Firing_SJ's patterns, illuminated in Figures 56 and 57.

Firing_SJ's occupation in the industry was that of fireman. This meant that he was in charge of the coal-firing kilns, and responsible for supervising the loading, placing and unloading of the ware, and initiation and monitoring of the firing itself. This role was one with particularly high pressure, as an imperfect firing of ware could result in huge financial losses for a company. A great deal of knowledge was required to ensure everything went smoothly, and the job was held in very high esteem. For SJ in particular, the job was passed down to him through two generations, with his father and grandfather teaching him the 'tricks of the trade' (which was not uncommon in this role in the industry (Sekers, 1981)).

Acoustically lax tokens				
F2-F1	**h/w**	**g/s**	**Token**	**Specific topic**
0.333	work	s	firing	types of coal
0.427	work	s	it	types of coal
0.433	work	s	firing	electric kilns; "any fool can do that"
0.44	work	s	firing	process of firing
0.468	home	s	it	childhood home; outdoor toilet; guy fawkes
F2	**h/w**	**g/s**	**Token**	**Topic**

1.372	home	s	houses	Sunday school premises/layout
1.379	work	s	wanted	ordering coal
1.383	work	s	firing	process of firing
1.391	work	g	established	Japanese firms
1.394	work	s	pieces	types of coal
Acoustically tense tokens				
F2-F1	**h/w**	**g/s**	**Token**	**Topic**
1.009	work	g	electrical	drawing a kiln for a Japanese visitor/investor
0.986	home	s	inches	childhood home; home-made décor, rugs
0.936	home	g	buckets	childhood home; outdoor toilet
0.932	home	s	it	childhood home; outdoor toilet; guy fawkes
0.916	home	s	it	childhood home; outdoor toilet; guy fawkes
F2	**h/w**	**g/s**	**Token**	**Topic**
0.717	home	s	inches	childhood home; home-made décor, rugs
0.696	home	s	it	childhood home; outdoor toilet
0.693	home	s	churning	childhood home; outdoor toilet
0.678	home	s	pieces	childhood home; home-made décor, rugs
0.672	home	s	fitted	childhood home; home-made décor, rugs

Table 23: Speaker Firing_SJ's acoustically laxest and tensest (i) tokens

Firing_SJ explains much of this in his work-topic interview. He explains to the interviewer about the different types of coal available, how each affected the ware differently, and how he was taught to tell this difference between coals by his father, using only his sense of smell. Some of his laxest and backest (i) tokens appear in utterances where this information is being imparted or knowledge is being asserted:

SJ: but if you use Coxhead there was hardly any ash in it at all (.) and a few knocks on the bars that were holding the <u>firing</u> (.) it had iron bars across the bottom

SJ: I says coal as comes from them you know you smell damp in it (.) I said but Hanley big pit smells like this come look in the side mine (1) and I'd smell <u>it</u> and that had got a smell of its own

SJ: it's just turn the gas on and light it now (1) and any fool can do that (1) but <u>firing</u> (2) years ago before the war (.) and just after the war til the influx of these (.) continuous gas fire and electric kilns and ovens (.) was er it was really an art in itself

SJ: now continually <u>firing</u> a kiln (1) if you used any old coal (.) number one (.) hard mine (.) stuff like number one nuts (.) slack (.) you'd get a lot of clinker in the mouth

SJ: now if you want something for the slow build up of heat (.) you'd use number one nuts (.) they were small nuts (.) <u>pieces</u> of coal about one inch in diameter

SJ: some of the firms were very old er <u>established</u> (.) but they're mostly run down but there's an influx now they're bringing them back and I believe there's a lot of Japanese people coming to the potteries (.) to learn (1) erm the art of pots

SJ: you get on the phone and phone up you <u>wanted</u> so many tonne and they'd bring it (.) and tip it outside the ovens you see

In these utterances, as well as explaining his knowledge of coal types, Firing_SJ also explains how many people from Stoke-on-Trent met with Japanese companies to explain various pottery processes – noting that he did this himself – and expresses a distaste for modern gas and electric kilns, suggesting his job could now be done by "any fool".

It is notable that, of the five laxest tokens on the F2-F1 plane, three are instances of *it* and two are examples of the word *firing*. From the linguistic constraints on (i) variation we may expect *it* tokens to be particularly lax, and *firing* tokens to be affected by the preceding approximant, which consistently disfavours a following tense (i). However, the backest five tokens with the lowest F2, exemplified in Table 23, represent a spread of word types, some we may even expect to be tenser, such as *–es* tokens.

The majority of Firing_SJ's tensest and frontest (i) tokens are focussed on two non-work pieces of talk. The first is an explanation of outdoor toilets followed by an extended anecdote about how the speaker broke such a toilet, with four of the tensest/frontest tokens appearing within 100 seconds of talk:

SJ: most houses had got er (.) buckets in the toilets that were emptied by nightsawmen

SJ: I was making er a guy fawkes in the yard (.) and I'd got some straw from (.) one of the firm's packing houses (.) and stuffed it into a sack to make the body (.) and I'd got a lot of this straw left (2) and I didn't know what to do with it (.) so I decided to push it down (.) the toilet (1) well everything was all right for two or three days (1) and one day me sister went in and said er dad there's something wrong with that toilet (.) he said what do you mean (.) says you can see it it's coming up to the top

SJ: if you turn the tap on in the scullery (.) and let the water run it kept churning over and over this bucket did at the bottom

The second example is an explanation of the types of rugs women used to make to cover the bare floors at home, with three of the tensest/frontest tokens appearing within 26 seconds of talk:

SJ: there was no rugs or anything er carpets same as you've got now carpet fitted carpet all round (.) people couldn't afford those

SJ: they'd got the children's or old jumpers and trousers or things like that and cut them up into pieces about seven or eight inches long and peg them through this so you got two pieces out of each piece

The more fronted and tense tokens of (i) used by Firing_SJ appear in anecdotal or emotive talk unrelated to work and professionalism. The phonetically fronted tokens of (i) are used in talk which is more personal and anecdotal, whereas more backed tokens are used to discuss work, skills and expertise.

7.4.3 Case study: Design_RC

Figure 58 shows speaker Design_RC's (i) tokens, classified according to home (orange) and work (purple) tokens. He has a very consistent and narrow articulation for (i) vowels in his work topics compared to (i) vowels in his home topics, which are more variable. As Figure 58 shows, on the F1 plane the topics are slightly distinct, with home topic tokens having a range of 0.583, while work topic tokens have a smaller range of 0.358. However, on the F2 plane this distinction is clearer, with his work topic tokens having a small range of 0.299, while his orange home topic tokens have a much larger range of 0.599, with both lower and higher F2 measurements than work topics.

Therefore, it appears Design_RC's home tokens are articulated much more variably, particularly on the F2 plane, than his work tokens. The ellipse of measurements for his work tokens is contained entirely within the ellipse of measurements for his home tokens – he does not appear to have two distinct articulatory targets based on topic, but a more and less focussed articulation according to topic.

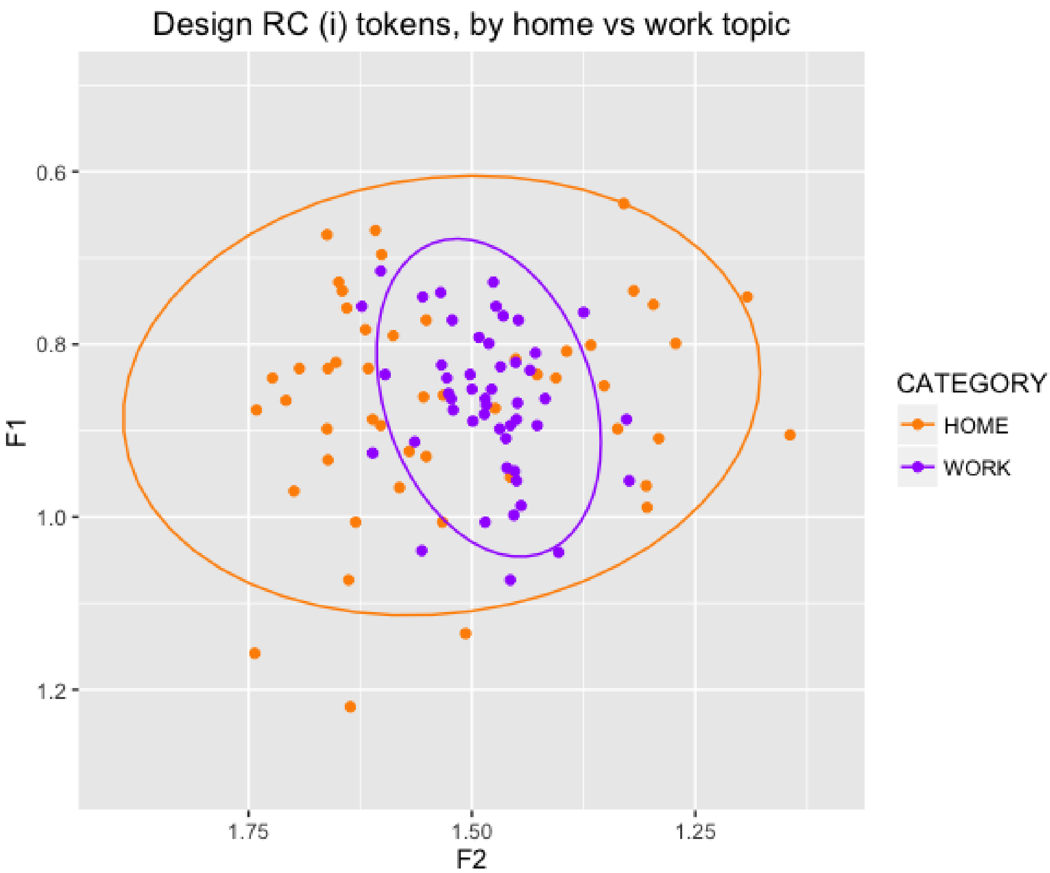

Figure 58: Speaker Design_RC's (i) measurements according to home vs. work topic

Figure 59 demonstrates all of Design_RC's (i) tokens on the F1/F2 plane with each token labelled with the word itself. Design_RC's patterns show similarities to those of the overall dataset. Some of his tensest tokens are in –*es* tokens such as *ashes* and *shortages*, or suffixed tokens such as *raided*; his laxest tokens are consistently tokens of *it*; and his lowest and frontest tokens are –*ing* words, including *spending*, *heating*, *something* and *rationing*. However, it is notable within the work tokens (labelled in purple) that the highest and frontest vowels are in a mixture of –*ing* words (*beginning*, *making*), -*es* words (*cases*), opaque words (*basic*) and a couple of tokens of *it*.

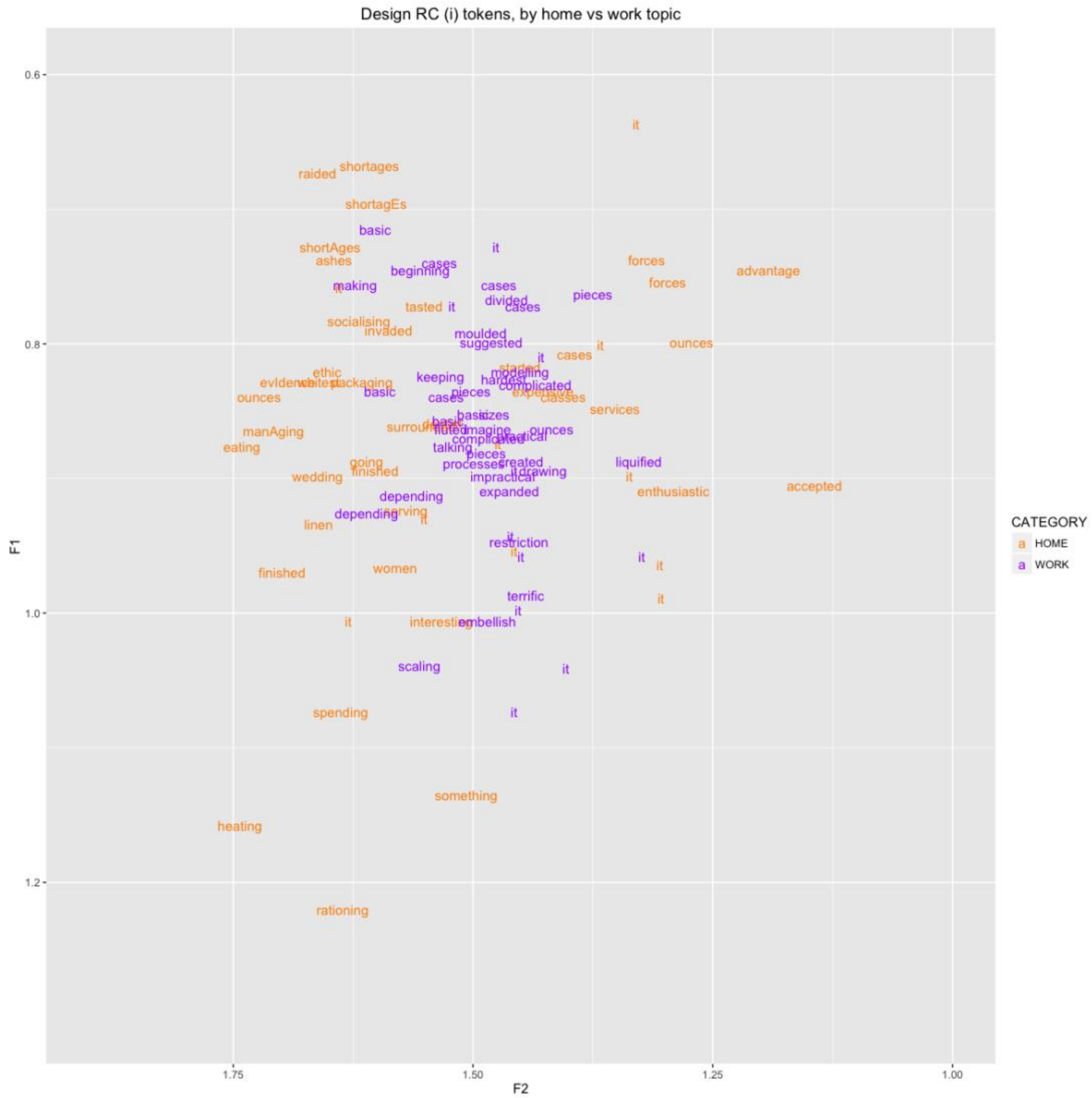

Figure 59: Speaker Design_RC's (i) measurements according to home vs. work topic, labelled with carrier words

I once again identified the speaker's acoustically extreme tokens of (i), which are listed in Table 24. Almost all the tensest and laxest tokens in Design_RC's data are from his home topics; Figure 58 demonstrates that his home tokens are consistently more articulatorily extreme, while his work tokens are more restricted.

Acoustically lax tokens				
F2-F1	**h/w**	**g/s**	**Token**	**Specific topic**
0.239	home	s	accepted	women's work at home; hard
0.315	home	s	it	wartime, rationing; hard, deprived but

				happy
0.341	home	s	it	"a world of women", lack of men around
0.362	work	g	it	producing a working drawing, sketching ware
0.366	work	g	it	modelling, mistakes, mouldmaking
F2	**h/w**	**g/s**	**Token**	**Topic**
1.144	home	s	accepted	women's work at home; hard
1.192	home	g	advantage	mother fending for herself, no financial help
1.272	home	g	ounces	rationing; wartime; food
1.291	home	s	enthusiastic	school; good teacher
1.297	home	s	forces	"world of women"; men in the forces
Acoustically tense tokens				
F2-F1	**h/w**	**g/s**	**Token**	**Topic**
0.989	home	s	raided	first time tasting chocolate, wartime
0.94	home	s	shortagEs	rationing; wartime; working men's club
0.921	home	s	shortAges	rationing; wartime; working men's club
0.907	home	s	ashes	food; rationing, burning food packaging
0.905	home	s	shortagEs	rationing; wartime; working men's club
F2	**h/w**	**g/s**	**Token**	**Topic**
1.743	home	s	heating	lack of heating in grandmother's house
1.741	home	s	eating	rationing; wartime; food, no fresh fruit
1.723	home	g	ounces	rationing; wartime; food
1.708	home	s	manAging	mother working in working men's club
1.699	home	s	finished	wartime; air-raid

Table 24: Speaker Design_RC's acoustically laxest and tensest (i) tokens

There are some consistencies across topics under discussion, as outlined in the examples demonstrated (underlining shows the token in question, with italics expressing the speaker's particularly stressed syllables). The laxer (i) tokens appear in talk that usually expresses a negative stance towards the topic under discussion, with the speaker talking about challenges to be overcome and lack of facilities or support. However, while highlighting these challenges, each example demonstrates resilience in the face of these challenges.

This may be the role of women in the home, particularly the speaker's home:

RC: so (.) that was life of a housewife then wasn'it really (2) it was hard work (1) hard work (1) but it was accepted (.) there weren't any washing machines (3) and just that was their job (.) that was their job

RC: it was a world of women (1) there weren't many men around 'cause they were all in the forces

Or the lack of facilities available during the war and in childhood:

RC: they were they were I suppose (.) you know kids didn't have as much (.) in some ways but (.) I never felt deprived or [laugh] unhappy about it (.) you just accepted it (.) got on with your life

VM: was there anything like child support or social security?

RC: mmm no (1) not that i (.) not that I knew of and [cough] not that my mother took advantage of to be honest

RC: and they'd slice it like cheese (2) to whatever (.) amount (1) and during the war it was *not* very much (1) I think you were allowed two ounces a *week* (2) have you ever seen two ounces of butter? It's about that big

The one particularly lax token that the speaker articulates when talking about work topics is also related to challenges he faced there, working with particular people:

> RC: even though some modellers don't (1) block or make a mould of (.) the model they need to *know* how it works (.) otherwise they're in deep trouble (2) because they *will* model it (.) in such a *way* (.) and I've had them (.) from people who have *not* known (.) and it creates a lot of problems later on

The speakers tensest (i) tokens are less focussed with regard to topic and stance. Some express similar sentiments to the laxer tokens, highlighting the challenges of growing up without modern amenities or foods:

> RC: and er (.) although my mother ran (.) the Basford working men's club on her own (.) it wasn't a club as we know clubs are today (1) because there was shortages of everything there was shortages of beer (.) you name it it was short so (.) it wasn't open (.) but even so I do remember spending some time as a child in the club

> RC: ah as you know paper bags (.) you'd got open fires then you just burnt everything (.) so there was no bins full of paper or cardboard (.) it was burnt on the fire (1) and the ashes were used in the winter for when there was snow and ice about

RC: me grandmother used to used to have a cupboard at the side of the (1) ‘cause it was a terraced house with (.) no central heating of course it’s just got a normal grate with (.) burn coal

Others are specifically about life during the war, as in the following examples – several of which also include a shift in discourse purpose or tone, as explained after each relevant example:

RC: we got pears you know as a special treat because as I say it was rationing (.) and you just couldn’t (.) fresh fruit can’t remember any (.) can’t remember *ever* eating fresh fruit (.) after the war towards 45 46 yeah fruit started coming in

In the example above, the tense token occurs just after the speaker changes from talking about a memory (getting pears as a special treat) to a more general reflection (the lack of fresh fruit available).

RC: and they’d slice it like cheese (2) to whatever (.) amount (1) and during the war it was *not* very much (1) I think you were allowed two ounces a *week* (2) have you ever seen two ounces of butter? It’s about that big

In this example, the tense token appears in an aside, addressing the interviewer specifically rather than the previous narration.

RC: erm but I never saw him (.) until he came out [laugh] so (.) although he sent chocolate from Iceland (.) think he raided the PX the American PX and I think that was the first time I’d tasted chocolate (.) I must have been about three

The lax token in this example forms part of an evaluation of a previous comment – the speaker's father sent him Icelandic chocolate and the speaker ruminates on how he was able to do this, suggesting he stole it.

RC: I suppose how it came about was (.) er me mother was er running the er managing the working men's club in me father's absence he should have been running it with her had the war not occurred (1) and er it was convenient that me grandmother looked after me while she did it

RC: and er me mother tells a story of er (.) when she was coming back from the working men's club one night cause by the time they'd finished it used to be midnight wouldn't it (.) and the air raid started

In examining the acoustically extreme tokens used by Design_RC, several appear to be linked to evaluative and stance-taking moments in interaction. His laxest tokens frequently appear in moments where he expresses resilience in the face of challenge or adversity (either on the part of himself or someone else), while his tensest tokens occasionally express a similar sentiment (particularly about life during the war). However, tense tokens also appear in moments in interaction where the narrative is disrupted in order for the speaker to add extra commentary, an aside or address the interviewer. These extreme tokens are almost exclusively found in Design_RC's home interview; his work tokens, in contrast, are far more consistently articulated and far less extreme than his home topic tokens.

When examining this speaker's patterns of /h/-dropping in §7.3.4, I commented that Design_RC's work topic talk comes across as very rehearsed and self-conscious. It sees him take on the role of instructor, explaining modelling processes in detail to the interviewer while expressing a great deal of pride in his work. Previous research (by, for example, Chen, 1980 and Moon, 1991) has shown that "acoustic phonetic analyses of speech produced by speakers who are paying careful attention to clear articulation vs. more casual speech indicate that, in careful speech, vowels are more tightly clustered around target values than in casual speech, where vowels are more scattered" (Schilling-Estes, 1999, p. 63).

Design_RC's pattern may mirror this: in his work talk; where his speech is more self-conscious and the speaker seems aware of the persona he is creating and maintaining, his (i) tokens more narrowly cluster around a target. As previously mentioned (see §7.3.4), this speaker's work talk is something of a monologue, with little input from the interviewer. The consistency in speech style throughout this work interview may have resulted in Design_RC's consistent articulation of (i).

In contrast, in the speaker's home topics more questions are asked by the interviewer, the topics are not the speaker's specialism and they evoke more evaluative responses and reminisces (such as talk about the war and his family). This may have broadly encouraged more variation in (i) articulation, because of the variation in talk type in this context. Many of the laxest tokens of (i) appear in talk about resilience and childhood challenges, and while this may be a burgeoning indexical link for this speaker, the fact that the more extreme tokens (both lax and tense) appear in talk about childhood, family and WWI suggests a more extreme realisation of (i) may be linked to evocative speech more generally for this speaker. Indeed, one of the speaker's most acoustically lax tokens appears in the same utterance as one of his tensest, both in tokens of *ounces*, which could be indicative of a non-specific but emphatic use of acoustically extreme tokens of (i).

This pattern is analogous to that of Firing_SJ: Design_RC's conservative tokens and Firing SJ's backer tokens are associated with work topics and assertion of skill and authority, while Design_RC's more extreme and Firing_SJ's fronted tokens are used in moments of emotive, expressive and opinionated talk about non-work topics.

7.4.4 Case study: Design_WH

Design_WH's pattern of (i) variation is subtler than the previous speakers', and reversed compared to Firing_SJ's. Both Design_WH's home and work tokens occupy very similar spaces on the F1 plane, but his home tokens are more advanced on the F2 plane as compared to his work tokens, as demonstrated in Figure 60. In fact, as demonstrated more clearly by Figure 61, in a direct mirror of Design_RC's pattern, this speaker's work tokens provide the envelope of F2 variation, occupying the frontest and backest space in the vowel space, while the home tokens lie in between these fronter and backer tokens.

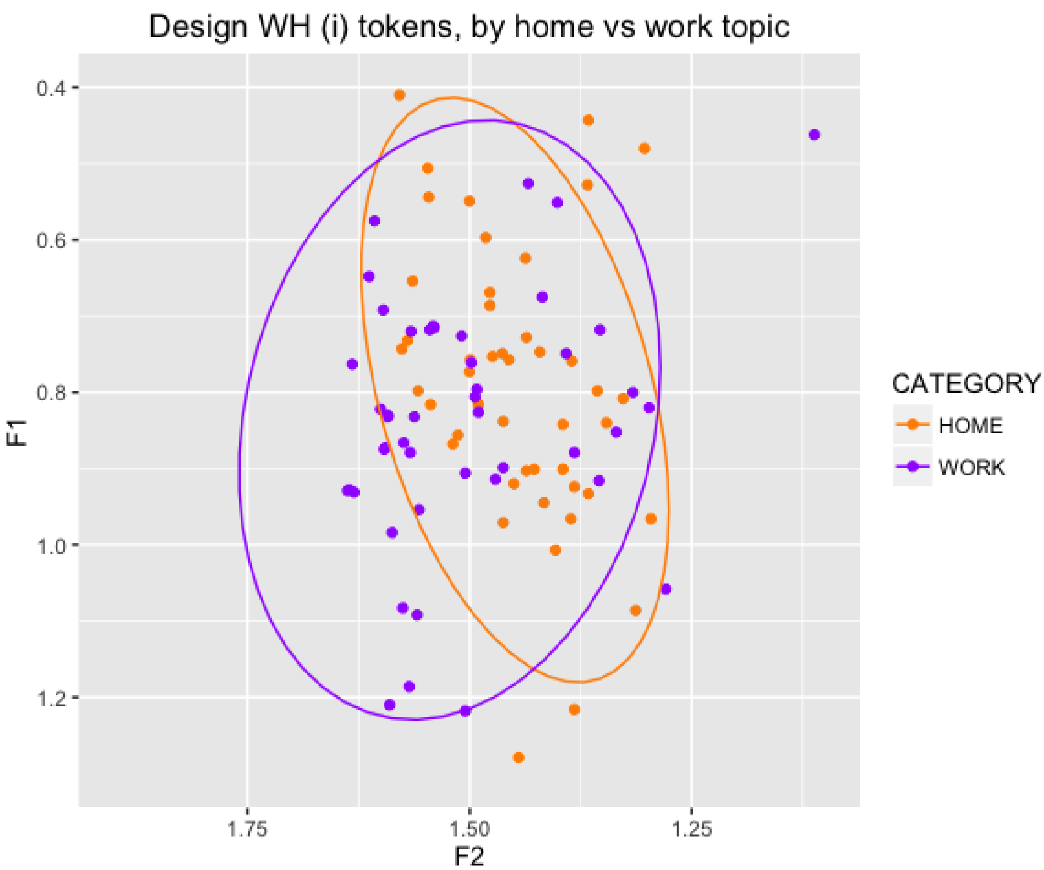

Figure 60: Speaker Design_WH's (i) measurements according to home vs. work topic

As discussed above, speakers Design_RC and Firing SJ appear to have more acoustically extreme tokens in talk that is more emotive and anecdotal, while their more focussed and retracted (i) tokens are associated with authoritative work talk. Speaker Design_WH demonstrates an opposing pattern, with acoustic extremity associated more with work-based topics, and more focussed or conservative tokens (at least on the F2 plane) associated with home topics. His pattern is also, as mentioned, subtler than the other two speakers'.

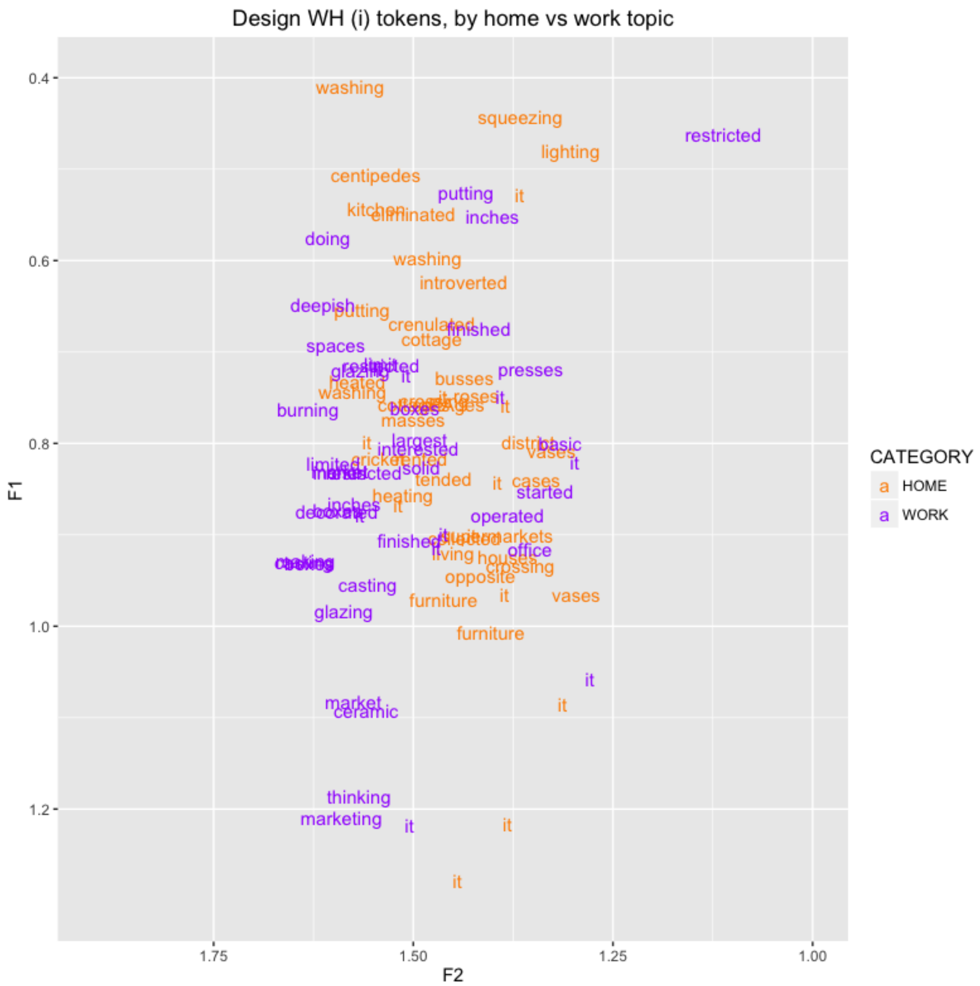

Figure 61 : Speaker Design_WH's (i) measurements according to home vs. work topic, labelled with carrier words

As demonstrated in Table 25, there is also less similarity between the specific topics in which Design_WH's tense and lax tokens appear. The previous speakers' tensest and laxest tokens often appeared in thematically similar topics and/or in similar stretches of talk, whereas for this speaker, tense and lax tokens of (i) are distributed throughout the interviews and topics.

Acoustically lax tokens				
F2-F1	**h/w**	**g/s**	**Token**	**Specific topic**
0.052	work	g	inches	packaging of whimsies
0.166	home	s	it	childhood home; grandparents' organ
0.166	home	s	it	childhood home; back garden contents
0.221	work	g	it	processes of modelling
0.227	home	s	it	gas works near childhood home
F2	**h/w**	**g/s**	**Token**	**Topic**
1.112	work	g	restricted	restriction on design with whimsies
1.279	work	g	it	process of modelling
1.296	home	s	vases	home décor; wartime; shell case vases
1.298	work	g	it	process of designing whimsies
1.303	home	g	lighting	childhood home; gas mantles in youth
Acoustically tense tokens				
F2-F1	**h/w**	**g/s**	**Token**	**Topic**
1.406	work	g	inches	packaging of whimsies
1.169	home	g	washing	hygiene; mother using soap on clothes
1.041	home	s	centipede	childhood home; back garden contents
1.032	work	g	doing	processes; women decorating figures
1.002	home	s	kitchen	childhood home; house layout
F2	**h/w**	**g/s**	**Token**	**Topic**
1.675	work	g	inches	packaging of whimsies
1.637	work	g	casting	processes; scraping of seams (fettling)

1.635	work	g	making	process of designing whimsies
1.632	work	g	burning	materials for mould making
1.631	work	g	inches	packaging of whimsies

Table 25: Speaker Design_WH's acoustically laxest and tensest (i) tokens

However, as discussed in §7.3.6, this particular speaker's home topics are very sensitive and occasionally traumatic. The speaker is much more relaxed when discussing work topics, whereas some of the home topics, reminiscing about childhood and family, cause the speaker to be hesitant and quiet. In contrast, the tensest (i) tokens in the work topics are in moments the speaker is explaining processes in the factory:

WH: and the plaster moulds each half would have erm be coated with a shellac (.) to stop the metal (.) from burning into the plaster

WH: you have to try and get some (.) movement (.) er just because they've got to get into these (.) boxes and also you've got to be thinking about the (1) these the mould making for these metal dyes (.) so that (.) you can get quite a lot of indentation into the figure or sort of go right through it

WH: you'd got to get (.) the seam leaves a raised (.) sort of line all round where they join and erm so that's got to be either scraped off and erm casting factories that do the casting that's done by girl operators

WH: from there (1) this would be (.) these figures would be decorated on a conveyor belt with a line of girls each doing (.) one separate operation like dotting an eye in

WH: as I say there'd be five figures in one box which would be about (1) what nine inches by six inches and er about one inch

If it is the case that this speaker is more relaxed in his work interview, his pattern may not be so dissimilar to the other two speakers with observable topic-based (i) variation; more variable tokens in his case may still associated with less inhibition or focus on the topics of conversation, but for this speaker he is more self-conscious in his home than his work talk.

7.4.5 Summary

While the data for /h/ variation, both quantitative and qualitative, has a certain level of robustness, with recursive patterns enacted by several speakers, the data for (i) has fewer robust patterns. I have presented above some tentative suggestions for associated social meanings of (i) for the three speakers studied in particular.

In the regression analysis presented in §6.4.2, F1 measurements had stronger statistical links to linguistic constraints on (i) variation. However, in the analysis presented in this chapter, F2 variation in particular seems to be the locus of social meaning-based work with (i). More acoustically extreme tokens – usually those fronted tokens with higher F2 – appear to be associated with expressive, emotive and uninhibited, and potentially more 'natural' talk. Acoustically conservative and backed tokens (compared to an individual speaker's overall spread of tokens, not a cross-speaker benchmark), in contrast, appear to be associated with authoritative, knowledgeable, reserved and self-conscious talk. I would not, based on tentative patterns in three speakers' talk, take this analysis as far as proposing an indexical field (Eckert, 2008) as I did for /h/ in §7.3.7, but these common threads of social meaning may provide a springboard for future analysis of this vowel in a larger dataset.

It is also important to mention that, for two of the three speakers analysed in detail, several tokens of lax or tense (i) occurred in relatively quick succession within the same few minutes of talk. This may suggest a recency effect, as found by Abramowicz (2007); tenser (i) tokens may prime the use of subsequent nearby tenser tokens and vice versa, though once again this is a conclusion based on a small amount of evidence that would require further investigation.

7.5 Evaluation

In this section I reflect on the social meaning analysis presented in this chapter. I summarise the patterns found for both /h/ and (i), discussing motivations for their similarities and differences.

The (i) vowel is a different kind of variable to /h/ in this dataset. /h/ is a variable with established social salience and links to various social meanings and groups (Mugglestone, 2007), which can be used and reinterpreted in creating local social meaning in this dataset. In contrast, (i) is an extremely local variable which has – for the most part, according to research and feedback from local speakers – a low level of linguistic awareness. Additionally, the presence or absence of syllable-initial /h/ is a more broadly recognisable and perceptually prominent variable than a (relatively) small alternation between vowel articulations in the top front quadrant of the vowel space. As such, it is unsurprising that they behave differently in this dataset, and seem to be associated with different social meanings.

The presence and absence of /h/ in this dataset correlated clearly with certain roles in the pottery industry: those that are non-manual, senior, and/or required advanced training before the job began. These links draw on the pre-existing indexical links between /h/-retention, education, high social standing and middle class occupations, and are developed on an individual level by speakers using full /h/ when asserting authority and knowledge about a topic, or referring to more senior members of staff. Standard, full /h/ also appears in some speakers to correlate with increased attention to speech and awareness of audience.

Variation in (i) vowels, in contrast, was minimal between speakers, with all interviewees in the dataset using vowels that varied in acoustic quality between [iː]~[ɪ] across their interviews and topics. Few speakers appear to show consistent variation between realisations of (i) according to macro (i.e. gender) or micro social factors, such as topic. It could be the case that this variable is rarely used for such sociolinguistic work, or that patterns of sociolinguistic variability in this variable are so subtle that they are difficult to trace analytically.

However, three speakers in the dataset had a wider range of (i) measurements than others and showed some consistent distinction between (i) vowel quality and broad work vs. non-work topics. From more detailed observation, it is suggested that laxer or more conservative (i) vowels may be associated with careful, authoritative, factual and detached speech, while tenser or more extreme (i) vowels may be associated with more affective, emotive speech.

It should be stressed that the patterns of alternation appear to be internally consistent with the individual speaker's spread of (i) vowels rather than shared across speakers. That is, while the three speakers analysed do not demonstrate the same patterning of home vs. work (i) tokens as each other, their idiosyncratic variation of (i) articulations appears to be motivated by similar social meanings. Firing_SJ contrasts between fronted and retracted tokens, Design_RC between conservative tokens and extreme tokens, and Design_WH the same as Firing _SJ but in a reversed pattern, which may be linked to the sensitivity of his home topics and higher cognitive load (Sharma, 2018)

Two of the three speakers who demonstrated variability in (i) vowels also had the lowest levels of /h/-dropping in the dataset, and showed compelling evidence for social work being done with both variables. These two speakers – Design_RC and Design_WH – have a somewhat complex position in the pottery industry. Artists by training and trade, they work in isolation, often alongside management. Their roles are less archetypal of the manual work typical of working class mass-production industries (not only pottery production, but mining and milling too, for example). However, they remain a fundamental part of the pottery industry, working within the factory grounds, and are born and bred locals to Stoke-on-Trent. It is perhaps the case that the different social practices their roles entail (interaction with management and solo design work, for example) as compared to those for factory floor staff (production-line work alongside dozens of other staff, for instance), result in the variables studied here being used differently by these speakers.

While speaker Firing_SJ does not have a particularly low level of /h/-dropping (which is why his /h/ work was not analysed in detail), he does differ from his peers within the firing department – he has 78% /h/-dropping, while his peers have 96% and 100%. As explained above, Firing_SJ is the manager of this department, responsible for its entire operation, highly-trained and paid accordingly. Though he would spend his working days on the factory floor alongside other workers, he has seniority. Again, this casts him in a somewhat atypical working class role. It may be the case that, while his /h/ tokens do not show a huge deal of difference to his peers (though they are distinct), his (i) tokens are where his knowledge and seniority are enacted, using a very locally meaningful variable to do this identity work. Of course, such a conclusion cannot be made definitively from studying one speaker, but I offer this as a potential explanation for his linguistic behaviour.

If conclusions can be drawn from this exploratory analysis, it appears to be the case that, for the majority of factory floor pottery workers in this dataset, /h/-is usually dropped, (i) measurements usually correlate with a variable articulation between [iː]~[ɪ], and at present this appears unaffected by the types of talk with which these speakers engage in the oral history interviews. However, for speakers with non-factory floor roles, variables may be used to, in the case of /h/, distinguish their role, social position or skill level in the factory from their peers'. For (i), explicit social distinctions do not appear to be enacted, but speakers whose industrial roles perhaps cast them in a social position less constrained by expectations of working class behaviour (in that they are more senior, trained or knowledgeable), this local variable shows burgeoning indexical meanings, with more extreme tokens linked to expressive talk and more conservative tokens linked to more authoritative talk. Love and Walker (2012, p. 12) suggest that "perhaps the ability to shift is dependent upon having different cultural allegiances or identities to shift between", and for speakers with atypical roles in the pottery industry, they may have, if not "identities", more styles to switch between.

The following chapter brings together the findings of this chapter and those in Chapters 5 and 6, examining their contributions to the fields of sociolinguistics and dialectology more broadly.

Chapter Eight

Conclusion

8.1 Overview

§2.4 highlighted the fact that Stoke-on-Trent is a relatively under-researched dialect area. Academic research that specifically catalogues language variation in Stoke-on-Trent and North Staffordshire comprises Gibson (1955), Montgomery (2003) and Leach (2012); Stoke-on-Trent and North Staffordshire are considered in Orton and Barry (1970), and in sparse detail by Wells (1982a) and Trudgill (1999a); and perceptual work on the region includes Montgomery (2007), Leach and Montgomery (2013) and Leach, Watson and Gnevsheva (2016).

This thesis both expands the knowledge of the language variety found in Stoke-on-Trent, and gives a detailed view of variation within it. Leach (2012) established that the (i) vowel in Stoke-on-Trent is variably realised as a tense [i:] and appears to be a very specific local feature; this is confirmed by the research presented in Chapter 6, with the added depth of the oral history data suggesting it is not a recent innovation. This thesis also examines /h/ variation in the local area, establishing it as a feature of contemporary Stoke-on-Trent English with some social patterning in Chapter 5.

While this thesis provides an account of Stoke-on-Trent English, it has, of course, examined a specific type of Stoke-on-Trent English – that used by speakers who work(ed) in the local pottery industry in the mid-to-late 20th Century (considering speakers were all born around the 1930s-50s, and were recorded in the years 2000-2003), before and up to its collapse. The industry is inextricably linked to the region, its dialect and identity, and this thesis has demonstrated the relevance of the specifics of the industry to language variation in the region (as expanded below). The pertinence of the pottery industry to the analysis presented here makes clear the need to examine this in any future work on Stoke-on-Trent English, particularly in older speakers or old recordings, as its influence on the social and linguistic makeup of the region has been evidenced here.

The remainder of this section outlines the specific quantitative and qualitative patterns and observations of /h/ and (i) and how this knowledge contributes to the fields of dialectology, quantitative and qualitative sociolinguistics, and issues regarding linguistic methods utilising oral history archives (§8.2). Following this, I evaluate the oral history dataset (§8.3), and discuss limitations of the current project (§8.4) and avenues for future research (§8.5)

8.2 Research findings and contribution to knowledge

This section examines the findings of this thesis and how they contribute to and expand current understanding in linguistics. I consider in turn each of the three research questions posed in Chapter 1 and their respective themes, and how the analysis presented here goes towards answering these questions and contributing to wider linguistic knowledge.

8.2.1 Quantitative variationist sociolinguistics

RQ1: *What social and linguistic factors are the best predictors of variation in the dialect features studied? Why might this be?*

i. /h/-dropping

Previous research and literature (Leigh, 2011; Orton and Barry, 1970; Trudgill, 1999a) suggested that Stoke-on-Trent and rural North Staffordshire were majority /h/-dropping areas, at least in the datasets sampled. On the assumption this dataset is a representative sample of Stoke-on-Trent in the mid-to-late 20th Century, the findings of this thesis suggest that the city remained a majority /h/-dropping region during this period. All speakers in this dataset demonstrated some level of /h/-dropping in both closed and open class words (average: 76%), and the majority of speakers had high levels of /h/-dropping, with nineteen of the twenty-six analysed having >78% (§5.4.1).

/h/-dropping in this dataset is also linguistically constrained in much the same way as communities previously surveyed: /h/ is more likely to be dropped in function words, pronouns in particular; /h/ is more likely to be dropped in words with lower nuclear stress and fewer syllables; and preceding vowels and pauses discourage /h/-dropping, as in Bell & Holmes (1992) (§5.4.2).

In this dataset, /h/ does not appear to be socially stratified by age or gender of the speaker. However, high levels of /h/-dropping are found in the language of manual, factory floor staff in the pottery industry, while lower levels of /h/-dropping are observed in higher-skilled, educated or senior staff such as modellers, administrators and managers. /h/ variation appears to distinguish between non-manual and manual occupations within the pottery industry. This suggests that speakers draw on established indexical links between dropped /h/ and lower class, less educated and unrefined speech and retained /h/ and middle class, educated and 'proper' speech (Mugglestone, 2007), but reanalyse these indexes as one way of enacting the divide between manual, 'blue collar', lower trained pottery workers, and craftspersons, administrators, managers and other 'white collar', more highly trained employees. Therefore, the speakers demonstrate awareness of established links between /h/ variation and social meaning, but imbue them with more localised social meanings too, and use them recursively (Irvine and Gal, 2000) to enact locally-salient hierarchies (§5.4.3).

ii. The (i) vowel

For (i), all speakers in the dataset showed a variety of articulations, from acoustically close and fronted tokens (akin to [i:]) to acoustically open and backed tokens (akin to [ɪ]). All speakers' (i) tokens overlapped in the acoustic vowel space with their KIT and FLEECE vowels, suggesting a variable acoustic target, but none appeared to be realised as laxly as schwa [ə], as has been observed in other varieties of English (Foulkes and Docherty, 1999) (§6.4.2).

Leach (2012) established a potential link between realisations of the (i) vowel in Stoke-on-Trent English and the morpho-phonetic makeup of the carrier word. The results of this thesis ratify these original findings with a new and bigger dataset. This thesis confirmed that (i) vowels in *–es* and other suffixed morphemes (such as *–ed*, *–age* and *–est*) were more likely to have a lower F1 and higher F2, suggesting a closer, fronter articulation like [i:]. In contrast, (i) vowels in tokens of *it* and *–ing* suffixes were more likely to have a higher F1 and lower F2, suggesting a backer, more open articulation like [ɪ] (§6.4.3).

The analysis presented in this thesis also describes a link between acoustic quality of (i) and preceding phonetic segment. The phonetic segments most likely to correlate with a tenser (i) vowel were non-sonorant delayed release coronal anterior stops, or [tʃ] and [dʒ]. Segments were analysed according to their distinctive features, and I concluded that tense (i) vowels preferred preceding obstruents > sonorants, coronals/dorsals > bilabials/labiodentals, and stops > continuants. The hierarchy for correlation with tenser and laxer (i) vowels was [dʒ tʃ] > [t k d s ʃ g z] > [n v f p ɹ b] > [j w l m] (§6.4.3).

Leach (2012) suggested there may be a link between lingual (specifically dorsal) engagement in preceding segments and tenser (i) vowels, linking this to VCV coarticulation and mutual compatibility of adjacent segments (Fowler and Brancazio, 2000; Recasens, 1985). The analysis presented in Chapter 6 of this thesis models the relationship between (i) quality and preceding segment using Recasens et al's (1997) Degree of Articulatory Constraint, which ranks phonetic segments according to degree of engagement of the tongue dorsum. DAC theory broadly fits the data from this project, demonstrating that segments with compatible trajectories correlated with tenser (i) vowels and those with opposing or antagonistic trajectories correlated with laxer (i) vowels. However, approximants did not fit neatly into DAC categorisation nor the linear patterns between segments and following (i) vowels. Recasens et al. (1997) did not consider approximants in their theory, and I suggest they pose a particular problem for this theory as a whole (§6.4.3.1).

The final linguistic pattern hypothesised in Leach (2012) was that, in younger (17 year old) speakers of Stoke-on-Trent English, the *–es* suffix had phonologised to [i:z], and represented a distinct, tenser articulatory target compared to other (i) contexts. This may have been a result of *–es* tokens only permitting medial strident consonants [tʃ dʒ ʃ ʒ s z], which are associated with tenser (i) vowels due to the phonetic constraints explained previously. While *–es* suffixes in this dataset did show the tensest (i) vowels on average, they did not appear to show a distinct articulatory target that was different to that for other (i) vowels, as the speakers in Leach (2012) did. As the speakers examined in this thesis are several generations older than the younger speakers in Leach (2012), the general tendency toward tenser (i) in this dataset may be indicative of the beginnings of this phonologisation. However, this conclusion can only be hypothetical without further research

Socially, (i) was not stratified according to the same departmental and role-related categories as /h/, nor according to the broad categories of gender and age. All speakers showed a great deal of variation in all contexts. This is potentially because, unlike /h/, variation in the (i) vowel has a lower level of linguistic awareness, is more local, and is not already associated with broad and stigmatised social meanings like /h/ (or absence thereof) (§6.4.4). However, certain speakers do appear to demonstrate a topic-based difference on the F2 plane in particular – see §8.2.2.

8.2.2 Qualitative social meaning analysis

RQ2*: How does examination of the variables in specific discourse moments illuminate the social meanings they are used for and to create, and how does this expand understanding of the quantitative patterns?*

i. /h/, (i) and associated social meanings

While the quantitative analysis demonstrates patterns of use across speakers that are, for the /h/ variable at least, linked to the internal social structures of the pottery industry, the addition of the qualitative analysis allowed me to uncover potential specific social meanings for both variables, some more fleeting and others more persistent.

The /h/-dropping analysis finds robust effects of topic on linguistic variation. Some speakers (such as Admin_EF, Admin_JB and Design_RC) show variation in /h/ usage according to broad work vs. non-work topics, as previously demonstrated in Douglas-Cowie (1978), Coupland (1981), Gordon et al. (2004) and Devlin (2014). All three speakers demonstrate less /h/-dropping in work topics (§7.3.3).

Analysis of individual usages of /h/-retention and their surrounding discourse contexts allows for the examination of the potential social meanings of full /h/. Speakers such as Decoration_DJ and Production_RC show use of full /h/ in moments of increased attention to speech and awareness of the recording situation. Speaker Admin_JB uses more full /h/ when referring to senior members of staff specifically, but not when referring to junior staff. Speaker Design_RC also uses more full /h/ tokens in moments where he expresses judgement towards other employees less knowledgeable than himself or asserts his high level of skill. These findings suggest that a variable like /h/, with established broad indexical meanings, can and is used by speakers – particularly those with more variable levels of /h/-dropping – to do discourse-level social work (§7.3.4 & §7.3.5).

There are no identifiable indexical links between (i) variation and broad social categories and practices, most likely due to it being a very local feature which research suggests (§6.2.3) has a lower level of linguistic awareness. As such, it is not surprising that the variable shows little correlation with work vs. non-work topics across the dataset, and that, for most speakers, it was linguistically constrained but not affected by social or discursive factors. However, three speakers do show a topic-based distinction between tenser and laxer (i) vowels, though they do not all demonstrate the same pattern. Speaker Design_RC has more extreme acoustic (i) measurements for home topics and more conservative measurements for work topics; Firing_SJ has acoustically retracted (i) tokens in home topics and acoustically fronted tokens in work topics; and Design_WH has the reverse of Firing_SJ's pattern, with acoustically retracted (i) tokens in work topics and acoustically fronted tokens in home topics.

Having examined these three speakers' acoustically tensest and laxest (i) tokens in their discourse contexts, I hypothesise that more acoustically extreme tokens may be associated with expressive, emotive and uninhibited topics, while acoustically conservative and backed tokens may be associated with authoritative, knowledgeable, reserved and self-conscious topics. These individualistic associations between a variant and an affect or stance may accrete into a work vs. non-work distinction that is observable across the three speakers (§7.4.5). Section (ii) that follows examines why this may be the case for these three speakers in particular.

The social meanings which are associated with /h/-retention in this dataset appear to be strongly linked to the variable's established social meanings, as outlined in Mugglestone (2007). /h/-retention is favoured by speakers with higher levels of training and education, whose jobs are non-prototypically working class, and who have frequent interactions with management. /h/-retention also appears to be used by speakers to demonstrate deference to senior staff, and to maintain a knowledgeable and authoritative persona regarding work. All of this social work appeals to the established power and class dynamics that are associated with /h/ variation in British English. Kirkham (2013, pp. 271–272) has a similar finding in his exploration of lax happY vowels in Sheffield; the lax variant's extant connections with local and working class accents restricts and guides the social work it is used for by local school-aged female speakers.

Conversely, Kirkham's other variable – affrication of /t/ – does not appear to have extant social meanings attached to it, and as such the social meanings associated with affricated /t/ are somewhat indeterminate across speakers. However, acoustically extreme tokens of affricated /t/ were frequently used in evaluative speech acts by the most "iconic" members of his observed communities of practice (Kirkham, 2013, p. 272), suggesting it is available for social work, but the lack of associated broad social meanings mean it is more unrestricted in how it may be used by individuals.

This may also be the case for acoustically extreme tokens of (i). The three speakers who demonstrate the most consistent topic-based variation of (i), two of whom also have high levels of variation in /h/, all have non-prototypical working-class roles in the industry. There is not complete consistency in the types of topics and stances in which their acoustically lax and tense tokens of (i) appear, but tenser tokens tend to appear in particularly expressive moments of interaction, whereas laxer tokens appear to be associated with authoritative and reserved talk. Because the (i) variable does not have established social meanings upon which to draw, social meanings of (i) used by speakers in this dataset are more indeterminate, but there is a "kernel of similarity" (Podesva, 2008, p. 3) between the emergent meanings that may be associated with (i) in this dataset.

ii. Contribution to theories of language and style

All three main theories of language and style (Attention to Speech, Audience Design and Speaker Design, as outlined in §7.2) were used in contextualising the language variation observed in this dataset.

Some speakers appear to revert to standard /h/ usage when increased attention is paid to their speech, as suggested by Labov (1972). For example, speaker Decoration_DJ's anomalously low level of /h/-dropping seemed to be linked to her attention to speech, as evidenced by the abrupt change in variable usage in asides and other more naturalistic speech.

Some speakers show variability in /h/ that appears to be linked to an imagined audience, their senior management, as hypothesised by Bell (1984). For example, speaker Admin_JB's position in the industry demands she regularly interact with both factory floor staff and senior management. Her intermediate level of /h/-dropping suggested she may have the need or ability to shift between full and dropped /h/ based on audience, a suggestion reinforced by her consistent use of /h/-full pronouns when referring to her senior managers, but not for anybody else.

The data also demonstrated potential evidence for /h/ (among other variables such as fully-released /t/, see §7.3.7) correlating with locally-recognised personae, such as ‘skilled worker’ or ‘administrator’. These personae drew from a pool of potential meanings in interaction for /h/ and broad social meanings already established for the variable, fitting the framework of indexical fields laid out by Eckert (2008). For example, speaker Design_RC’s marked shift towards more use of full /h/ in work topics suggests he may use full /h/ as a marker of his authoritative, knowledgeable, ‘tortured artist’ persona.

Holistically, this analysis demonstrates that theories of language and style may not be mutually exclusive, but that the relevance of each must be determined in relation to the speaker in question’s individual context. A speaker’s reaction to the recording situation, their social status, and their pattern of variable usage may all be slightly different, and may be explained according to different language and style theories.

The speakers who seemed to show the largest style shifts for each variable, or the most robust correlation with potential social meanings, were frequently the speakers in this dataset whose industrial roles involved different social practices and expectations than typical factory floor staff. The management speaker, the administrators, the senior fireman and the two modellers demonstrated the most potential for socially-motivated linguistic variation, the latter speakers (Design_RC and Design_WH) in both /h/ and (i). That these speakers seem to show the most marked style shifting is perhaps not surprising – their spatial isolation, non-mass production activities and frequent interaction with clients and management perhaps require more style work to be carried out in their interactions. Once again, as suggested by Love and Walker (2012, p. 12), “perhaps the ability to shift is dependent upon having different cultural allegiances or identities to shift between”.

Additionally, this analysis has suggested a link between linguistic variation and emotional talk. Two speakers were examined according to their opposing reactions to emotional topics – Decoration_DJ reverted to /h/-dropping, whereas Design_WH used more /h/-retention. This goes against Labov's (1972) suggestion that emotional topics elicit the most natural, and therefore the most vernacular and non-standard speech. Instead, my analytical conclusions align with Sharma's (2018) recent work on biographical indexicality, which demonstrates one speaker shifting between what she calls 'lects' in various situations. Sharma states that a speaker's Lect 1 represents their first or most natural langauge variety – which may or may not be a 'vernacular' style in the Labovian sense, and may be different for individual speakers depending on their life trajectory (Sharma, 2018, p. 4). Speakers may move away from their Lect 1 to do certain style work, but frequently revert back to it in times of higher cognitive load.

This may be the case for the speakers studied here – Decoration_DJ's lect 1 may include /h/-dropping, while Design_WH's lect 1 includes /h/-retention. Emotional topics provoke both speakers to revert to their personal lect 1, giving a unifying motivation for their divergent patterning.

8.2.3 Oral history and linguistic methods

RQ3*: What impact does the oral history data have on the methodologies employed and results obtained from this project?*

The use of an oral history dataset has influenced, restricted and enabled certain methodological choices to be made, and has affected the outcomes of the analysis and the shape of the thesis as a whole.

i. Examination of locally-salient hierarchies

When assessing the oral history archive as a data source for this project, it was clear that the group of people sampled within it were relatively demographically homogenous. They were all working class (and, more specifically, all employed in the same broadly working-class industry); they were all from North Staffordshire; they were mostly 50+ years old; and they were exclusively white (to my knowledge there were no minority ethnic people interviewed in the archive[28]). Men and women were interviewed, but all had similar ages and class status. As such, in investigating variation between speakers, I needed to investigate socially salient groupings within this set of speakers.

I was, of course, unable to carry out ethnographic study of the group in order to investigate their social networks (Milroy, 2002) or communities of practice (Eckert, 2000), as employed in sociolinguistic studies such as Moore (2010), Kirkham (2013) and Howley (2015). However, from detailed research on the pottery industry and informed by the content of the oral history interviews themselves, I was able to formalise an internal hierarchy for the pottery industry, and develop a detailed knowledge of the individual roles occupied by each speaker. This hierarchy formed an important basis for my quantitative analysis, and was supported by socio-spatial observations about the pottery industry made by previous researchers (such as Baker, 1991; Jones, 1961; Sekers, 1981). This built upon work by, for example, Rickford (1986), whose observation of the Estate/Non-Estate Class divide in Cane Walk, Guyana proved a much more meaningful predictor of linguistic variation in that occupational community, and work by Zhang (2005), which demonstrated the importance of locally-salient occupational systems and hierarchies.

This research also enabled me to reflect on how the demands and day-to-day life of specific occupational roles may link to the social meanings associated with the speakers' /h/ and (i) variation, finding in particular for /h/ that occupational role was a very strong predictor of level of /h/-dropping. This study demonstrates that, alongside macro demographic categories like gender and class and socially-meaningful speaker-developed communities of practice and social networks, attention should be paid to the formal, local-level structures in place in a community, how internal hierarchies may be established and maintained within what looks to be a demographically homogenous community, and what this may mean for linguistic variation.

[28] The industry was not completely monoethnic; one speaker mentions working alongside Asian migrants during his time in the industry, but gives no further detail.

ii. Manual transcription, coding and analysis

It is not uncommon in contemporary (socio)linguistic work to employ transcription and forced alignment technologies to automate some of the linguistic data processing of large datasets (e.g. Bailey, 2017; Labov et al., 2013; Smith and Holmes-Elliott, 2017). The technologies involved have been shown to be very accurate on certain data (MacKenzie and Turton, 2013) and offer a huge number of benefits to users, including speeding up annotation processes.

However, having run a test on one sample from the oral history dataset, I decided against using forced alignment software for this thesis, for reasons outlined in §4.3.1. Instead, three research assistants and I orthographically transcribed the sound files, and I manually coded all tokens of /h/ and (i). This, naturally, was more time consuming, but gave me a deeper understanding of the dataset that aided the subsequent analysis, particularly the qualitative analysis presented in Chapter 7. Developing this understanding of the speakers, their varieties, and the content of the interviews enabled me to more fully understand the social makeup of the pottery industry. This was particularly important considering I did not collect the data myself in the first instance, so my exposure to it and my understanding of the community may have been negatively affected had the coding and extraction of variables been automated. While time constraints are of course important, I would encourage this lengthy engagement with the data in projects which explore specific communities and social meaning in interaction.

iii. Qualitative and quantitative methods

In this project I conducted quantitative, statistical analyses of /h/ and (i) variables and expanded upon this with qualitative investigation of tokens in interaction. This follows the methods employed in many sociolinguistics, and specifically Speaker Design, studies (Coupland, 2001; Eckert, 2000; Kirkham, 2013; Mendoza-Denton, 2008; Moore and Carter, 2015; Podesva et al., 2002), and further endorses multi-method approaches in sociolinguistics.

While the quantitative methods gave a broad idea of language variation in this dataset, particularly as linked to the social structure of the pottery industry, the qualitative analysis allowed further contextualisation and exploration of this, revealing a diverse but linked set of motivations for speakers Decoration_DJ, Production_RC, Admin_EF, Admin_JB, Firing_SJ, Design_RC and Design_WH to exhibit anomalous patterns of /h/ and (i) usage compared to their peers.

I also followed Podesva (2007, 2011) and Kirkham (2013) in pursuing analysis of social meaning using acoustic and statistical outliers. For /h/, my qualitative analysis focussed on speakers with anomalously low levels of /h/-dropping compared to the rest of the dataset, and for (i) I investigated the tensest and laxest (i) tokens and their discursive purpose and content. Podesva (2011, p. 254) states that '[i]f an axis of phonetic variation indexes a particular social meaning, then outliers on that axis can be understood as the strongest indicators of meaning", though Kirkham (2013, pp. 207–8) adds that this does not entail "a linear relationship between social meanings and continuous acoustic measurements, such that a higher acoustic value always indicates progressively 'more' of a particular social meaning". As such, not all acoustically extreme tokens may appear in utterances associated with particular social force, stance or affect. However, I did consistently find interesting potential social relationships between statistically and acoustically extreme users of /h/ and (i), suggesting robustness in this methodological choice.

8.3 Evaluation of dataset

Working with an extant oral history dataset presents unique opportunities and challenges in linguistic work, many of which were outlined in §3.4.2. Several of these became apparent throughout this project, and are evaluated here.

I was particularly lucky in inheriting an oral history archive with comprehensive documentation of biographical materials and consent forms, which made selection of speakers and establishment of ethical approval much easier than in other linguistic studies using oral history data (Braber and Davies, 2016). The archive was also recorded in the first instance using high-quality lapel microphones, which made acoustic analysis possible without the need for technical intervention, as in Stuart Smith et al. (2016). The relative recency of the archive's collection undoubtedly contributed to its usefulness as a linguistic dataset, as well as the fastidious organisation of its contents by the original project lead, Vicky Martin, and her subsequent assistance. I am indebted to her.

There were some surprises and problems introduced by the archive. Naturally, not being the primary data collector meant I did not have control over the choice of subjects, the topics and types of talk covered, or the interview setting. This restricted and affected the analysis in several ways. Subjects were selected by Vicky Martin, the project lead, based on their role in the pottery industry. However, she was unable to find multiple speakers for some roles, whereas others were more repeatedly sampled, which meant some roles were represented by multiple speakers and others were not. My analysis had to follow suit, with some job types represented by three speakers (e.g. caster) and others by just one (e.g. manager) – see §3.4.3.

Additionally, in my analysis, speakers had to be discarded based on their background (such as a privately-educated management speaker with a very RP accent), and some speakers had fewer available tokens than others (such as Decoration_JM). Overall, these factors left the sample slightly imbalanced.

Only one type of talk was elicited in the oral history interviews, so I was unable to compare interview speech with either more casual group talk or more formal reading tasks, as in Labov's (1972) sociolinguistic interview. Additionally, topics were selected by Martin from a pre-determined list of questions, or they emerged as the interview progressed. As such, my topic-based analysis could not be controlled. However, this meant that topic selection was more naturalistic. Furthermore, not only did several speakers have a broad home vs work distinction, their topics of discussion (often led by Martin's questioning) tended to focus on similar themes: childhood and family, school and neighbourhood, training and apprenticeships, factory environment and step-by-step processes, for example (see §3.4.1).

The fact that the interviews were collected for a non-linguistic purpose eased the effect of the Observer's Paradox (Labov, 1982), in that the speakers were not aware their language specifically would be being analysed. However, all were made aware through the consent form (see Figure 12) that their data may be used for research purposes beyond those of the original archive. As such, observer's effects are still apparent, as the speakers were in an unnatural interview situation with a near-stranger for the purposes of creating an oral historic record. As such the speech analysed in this dataset is unlikely to be the entirely unguarded vernacular of the speakers (if such a thing exists) as they may feel the need to alter it to impress or relate to the interviewer or audience, relate very local or personal stories, or they may have been particularly uncomfortable with the topics or setting involved. However, my analysis did not focus heavily on the concept of a speaker's vernacular, instead examining how they use language in this particular speech situation, and accounted for how the speaker reacted to the interview setting and topics covered therein (as encouraged by Wolfson, 1976).

However, one aspect not systematically considered – beyond being kept consistent – was the interviewer effects on either the realisation of individual variables, or on the type of discourse elicited and whether this differed between speakers. Broadly, my impression is that Martin was a very consistent interviewer, not behaving differently with different interviewees, and as explained in §3.4.1, this was her intent. However, she may have unconsciously accommodated to or diverged from the variety of her interviewee, and this, as well as her own native accent, may in turn have affected the interviewee's speech. Further research could examine this in detail.

Despite not being designed by a linguist, the interview content did not place restrictions on the variables I was able to extract and analyse – both syllable-initial /h/ and unstressed (i) were frequent enough to collect sufficient tokens per speaker to enable robust quantitative analysis. Additionally, while oral history data has been used by many linguists to conduct quantitative analysis (see §3.3.1), few (other than Moore and Carter, 2015) have pursued qualitative analysis of extant historical material, as in this thesis. The archive provided a surprisingly fruitful source for this kind of analysis – the interviews were made up of descriptive narratives, which encouraged the types of affect, stance and positioning which frequently correlate with use of particular dialect features. As a result, the interviews were rich sources of evidence for interaction-level meaning that mapped on to local social categories and upwards to macro social types (see §7.3.7). In this way, the analysis in Chapter 7 demonstrates the merit of exploring social meaning in oral history data, and the richness of findings that can come from this.

However, one of the critiques of using oral history as an academic source is the integrity of the recounted material. As outlined in §3.2.2, Perks and Thomson (2006, p. 3) explain the main criticisms included "the assertion that memory was distorted by physical deterioration and nostalgia in old age, by the personal biases of both interviewer and interviewee, and by the influence of collective and retrospective versions of the past". I based my divisions of the pottery industry into departments, descriptions of those departments, and analysis of motivations for intra-speaker social meaning partly on the content provided in the oral history interviews, and the way the speakers described their roles and day-to-day lives. This particular archive was recorded between 2000 and 2004, some years after the pottery industry's heyday, and after the period in which the majority of speakers actually worked in a potbank – many were retired at the time of being interviewed, or their potbanks closed during the industry's collapse. It could be the case that fading memory, exaggeration, nostalgia or other pressures encouraged an inaccurate reflection of what the industry was like. This in turn could have affected the assumptions and knowledge my analysis drew upon.

Nonetheless, the descriptions given by the interviewees were corroborated by academic sources (Baker, 1991; Jones, 1961; Sekers, 1981), and by each other – while speakers had different experiences, their descriptions of roles and events often overlapped. And finally, in response to oral history critics, Portelli (1979) asserts that recounted records that are imbued with bias and subjectivity are no less true, but reflect a lived history experienced from a personal standpoint. The speakers' interviews may not be an objective list of historical facts and occurrences, but they are a document of how a history was lived and is remembered, and in that way are still valuable sources. My analysis, therefore, is still grounded in the lived experiences of pottery workers, and their affective reactions to this.

8.4 Limitations

As in all research projects, restrictions, accessibility and time constraints leave room for improvement. Different departments were unequally represented in the dataset – for instance, there were five male design speakers and only one manager, and seven female decoration speakers, and only two administrators. This was partly because of the makeup of the extant oral history archive from which the data was drawn, which only aimed for at least one speaker from each role, and thus restricted the choices that could be made here.

However, there were originally two male managers to be analysed in the project, but it quickly became clear that one of them had a very RP-like, highly standard accent with very few local features. This was likely because of his private education (as noted in his interview). His inclusion in this analysis, particularly as one of only two managers, may have skewed the data, and so he was removed, and the analysis had progressed too far for his data to be replaced. This left just one manager as a representative for his department; while Management_TB's data was interesting, we cannot know how representative he is of other management-level speakers in the industry. His data was also removed from the regression models for reasons of imbalance.

It could be the case that Management_TB himself is the anomaly and other managers had RP-like dialect varieties. However, this is unlikely: the manager removed from the dataset was a manager-owner, who inherited his managerial status through family connections. In contrast, Management_TB started his career on the factory floor before rising through the ranks to works manager (see §5.4.3.1), still very much in regular contact with day-to-day operations. I believe excluding the original management speaker was the best choice for the analysis, and left Management_TB's data as an interesting example of someone with factory-floor beginnings rising to a management position, and the potential linguistic effects of this transition.

The restricted availability of speakers from the archive also meant that only 14 of the 26 speakers in the dataset had distinct 'home' and 'work' interviews – several speakers only had one tape (one hour) of recorded interview content which covered many topics, both work and non-work based, often mixed together. This meant that broad home/work topic analysis could only be carried out on 14 speakers.

Additionally, speakers with multiple hours of interview content tended to be more comfortable providing periods of extended talk. This resulted in plenty of tokens available to reach my analysis target, and speakers with a home and work interview had 50 tokens of (i) and sixty tokens of /h/ from each interview, totalling 100 and 120 respectively. However, speakers with only one interview tape tended to be more reticent with their responses, and as such no further interviews were pursued by Martin. Consequently, the content from single-interview speakers often struggled to exceed the minimum target of 50 (i) and 60 /h/ tokens. Consequently, some speakers have 100/120 tokens as part of the analysis, and some have 50/60. While this is an imbalance, 50 (i) and 60 /h/ tokens is a robust number for sound linguistic analysis (Di Paolo et al., 2010), and the fact that the linguistic and social variation exhibited by these speakers matches those with 100/120 tokens provides some reassurance that the analysis remains valid.

8.5 Future research

This thesis built on some of the research and findings of Leach (2012), and introduced more avenues for future exploration of language variation and social meaning in Stoke-on-Trent and the pottery industry specifically. Expanding the dataset, either through digitisation and analysis of more oral history interviews or conducting further interviews myself with ex-potters, would allow me to test the robustness of the hypotheses and conclusions from this project. In particular, further samples from management and administration speakers in particular would strengthen the observations made about the particular demands of these industrial roles.

One tentative conclusion made in Chapter 6 was that, considering the widespread use of tense [i:] in (i) vowels by all speakers, that it may be a linguistic emblem of occupation within the pottery industry specifically. The original oral history archive did contain interviews with people in ancillary (such as delivery-person and saggar maker) and unrelated roles (such as doctor, hairdresser and miner) to the pottery industry. Analysis of the same linguistic features in these speakers may illuminate this hypothesis further, and build a broader picture of life and language in 20th Century Stoke-on-Trent. Linguistic analysis of miners in particular would allow comparisons with other research on mining communities, such as Dyer (2001), Devlin (2016) and Burland (2017), for example.

Regionality in Stoke-on-Trent is particularly important, as expressed by Gibson (1955), who noted that in the 1950s much of Staffordshire's rural and agricultural nature remained, in contrast to the industrial growth of Stoke-on-Trent in the north of the county and the Black Country in the south. Linguistic comparison between rural north Staffordshire speakers of the 20th Century and the industrial workers of this dataset would allow exploration of the influence of the pottery industry on the variety spoken in Stoke-on-Trent as compared to the surrounding agricultural region.

Moreover, Stoke-on-Trent is geographically and politically a federation of six towns (north to south: Tunstall, Burslem, Hanley, Stoke, Fenton and

Longton) as explained in §2.2.3. Several speakers in Leach & Montgomery (2013) suggested perceptual accent differences between speakers in the north and south of the city, such as "Longton accent has slight Brum tones where our side [Tunstall] has more of a rural twang". It was commonly suggested by respondents in Leach & Montgomery (2013) that the towns in the south of the city sounded 'more Brummie' and those in the north sounded 'more Manc or Scouse'. Another avenue of interest with this dataset would be to see if the perceived differences in accent between the six towns of Stoke-on-Trent has any basis in linguistic production.

Finally, Leach (2012) suggested that younger Stoke-on-Trent speakers appeared to have a distinct pattern of variation for (i) – tenser vowels in *–es* suffixes and laxer vowels in tokens of *it* – compared to the broader variation exhibited by slightly older speakers. The results of this thesis show that older speakers have a potentially even greater deal of variability in (i) articulation, and together these findings are suggestive of a change in progress in the local dialect, from phonetically-conditioned variation to phonologised [i:z] suffixes. Further research could compare the oral history archive data (where speakers' birth dates ranged from 1910-1944) with new data collected from older contemporary local speakers (aged 65+, born 1945-1955), middle aged speakers (aged 45-65, born 1955-1975), adult speakers (aged 25-45, born 1975-1995) and young speakers (aged >25, born after 1995), to see if this is in fact the case.

8.6 Final words

The research in this thesis has demonstrated intra- and inter-speaker variation in the use of syllable-initial /h/ and unstressed (i) in 20th Century pottery workers from Stoke-on-Trent, much of which appears to be socially motivated. I have shown the importance of attending to local social structures and hierarchies and combining quantitative and qualitative methods in creating a full picture of socially-motivated dialect variation, as well as the potential that oral history archives present for sociolinguistic research of this nature. I hope to pursue this analysis further, and to have encouraged others' similar projects.

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Appendix 1 –

Ethics approval

The University Of Sheffield.

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1 April 2014

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Dear Hannah

VOICES OF THE POTTERIES: ACCENT, IDENTITY AND SOCIAL HISTORY IN STOKE-ON-TRENT

On behalf of the University ethics reviewers who reviewed your project, I am pleased to inform you that on 1 April 2014 the above-named project was **unconditionally approved** on ethics grounds, on the basis that you will adhere to the following document that you submitted for ethics review:

- University research ethics application form (dated 18 February 2014)
- Participant consent form (dated 18 February 2014)

If during the course of the project you need to deviate from the above-approved document please inform me. Written approval will be required for significant deviations from or significant changes to the above-approved document. Please also inform me should you decide to terminate the project prematurely.

Yours sincerely

Emma Bradley
Ethics Administrator

UNIVERSITY OF SHEFFIELD