Regional Variation in South African English: A Socio-phonetic comparison of young White speakers in Cape Town and Durban

[Bruce / Wileman /WLMBRU001]

A [minor]dissertation submitted in [*partial] fullfilment* of the requirements for the award of the degree of Master of Arts in Linguistics

Faculty of the Humanities

University of Cape Town

[2011]

ABSTRACT:

This research has been designed to investigate regional differences in a variety of South African English known as General South African English, between the White communities of Durban and Cape Town respectively. The research is socio-phonetic in its focus and therefore three variables, the PRICE, NURSE and KIT vowels of Wells' (1982) lexical sets, were selected for acoustic analysis, a selection which was guided partly by the researcher's own intuitions and partly by observed correlations in the impressionistic literature between certain realisations of these vowels and the Cape and Kwa-Zulu Natal as regions.

Twenty-four subjects, twelve subjects from Cape Town and twelve subjects from Durban, were selected, with each regional subsample further divided into six male and six female subjects. All subjects were between the ages of 18 and 28, with a mean age of 21 for the sample as a whole. The subjects participated in 'Labovian' sociolinguistic interviews (Labov 1972) which included the reading of a wordlist.

Tokens of the three variables were extracted from the interviews for instrumental acoustic analysis using the computer programme PRAAT (Boersma & Weenink 2010). The formant measurements for these tokens provided by PRAAT were then grouped according to the relevant phonetic environments. These data were then normalised using Watt and Fabricius (2003) normalisation and t-tests as well as Wilcoxon rank sum tests in cases where the data were not normally distributed were performed on the normalised data in order to discover statistically significant differences. Graphs were constructed in order to display the results.

The author concludes with a summary and discussion of the results. It was found that there were certain significant regional differences between the two cities for the trajectory length of the PRICE vowel, the PRICE vowel offset and for the centralisation of the KIT vowel in Durban for male speakers, in particular. Minimal evidence of regional variation was found for the NURSE vowel and the PRICE vowel onset and these differences are not statistically significant.

ACKNOWLEDGEMENTS:

The author would like to acknowledge the contributions of the following individuals and organisations, without whom, this project would not have been completed in its current form:

The NRF, for providing essential funding for this research and for funding the SARCHI chair of Professor Mesthrie. The Postgraduate Studies Funding Committee, for providing additional funding. The supervisor for this research project, Professor Rajend Mesthrie. His contributions include providing useful advice and constructive criticism, providing access to the departmental interview database as well as departmental resources (such as recording equipment etc.), organising interviews with participants, reading through and commenting on rough drafts, providing additional training where necessary, financial support for additional work and training, organization of conference logistics, providing answers to my queries and generally providing help and advice wherever necessary and whenever possible. Alida Chevalier, for all her administrative assistance, for setting up meetings, organising conference logistics and transport, her contribution to interviews, help with locating interview participants and assistance with the organising for interviews. The following individuals, for contributing interviews to the larger project: Rajend Mesthrie, Alida Chevalier, Wendy Stephenson, Layla Sieed, Kelly Williams and Cathy Gill. Yolandi Klein, for some training in basic statistics. The interview participants (who for confidentiality reasons, cannot be named) who sacrificed their time to talk to me and often helped organise interviews with other participants. Tracey Toefy, for providing me with invaluable training in socio-phonetics, in particular, vowel normalisation and instrumental acoustic analysis. The UCT Postgraduate Funding office, for providing the necessary conference travel funding. Marcus Collins, for his help in locating interview participants. The organisers of The Joint Annual SAALT, SAALA and EPIP Conference 2011: Interactions and Interfaces, at Rhodes University which gave me the opportunity to receive useful feedback for this project. All conference delegates who provided feedback, in particular, Ian Bekker, Sabine Zerbian and Paul Foulkes. Ian Bekker, for providing very useful suggestions and comments. The 'team' of socio-phoneticians at the University of Cape Town, including Tracey Toefy, Alida Chevalier, Justin Brown and Kirstin Wilmot for their advice and feedback. Katya Mauff and the Statistical Consulting Services (UCT), for all the statistical analysis and interpretation. My family, for their support. I apologise if I have left anyone out.

Bruce Wileman.

INDEX

1 CHAPTER ONE: INTRODUCTION.

The principal aim of this research project is to investigate the possible existence of regional variation for one particular variety of South African English (henceforth SAE), namely the standard variety, General SAE, as spoken by young, White speakers, focusing on certain specific phonological variables. These variables will be analysed using instrumental acoustic techniques and the results will be interpreted by means of statistical analysis wherever possible. The two regions which will be compared are the Western Cape and Kwa-Zulu Natal (represented by the cities of Cape Town and Durban respectively). It is hypothesised that there will be certain differences between speakers from Durban and speakers from Cape Town for the vowel variables investigated in this research, which is designed to test whether such differences exist. The following chapter provides a brief outline of the historical background of the variety as well as some of its characteristics, followed by a review of the relevant literature pertaining to regional variation. Following this, the methodology will be explained, which is followed by the results chapter. The paper ends with a discussion, summary and conclusion.

1.1 BRIEF HISTORICAL BACKGROUND OF WHITE SOUTH AFRICAN ENGLISH.

The English language was firmly established in South Africa in the year 1820, when settlers from Britain, approximately five-thousand in number, arrived on the shores of Port Elizabeth (Lanham & Macdonald 1979, Lass 2002). The settlers subsequently dispersed, especially into the rural areas of the Cape (Lanham & Macdonald 1979). The English language was later proclaimed by Lord Charles Somerset, then governor of the Cape Colony, to be the sole official language there, in 1822 (Lass 2002). As the majority of the settlers during this time were from southern Britain, that is, the Home Counties and London and were of a working or lower-middle class background (Lanham & Macdonald 1979), their dialect and White South African English today can be described as an (initially) non-standard dialect of southern (more specifically, south-eastern) British English, as Lass (2002) also maintains.

From the year 1848 to 1862, the second major influx of English-speakers from Britain arrived in South Africa (Lanham & Macdonald 1979), this time, to settle in Natal. One of the most significant differences between this settlement and the previous one was that the upper and middle classes had a proportionately greater representation in the Natal settlement than was

the case in the Cape (Lanham & Macdonald 1979:74). The Natal settlement also differed from the Cape settlement in a number of other respects, for example, the settler population was more concentrated and more occupationally and economically diverse in Natal (Lanham & Macdonald 1979).

Lanham and Macdonald (1979:74-75) therefore claim that although the forces which simplified the order of Cape settler society were also present in Natal, the effects of these forces were less drastic in this latter settlement. These forces contributed to the homogeneity of English spoken at the Cape. In contrast, due to the less drastic effect of these forces in Natal, together with the fact that the Natal settlement took place more recently than the Cape settlement, some of the initial diversity existing in the speech of the original Natal settlers may have been retained and the British standard spoken at the time "shaded into" the original settler speech for probably most of the English speakers in Natal (Lanham & Macdonald 1979:75). Aside from the differences between the Cape and Natal settlements mentioned above, the Natal settlement also differed in terms of the regional origins of the settlers. The majority of the 1820 settlers originated from the South Eastern parts of England, especially from London and the immediately surrounding areas. The Natal settlers, however, according to Lanham and Macdonald (1979), originated mostly from the north of England with a large contingent from such areas as Yorkshire, Lancashire and the Midlands. Therefore, because the mix of accents in these two settlements was very different, it seems possible, if not highly probable, that the English spoken in Natal and that spoken in the Cape would have had quite different characteristics, at least initially.

The last significant influx of immigrants not only from the British Isles, but also from elsewhere, arrived from about the year 1875 to around 1904, after gold was discovered and as a result of the rapid expansion of the mining industry in South Africa (Lass 2002).

There has been some disagreement in the literature on the subject, regarding the influence which these respective settlements have had on White South African English, as well as the extent to which regional differences in White South African English exist. Lanham and Macdonald (1979), for example, suggest that regional differences were apparent (at least at the time that they conducted their research), but that such differences were being levelled out, especially among younger speakers, while previous work by Lanham, for example, Lanham (1967) had not been as unequivocal about this.

Lanham and Macdonald (1979) also suggest that the three main stages of the development of SAE (namely, the Cape settlement, the Natal settlement and the final major influx of settlers around 1875-1904) all contributed towards defining the variety to some extent. Lass (2002) however, claims that neither the settlement in Natal, nor the changes resulting from the expansion of the mining industry contributed in any significant way to the development of White SAE and that the foundation set by the 1820 settlement was by far the most influential. Referring to the last major influx of immigrants, he states that "...it (like the Natal input) seems not to have had a major effect on the subsequent development of SAE as a distinct type, the seeds of that development were already sown in 1820. What the Natal settlement may have done is to entrench more deeply a particular set of 'colonial' (i.e. nostalgic) attitudes toward British norms and this, in all parts of the country, has been of considerable importance in defining the lay notion of 'standard'" (Lass 2002:109). This is in agreement with the earlier work of Lanham (1967:105) with regard to the claim that most of the trends observed in White SAE originated from the English spoken by these early settlers, which resulted in the distinctly Southern British English bias in White SAE.

Lass (2002) dismisses the assertion made by Lanham and Macdonald (1979) that the input from the Natal settlement was of particular importance for providing White SAE with certain glide-weakened diphthongs arguing that as such processes are extensive in English worldwide, their regional origins cannot be definitively established. Thus Lass (2002) differs from Lanham and Macdonald (1979) in his assessment of the contribution the Natal settlement played in the development of White SAE and questions the validity of claims regarding the regional origins of certain variables.

Other researchers have also commented on the possibility of significant regional variation for SAE. Bekker (2009:71), for example, concludes that although the situation in the Eastern Cape was more clear-cut, the Natal settlement was only minimally affected by the 'Founder Effect' and therefore claims that if there had been any sort of mixture of dialects in Natal, that the resultant variety "...would have been a distinctly north-of-England sounding variety, although tempered no doubt to some degree by a 'Standard English'-influence...," that is, a variety different from the distinctly South-Eastern English sounding Cape English. Bekker (2009) does however seem to assume that regional variation, certainly in the present day, is not as salient a variable as, for example, social class. Following a three stage koinéization model, Bekker (2009) sketches the outline of the development of General SAE (essentially the modern SAE standard variety), involving first the development of regional varieties, Cape

English and Natal English, which were then reanalysed and absorbed as Broad SAE and General SAE respectively, due to the mixing occurring primarily in Johannesburg, but also in the other modern industrial cities of South Africa and that this new stratification, which is now class-based, then spread throughout the rest of South Africa with General SAE as the new standard (Bekker 2009). Bekker (2009) presumes that the aforementioned spread has resulted in a gradual, but perhaps incomplete recession of the regional markers of Natal English and Cape English, resulting in increasing homogeneity in White SAE and is in agreement with Wells (1982) on this point.

Bekker (2009) observes that evidence for modern regional diversification is insufficient and this fact, along with his focus on privileged White speakers and use of word list tokens only in his study, justifies his conclusion that regionally-based variants would not be likely to feature prominently in his data. He does however, allow for the possible occurrence of regionalisms in other, less formal contexts (Bekker 2009:122). Bekker (2009:122) then goes on to mention the potential existence of "...a few isolated features..." remarked upon by in the impressionistic literature and then claims that these, if they do in fact exist, are fairly recent as well as being quite variable. He singles out, for special comment in a footnote about these features, two of the variables which are investigated in the current research, namely pre-palato-alveolar KIT (for example, in the word *fish*) as a Natal English marker and a monophthongised and fronted PRICE vowel associated with Johannesburg (Bekker 2009:122). Bekker (2009) claims that it is not possible to ascertain at present the extent to which these features have remained centrally based in their regions of origin, or whether these have spread more extensively throughout White SAE. Bekker (2009) agrees with Lass (1990), that more research investigating regional variation in modern SAE is necessary.

1.2 THE SOUTH AFRICAN ENGLISH LECTAL TRICHOTOMY.

It was originally claimed by Lanham and Macdonald (1979) that there were three lectal types in SAE and that these correlated with certain social variables. The names Extreme, Respectable and Conservative were given to these lectal types based on the phonological variants of each type (Lanham & Prinsloo 1978). Conservative SAE correlated with upper class affiliation and strong links to Britain, as well as the variables "over the age of 45" and "female" (Lanham & Macdonald 1979). In terms of phonological characteristics, Conservative SAE bore a very close resemblance to British Received Pronunciation and

therefore few characteristically South African variables were said to be present in this lectal type.

Lanham and Macdonald (1979:30) claimed that there was an association between Respectable SAE and the combination of variables "...European Jewish, female, younger than 45, without associations with Britain". It was further noted that what Lanham and Macdonald (1979:36) call "General SAE variables", are found more abundantly in Respectable SAE. Of relevance to the current research, the variables of Natal English as described by Lanham and Macdonald (1979) were found to be prevalent in Respectable SAE. These will be further discussed below.

Extreme SAE variables were said to correlate with Afrikaans descent and the lower social classes (Lanham & Macdonald (1979).The Extreme SAE accent profile consists of variables which Lanham and Macdonald (1979) called Cape variables as well as a mixture of Natal or General SAE variables. The Cape variables include, according to Lanham and Macdonald (1979:37-40), "Fronted, glide weakened [æu]" "Obstruent [r]...," and "Backed, raised, rounded, shortened [aa]..."[1].

Lass (2002) offers a qualitative description of the lectal trichotomy in White SAE, rather than the quantitative one of Lanham and Macdonald (1979), mentioned above. In this revised account, Conservative SAE refers to Received Pronunciation with upper-middle-class associations and which is now somewhat archaic. Lass (2002) describes Respectable SAE as the standard variety of SAE and Extreme SAE is said to be associated with the lower classes in White society, correlating with such variables as low levels of education and lower socioeconomic status.

Bekker (2009) prefers the terms "General," "Broad" and "Cultivated" to refer to what Lanham and Macdonald (1979) and others have called "Respectable," "Extreme" and "Conservative" SAE. Bekker (2009:68) therefore considers General SAE to be the equivalent

[1] Brackets are not found in the original quotation from Lanham and Macdonald (1979:37-40) but are inserted here in keeping with phonetic transcription conventions.

of Lanham and Macdonald's (1979) "Respectable SAE." General SAE, according to Bekker (2009), can be considered to be the standard variety for most speakers of SAE.

1.3 THE VARIABLES.

Two of the linguistic variables investigated in the current research correspond to what Lanham and Macdonald (1979:41) have identified as the salient Natal English variables, "fronted, glide-weakened ai ('Fronted ai' in *high*, *ride*, *while*)," and "raised, fronted, rounded əə ('Fronted əə' in *years*, *Durban*)"(Lanham & Macdonald 1979:44). The third salient Natal English variable mentioned by Lanham and Macdonald (1979:43) is "vowel retraction before l...".

The third variable included in the current investigation is analogous to what Lanham and Macdonald (1979:45) describe as "...high schwa as allophone of /i/ in contexts h_, #_, _C palatal, in *Hilton*, *industry*, *fish.*" This is a variable which Lanham and Macdonald (1979:45) describe as one of the Natal English variables having "...clear local correlations...," although it is perhaps implied that it is less salient as a Natal English variable than the other Natal English variables already mentioned. The description of this variable is further complicated by Lanham and Macdonald's (1979:45) separation of this variable (high schwa) from that of "Low schwa" on the basis of the latter's putative Afrikaans/Dutch origin. In the current research, what Lanham and Macdonald (1979) refer to as "high schwa" and "low schwa" respectively will both be investigated as one variable and the justification for this treatment, particularly in light of more recent research, will be provided below.

For descriptive purposes however, the current research and the following review provided herein will makes use of Wells' (1982) lexical sets as a means of identifying categories of English vowels. This method involves the categorization of vowels by using key words which exemplify categories of vowels as they contain the vowels in question. Thus, for example, the TRAP vowel is the vowel found in all words, such as the word *trap* which have this vowel. For a more detailed description of the various lexical sets of English vowels, the reader is referred to Wells (1982).

This method of vowel categorization avoids the problem of using a standard phonetic transcription of RP, for example, to classify vowels and has the advantage of allowing for a

concise reference to large sets of words sharing a particular vowel (Wells 1982). In terms of Wells' (1982) lexical sets, the variables investigated in this research are the KIT vowel, the PRICE vowel and the NURSE vowel. A review of the relevant literature pertaining to these variables will follow, with a particular focus on literature describing regional variation for these vowels in SAE.

THE KIT VOWEL.

The KIT vowel lexical set, as defined by Wells (1982:127) comprises "...those words whose citation form in the two standard accents, RP and GenAm has the stressed vowel /ɪ/...Phonetically it is a relatively short, lax, fairly front and fairly close unrounded vocoid [ɪ], centralized from, and somewhat closer than, cardinal 2." This class includes words such as " *ship, bit, sick, stitch, stiff, pith, this, wish*..." (Wells 1982:128). Wells (1982) also mentions that vowels in this class are sometimes articulated as central vowels, similar to [ɨ].The behaviour of this particular vowel has frequently been referred to as one of the most distinctive features of SAE. Lass (2002:114) for example, states that "SAE proper (that is, Respectable and Extreme) can in fact be defined by the behaviour of KIT: here (and nowhere else in the English-speaking world), the words *it* and *sit* do not rhyme."

The allophones of the KIT vowel, its historical provenance and its ostensibly exceptional properties have however been controversial in previous research on SAE and this vowel has also therefore received more attention than has been the case for any of the other vowels of SAE (Bekker 2009). The reasons for this will become evident in the following review of the relevant literature.

LANHAM (1967).

Lanham (1967) has claimed that in the Conservative SAE spoken by older individuals, two separate phonemes for the KIT vowel exist and that these phonemes are marginally contrastive, rather than being two allophones of the same phoneme.

By the term "...marginal contrast...", Lanham (1967:21) appears to mean that these phonemes are not in complete complementation, such that, for the most part, the distribution of the two phonemes can be predicted by the phonetic context in which they appear, but their distribution cannot be consistently be predicted in this way. The two values which Lanham (1967:21) proposes for this variety are "[ɪ] and [ɜ][33]" (or [ɐ̟] in the modern IPA; a copy of the original vowel chart used by Lanham (1967) is provided in the appendix), the former of which generally occurs finally, initially, after /h/ and in velar environments, where the latter generally occurs in all other phonetic environments. However, in a small class of words, such as *window*, *pin* and *finish*, Lanham (1967) reports that this variety of SAE (namely Conservative SAE) has [ɪ]. This phoneme therefore occurs outside the phonetic environment predicted by the aforementioned phonological rule.

For this reason, Lanham (1967) concludes that these are two separate phonemes in marginal contrast, rather than simply being allophones of the same phoneme. The finding that among some speakers, the distinction between the words *Finnish* and *finish* is maintained solely by the use of [ɵ] in the first syllable of the former and [ɪ] in the first syllable of the latter, Lanham (1967) takes to be further evidence supporting the claim that these represent two separate phonemes.

Regarding more typically South African varieties, especially Extreme SAE, Lanham (1967:72) observed what he calls "...low schwa...", transcribed as [ə], occurring in stressed syllables, where either /ɜ/ or /i/ would be found in RP. For example, Lanham (1967) reports that low schwa can be heard in the Extreme SAE pronunciation of words such as *sin*, *exhibit*, *split*, *grip* and *did*. Lanham (1967:70-71) claims that in Extreme SAE, the influence of palatal consonants (although, judging from the examples he provides, he is clearly referring to palato-alveolar affricates) does not generally condition the realisation of KIT as an [ɪ]-like vocoid, as is the case in RP, but the vowel is instead realised as [ə]. This occurs, for example, in the words *stitch* and *bridge*, transcribed as [stətš] ([stətʃ] in the modern IPA) and [brədʒ]. Lanham (1967) claims that there is nevertheless a retention of [ɪ] if /ʃ/ is adjacent, for example, in the word *fish*. Lanham (1967) also mentions the retracting influence of /l/ for the

KIT vowel and also suggests that the raising and fronting influence of a velar stop (for example, /k/) may in fact be more influential as a conditioning factor than /l/.

LANHAM AND MACDONALD (1979).

Lanham and Macdonald (1979:45) claim that a clear correlation between the Natal region and the variable they describe as "high schwa" exists and that this variable probably has its origins in the Northern English counties or Scotland. Lanham and Macdonald (1979) furthermore claim that this variable seldom occurs in SAE outside of Natal, except in the pre-palatal environment.

Bekker (2009) notes that if Lanham and Macdonald (1979) were correct, it would mean that the only remaining context in which [ɪ], (that is, the fronter value for KIT as opposed to "high schwa") could occur in Natal English, would be the velar context. This is because the earlier Lanham and Traill (1962) identify four environments which phonetically condition the fronter allophone of the KIT vowel (i.e. [ɪ]). These environments are the pre-palatal (including words where KIT occurs before a palatal which is preceded by /n/), word initial, word final in open syllables with tertiary stress and velar environments as well as in environments where KIT is preceded by /h/ (Lanham & Traill 1962:190). The velar environment is the only phonetic environment which is not included in the inventory of the environments which phonetically condition "high schwa" for Natal English as listed by Lanham and Macdonald (1979) and is therefore the only context for which one would not expect to find "high schwa" (a more centralised value) in Natal English speech, but where one would expect to find a fronter value, according to Lanham and Macdonald's (1979) analysis. Lanham and Macdonald (1979:45) further state in a related footnote, that the occurrence of a schwa-like realisation of /i/ in the pre-palatal environment is partly responsible for "Low schwa", as a highly prevalent feature of SAE, as recognized in Lanham's (1967) earlier research.

The variable "Low schwa" is described by Lanham and Macdonald (1979) as a variable of General SAE, which occurs where more centralised allophones of /i/ are found in British English, for example, in words such as *did* and *build*, especially at the more Extreme end of the lectal continuum.

BAILEY (1984).

This author claims that there is a regional difference for the KIT vowel. It is claimed that the more typically SAE central [ə] (used by most Transvaal and Natal speakers) in stressed syllables is replaced by the vowel [ɪ] for Cape Town speakers, in words such as *pin*, *winter*, *finish* and *window* (Bailey 1984:13). Bailey (1984:14) attempts to explain this difference in terms of hypercorrection by bilingual first language Afrikaans speakers of the phonologically conditioned allophones of the KIT vowel thus overgeneralising the conditioning of the fronter and higher allophone of this vowel. The environments which condition the front, high KIT allophone provided by Bailey (1984:17), based on his own (Natal) speech include velar and glottal environments, that is ".../k, g, h, ʔ/, e.g. 'kiss, give, hit, id, kitten, forgive, India." The other environments conditioning this allophone, according to Bailey (1984:17) are syllable codas containing velar or hushing silibants, such as "...k, g, ŋ, sh, zh/ e.g. 'sick, dig, ring, sink, dish, vision, depict, distinct, condition'." Bailey (1984:18) claims that the [ə] allophone is found elsewhere in words such as "..fin, Finn, bitch, ditch, witch, bridge…." Some of the examples Bailey (1984:17) provides are unusual given that, as noted by Bekker (2009:256), "…a central [ə] in *dish* is a well-known shibboleth of Natalian English, at least in GenSAE," which Bailey (1984:17) supplies as an example of an environment conditioning [ɪ] in his own (Natal) speech.

Bailey (1984:15) claims that there is evidence in everyday speech that the [ɪ] allophone is being replaced by [ə] in many environments and gives the example of some speakers using the more central allophone in the word *fish*, thus implying that this is a phonological environment which would ordinarily condition [ɪ]. Bailey (1984) does not, however, refer to any regional difference for this specific phonetic environment.

LASS AND WRIGHT (1985).

These authors have questioned Lanham and Macdonald's (1979) approach to "the KIT split," and offer an alternative approach in Lass and Wright (1985). This is the main focus of Lass and Wright (1985) and therefore regional variation for the KIT vowel is not discussed in depth in this work and therefore a summary of their findings which related to the "KIT split" will not be provided here, due to space limitations, although interested readers are referred to Lass and Wright (1985) for their account of this phenomenon.

However, the following statement, taken from Lass and Wright (1985:150) is relevant to the current research: "we chose two speakers of SAE, of quite different varieties." The "different varieties" being referred to here are presumably "'Respectable SAE' –i.e. of a local (Western Cape) but fully standard variety" (Lass & Wright 1985:150) and "'Extreme SAE'" from "...the white working class southern suburbs of Johannesburg...." (Lass & Wright 1985:152). What is of interest here is that Lass and Wright (1985) do claim that although the first speaker's variety can be regarded as standard, that is, a stable system, it is still local. This could be taken to mean that it has local differentiating characteristics and it is later referred to as "...one well-defined regional and class variety of SAE..." (Lass & Wright 1985:151).

LASS (1990).

Lass (1990) claims that Conservative SAE, unlike Respectable and Extreme, shows an RP bias in its levelling of the distinctions between the allophones of the KIT vowel, so that, for example, *sit* and *it* rhyme. Lass (1990) claims that the principal allophone for KIT in SAE has the quality / ɨ /. The complex distribution of allophones of the KIT vowel in SAE, ranges from [ɪ] to [ɤ̈], according to Lass (1990). His summary of the behaviour of the KIT vowel in SAE is that [ɪ], the most fronted allophone of KIT in SAE, occurs initially, for example, in *it*, in velar environments, for example, in the words *sing*, *sick* and *kiss* and following /h/, in a words such as *hit* (Lass 1990).

He also claims that this allophone also occurs in pre-palato-alveolar environments, such as for example, in the words *vision* and *fish*, but that it very seldom occurs after palato-alveolars, for example, in *chin*, which normally would have [i̽] (Lass 1990). The second, more centralised and slightly lowered allophone of the KIT vowel which Lass (1990) mentions is [i̽]. This allophone occurs in the majority of environments other than those already mentioned, although Lass (1990) also states that this allophone further retracts to [ə] in labial environments, in words such as *limb* and *miss* as well as following liquids. Lass (1990) mentions one other allophone of the KIT vowel in SAE, namely [ɤ̈], which is decidedly back in terms of quality, is somewhat further retracted than the previously mentioned allophone

and which occurs following /w/, for example, in *wish*, as well as preceding /l/ in the coda of a syllable, for example, in *fill*.

Lass (1990) suggests that there may be a perception that the backer allophone and the more central [ɨ] are "local" and are therefore avoided in more formal speech contexts, such as in reading style. The evidence Lass provides for this assertion is that two of his informants who were school teachers consistently used [ɪ] when reading, but used the other allophones of KIT as described by Lass (1990) when engaged in less careful speech. The intuitively-based position of this author is that there is a great deal of regional variation, not only within the broader SAE community, but even within the city of Cape Town itself (Lass 1990), but that further research is necessary in order to provide evidence of this.

BEKKER (2009).

Bekker (2009) maintains that General SAE KIT became categorically more centralised, but that this sociolect is also characterized by "shading" which has been derived from RP. Wells (1982:128) defines "shading" as "...the development of different allophones conditioned by the place of articulation of the following consonant." In describing this shading, Wells (1982:128) specifically mentions "...American southern speech..." as well as the KIT split, as described for South Africa, although other Southern Hemisphere Englishes Wells (1982) claims, also display this shading. Bekker (2009) draws attention to the fact that that other researchers have described this sort of shading for RP, suggesting that its origin can be found in RP. Lanham (1967), for example, states that in RP, a fronter, [ɪ]-like vocoid for the KIT vowel is conditioned by a following velar consonant and by a following margin which includes a palatal consonant (although this realisation of KIT in RP is also conditioned by a preceding velar consonant, a preceding /h/ and is also found word initially and word finally, according to Lanham (1967)). A more central [ɨ], identified by Lanham (1967) as the phoneme /ɜ/ (which is said to be marginally contrastive with /i/) is said to occur in RP for most of the other phonetic environments. Therefore, far from being a South African innovation, this shading for KIT is found in RP and therefore has its origins in RP. Bekker's (2009) data point to a KIT vowel in General SAE, which can be better described as categorically centralised rather than as exhibiting a polarization of allophones as such and that the value of this centralised KIT vowel is based on typical Natal English values, although with the abovementioned shading derived from RP.

Bekker (2009) does agree with Lass and Wright (1985) that the fronter allophones of KIT are best transcribed as [ɪ̈], while the quality of the centralized allophones is best transcribed as something approaching a centralised (as well as slightly lowered) [ɵ]. Bekker's (2009) research does provide some evidence to support the suggestion that the central allophone of KIT in General SAE should be transcribed as something akin to [ɵ] or [ɨ] rather than as schwa.

Bekker (2009:267) also claims that a more centralised KIT vowel is evident to some extent, in the pre-palato-alveolar context according to his data. Examples would include KIT in words such as *dish*, *bitch* and *fish.* This author also acknowledges the possibility of regional variation for the KIT vowel in SAE. Bekker (2009:276) conjectures that *modern* Natal English "...is still often characterized as having a greater degree of centralization than elsewhere."

THE PRICE VOWEL.

The PRICE vowel, as it occurs in Wells (1982:149) is characterised "...as comprising those words whose citation form in RP and GenAm has the stressed vowel /aɪ/...phonetically, it is a wide diphthong with a starting-point which is open, unrounded, and most usually centralized-front, [a̟ɪ], though front and central variants, [aɪ~ɑ+ɪ] are also common within the standard accents. The diphthong glide is in the direction of [ɪ]. Distributionally, this vowel occurs in both checked and free position." Examples of tokens containing the PRICE vowel which Wells (1982:150) provides include "(a) *ripe*, *write*, *like*, *knife*..." and "...(b) *fight*, *high*, *sign,...*". Wells (1982: 149) also mentions backer onsets such as [ɑɪ~ɒɪ] characterizing urbanized Southern England, as well as Southern hemisphere accents, while fronter onsets such as [aɪ] are noted for the north-of-England.

LANHAM (1967).

This author claims that there is normally some degree of fluctuation between extreme glide-weakening and a distinction in length for the PRICE vowel in Extreme SAE idiolects

(Lanham 1967), but that there are very few speakers of Extreme SAE, who monophthongise this vowel completely and consistently do so. Lanham (1967:63) observes the prominence of glide-weakening from an almost indiscernible glide "...to a long vocoid..." which is present in most SAE idiolects. He then provides phonetic values for the two principal variants occurring in Extreme SAE (the relative positions of these values can be found on the chart provided in the appendix), the first being [aː][73](corresponding to the modern IPA transcription [ɐː]) which he claims is also found in Conservative SAE and RP), and the second being [ɑː][65] (corresponding to modern IPA transcription [ɑ̈]) (Lanham 1967). Lanham (1967) also mentions the possibility of a merger of the second of these variants with the BATH vowel in Extreme SAE, the distinction being maintained for the majority of speakers who have this variant, by using a glide-weakened but not fully monophthongised vowel. However, Lanham (1967) does claim that this merger is uncommon in SAE. Another option which Lanham (1967) describes, when there is complete glide-loss in Extreme SAE, is that PRICE may have the quality [a][72] or [a][73] (corresponding to the modern IPA [ä] and [ɐ] respectively), while the BATH vowel has [ɑ][65] (or [ɒ̈] in the modern IPA), that is to say, a front versus back distinction.

LANHAM AND MACDONALD (1979).

The Natal English variable, which Lanham and Macdonald (1979:41) refer to as "Fronted ai," is described as glide-weakened as well as fronted, with a trend towards a tense, fronted [aː] which after /l/ /m/ and /n/, exhibits no indication of an off-glide. Lanham and Macdonald (1979) claim that this trend is most aurally prominent in word-final PRICE, where evidence from spectrographic imaging reveals that there is complete glide loss for word final PRICE. There is some variation between idiolects as to the extent of glide loss according to Lanham and Macdonald (1979).

Lanham and Macdonald (1979:42) note the correction of "Backed ɒi" to "Fronted ai" in formal contextual style in the Eastern Cape and that outside of Natal, the "...highest values of

Fronted ai are found in most formal speech behaviour." Lanham and Macdonald (1979) also claim that women are ahead of men in the transmission of "Fronted ai."

"Fronted ai" was found to be most prevalent in the speech of young, Jewish females, with older and old aged Natal females suppressing Natal English variables (including "Fronted ai") in their formal speech. Young Natal speakers, however, produce these variables in their formal speech, regardless of their attitudes towards the variables themselves according to Lanham and Macdonald (1979).

Lanham and Macdonald (1979:34) claim that the PRICE vowel in SAE exhibits variation according to lectal type and thus displays three continua: Extreme SAE is characterised by glide-weakening, raising and backing, Respectable SAE exhibits glide-weakening, tensing and fronting and in Afrikaans English, PRICE has a fronted [a] and a tense and lengthened "off-glide to [i]."

Lanham and Macdonald (1979) claim that their results support the hypothesis that the Natal English variable "Fronted ai" is a prestige variant (although not in Natal itself) which, along with the other Natal English variables co-occurring with "Fronted ai", constitute a South African standard and at least at that time, was showing signs of increasing in use in all age groups. In contrast to fronted and glide-weakened PRICE, a backed, glide-weakened and raised PRICE vowel, as a feature of Extreme SAE carries a very low level of prestige and along with other Cape English variables, is stigmatized, is corrected in formal speech contexts and is retreating in SAE generally (Lanham and Macdonald, 1979), although these authors do claim that males exhibit comparatively high quantities of Cape English variables, presumably including backed, glide-weakened and raised PRICE.

Lanham and Macdonald (1979:41) also identify a "Fronted, glide-weakened..." PRICE vowel as a Natal English variable, hypothesized to have originated in Natal. In support of the claim regarding the origins of this variable, Lanham and Macdonald (1979) present as evidence, the stability of this variable throughout different age grades among women in Natal, in contrast to the unstable pattern found in the speech of Witwatersrand females. Further evidence of the Natal origins of this variable noted by Lanham and Macdonald (1979) is the suppression of these variables only in the very oldest of Natal speakers. Lanham and Macdonald (1979) also

note that this variable has associations with the North Country in Britain and that a substantial number of Natal settlers came from this particular region.

LASS (1990).

Lass (1990:274,279) represents the value for the PRICE vowel in Respectable SAE [although strictly speaking, his observations are only valid for making claims regarding "...one local but (intuitively) highly typical standard SAE variety: Respectable (=(Upper) Middle Class) White Cape Town English" (Lass 1990:272)], as [äɪ], which he claims, is the value used by approximately half of all speakers, apart from occasional realisations such as [äe ~äɪ] when reading word lists. He also claims that monophthongisation of this nucleus occurs in most varieties of SAE generally, except for Conservative SAE and that in Extreme varieties, a backer output [ɑ:], matching the BATH vowel of Respectable SAE is used (Lass 1990).

DA SILVA (2007).

The research by Da Silva (2007), does not have a direct bearing on the current research, since the focus and aims of Da Silva (2007) are quite different. However, this author does make some interesting observations and some surprising claims regarding the PRICE vowel which call for further comment and this has therefore been included in this literature survey. The methodology used in Da Silva (2007) is that of Principle Component Analysis which was used to isolate two individual lects in SAE. The first of these, "lect 1" is identified as the one in which the most White subjects were located and is therefore the most relevant lect for the current research. The other major lect identified by Da Silva (2007), named, "lect 2" is spoken predominantly by Black subjects. For the PRICE vowel, Da Silva (2007) identifies two main variants, namely PRICE1, which refers to [a:] and PRICE2, or [ɑ(:)].

Da Silva (2007:243) makes the statement that " the fronted PRICE1 variant, which has limited representation in lect 1, is predicted to have no increase whatsoever. This is probably a variant socially marked by a sublect of White speakers in lect 1 which does not carry as

much prestige as PRICE2...". This is an unusual observation because most of the previous research on PRICE in SAE has indicated that what Da Silva (2007) labels PRICE1, that is, a monophthongised, fronted PRICE vowel, is in fact the prestige variant in White SAE and a marker of Respectable SAE. Even more extraordinary is Da Silva's (2007) claim that PRICE2, a backed monophthongised variant, carries more prestige than PRICE1, given that most of the impressionistic literature, (especially the various studies by Lanham), indicates that what Da Silva (2007) calls PRICE2, is in fact a low prestige variant and a marker of stigmatized Extreme SAE. This may possibly be accounted for by the fact that Da Silva's (2007) sample was quite different to that of other researchers, in that it included a number of Black students. Therefore, different and changing attitudes may account for this discrepancy between Da Silva's (2007) observation and those of other authors.

Da Silva (2007), also predicts that PRICE1 will not increase, which is rather odd considering that Lanham, for example, in a number of publications, but most clearly in Lanham and Macdonald (1979), made the prediction that a fronted monophthongised PRICE is likely to increase in use. The explanation for these claims which Da Silva (2007:116) offers is that, as claimed by the research assistants, PRICE1, "...is highly marked and particular to certain speech communities in the Johannesburg area, namely affluent northern suburbs such as Sandton, and is associated with the social variables "female" and "Jewish"...".

BEKKER (2009).

Bekker (2009) claims that according to his data, the PRICE vowel in General SAE can be characterised as glide-weakened, but not fully monophthongised. The first element of PRICE for General SAE, according to Bekker (2009) is fronted and that this fronting can be considered a categorical (i.e. contextually unaffected) prestige feature of General SAE. Backed realisations of the PRICE vowel, stereotypically Broad South African English, are however retreating in comparison to fronted PRICE (Bekker 2009).

Bekker (2009:237) also makes another interesting statement with regard to the PRICE vowel, namely that his data indicate that a fronted and completely monophthongised PRICE vowel is not as prestigious as it had been in the past, supported by the fact that PRICE is glide-weakened although not monophthongised "...in citation-form style" in his data. Bekker (2009) allows for the possibility of glide-weakened or monophthongised, fronted PRICE in

the early days of Johannesburg originating from Natal speakers, who originally had this value for PRICE as a result of the influence from the northern parts of England and Scotland in their speech, along with the influence of the old RP value similar to [aɪ].

THE NURSE VOWEL.

Wells (1982:137) defines the NURSE lexical set "...as comprising those words whose citation form contains the stressed vowel /ɜː/ in RP and /ɜr/ = [ɜ˞] in GenAm...phonetically, it is a relatively long unrounded mid central vocoid, [əː]...Distributionally, /ɜː ~ ɜr/ occurs both in checked and free position (*turn*, *fur*). It does not occur immediately before a vowel except across a morpheme boundary, as *stirring* (*stir # ing*), RP /ˈstɜːrɪŋ/, GenAm /ˈstɜrɪŋ/." Wells (1982:139) gives "*...usurp*, *hurt*, *lurk*, *church*, *turf*..." etc. as examples of tokens containing the NURSE vowel.

LANHAM (1967).

Lanham (1967:64) offers /əə~ɜˑ/ as the phoneme for the NURSE vowel in SAE. The reason why two values are given is that in Lanham (1967), the view is taken that there are two systems in SAE which are related, but different and that these values represent equivalence points in those related systems. For Extreme SAE, NURSE is represented as [ɜː][33], which is open and rounded, corresponding to [ɵ̟ː] following modern IPA transcription conventions. Lanham (1967) also affirms the raising of this vowel, especially in Extreme SAE and also notes the absence of a glided form.

LANHAM AND MACDONALD (1979).

Lanham and Macdonald (1979:44) claim that "Raised, fronted, rounded əə ('Fronted əə' in *years*, *Durban*)" is one of the three salient variables of Natal English. In support of this claim, Lanham and Macdonald (1979) note that among older Conservative SAE-speaking, Natal

men from the upper classes, a high value for "Fronted əə" is present. Fronted [ɜˤː] with weak-rounding, corresponding to modern IPA [ɵ̟ː] is provided by Lanham and Macdonald (1979:44) as the quality for variants to which the highest index values were assigned. Lanham and Macdonald (1979) claim that this variable is contextually conditioned only in Natal, with a preceding /j/ being the most highly favouring environment for weak rounding and fronting of NURSE in that region. Although still considered by Lanham and Macdonald (1979) to be a Natal English variable, the largest quantities of the fronted NURSE variable were observed at the Cape although they did not discover any definite correlations between this variable and social groups there.

LASS (1990).

This author transcribes the normal value for the NURSE vowel in "...(Upper) Middle Class White Cape Town English"(Lass 1990:272), (presumably intended to be representative of typical Respectable SAE) as [ɵ], which is described as an invariantly rounded (although this is not always the case in the most conservative varieties), front, centralized and half-close monophthong, although a more open vowel [œː] is reported for some.

BEKKER (2009).

Bekker (2009) claims that, in General SAE, the NURSE vowel is a comparatively invariable, relatively raised, front and rounded monophthong. This author finds support for the claims made in the impressionistic literature about the rounding of this vowel. Bekker (2009) transcribes the value for the NURSE vowel in General SAE as similar to [ɵ], that is to say, a close and somewhat fronted vowel. Bekker (2009) also mentions the retraction of the NURSE vowel when preceding final /ɬ/ as well as the retraction of NURSE when following /w/. Assuming lip-rounding, NURSE in Bekker's (2009) data is relatively rounded, when taking into consideration the lowering effect which lip-rounding has on F2 readings.

The proximity of the token *year* to the NURSE vowel is noted by Bekker (2009) as an observation made by Webb (1983:155) who claims that it is a stereotypical feature of Natal English. Webb's (1983:149) interpretation of his own data, according to Bekker (2009) is that

/ɜ/ is fronted when following a [+cor] or [+ant] segment. However, due to the rather small number of different tokens in Webb's (1983) dataset and within these subgroups, NURSE before final /l/ was not separated out or controlled for, as pointed out by Bekker (2009), it is difficult to evaluate the validity of this interpretation.

2 CHAPTER TWO: METHODOLOGY.

2.1 THE RESEARCH PARADIGM AND THE IMPORTANCE OF PHONOLOGICAL MARKERS.

The current research is informed by and located within the quantitative sociolinguistic paradigm as developed by William Labov (1972). Thus, the aim of the research, as with other research falling within the scope of this research paradigm, is to discover and describe correlations between social variables and linguistic variables. This is in order to uncover the structured variation present in language which indexes the values of a given society (Labov 1975). In the present study, the linguistic variables are the vowels of PRICE, KIT and NURSE, while the primary social variable is that of region.

The focus is therefore on phonological variables. One of the reasons for this particular focus is that unusual syntax or lexical items are not as instantly discernible as phonological differences since they do not occur as frequently in speech when compared to phonological variables and are therefore not as salient to speakers as phonological markers are. In the literature on White South African English in particular, this observation has been repeatedly confirmed, for example, by Lanham and Prinsloo (1978), who remark that clearer social demarcations are provided by phonological variables, than are provided by grammatical variables. Lass (2002) puts this more forcefully in stating that phonological variables are more frequently stigmatized as they index social variables so directly.

Lass (2002) has also emphasised that phonological variables are socially salient, so much so that a discussion of such variables constitutes the greater portion of his description of White SAE. In accordance with this general finding, the current research therefore also assumes the primacy of phonological variables for discovering correlations with social variables.

2.2 SAMPLE SELECTION.

The sample used in the current research constitutes a judgement sample, given that the aim is to investigate correlations between specific variables and that the available sample was limited in terms of size, such that random sampling was not a realistically viable option. Research participants were selected primarily on the basis of their home city, essentially the place where they had spent their formative years.[1]

The sample consists of twenty-four participants in total. The sample was also subdivided according to regional provenance and gender, such that there are twelve subjects from Cape Town and twelve from Durban, with the Cape Town and Durban samples each consisting of six males and six females. The sample thus includes an equal number of males and females, as well as an equal number of participants from Cape Town and Durban.

The interviews incorporated in the current research form part of a larger departmental project on English Social Dialectology in South Africa, headed by Professor Rajend Mesthrie, which requires the collection of a large number of interviews which the database for this project is comprised of. Eleven of the twenty-four interviews were conducted by Professor Mesthrie and four of these were conducted in Durban itself. Five of the interviews (all with Durban residents) were conducted by the author and the remaining eight interviews were carried out by five students studying linguistics at the University of Cape Town. While most of the interviews were conducted in the participants' places of residence, six of them were recorded in the linguistics section of the University of Cape Town campus as requested by the research participants concerned.

It was important that the potentially confounding effects of the social variables age, social class and ethnicity, were all controlled for in this research. This was achieved by selecting

[1] There is one possible exception, namely speaker E, who only moved to Cape Town from Johannesburg at the age of 13. However, speaker E conforms with the rest of the Cape Town female sample in terms of her overall accent profile and the difference between speaker E and other speakers in the Cape Town female sample is minimal.

subjects within a certain age cohort and from approximately the same social class. All the research subjects were White in terms of ethnicity and therefore since the research investigates White SAE, the potential confounding effects of ethnicity are controlled for.

It is crucial in a study of this nature that "region" as a variable is correctly and sufficiently operationalised. In order to qualify for inclusion either the Cape Town or Durban subsample, potential participants would have had to have spent a significant amount of time in their respective cities. The minimum amount of time acceptable for the inclusion of a given participant in the sample was 7 years, with no set maximum limit. Most participants had spent the majority of their lives in either Durban or Cape Town, with the average number of years spent in either Cape Town or Durban being 19 years for each of the regional sub-samples. In cases where the subjects had not spent most of their lives in either Durban or Cape Town (this was the case with only one research subject), the fact that the time spent in Cape Town was at a significant time of life in terms of linguistic development, namely late primary school and high school was taken into account.

As has been reported in previous research, the lectal types of SAE are strongly associated with social class differences (Lass 2002). For this reason, it was important to select participants from approximately the same social class. The social class from which research participants were selected was that of the middle class. Since the sample is a judgement sample and because it is a relatively small sample, no complex indices of social class were constructed for this study.

However, a number of general indicators of social class membership were taken into account when selecting research subjects. The primary indicator of social class for the sample was that of level of education, operationalised as "tertiary institution attendance". All of the participants were sampled from the population of those who had attended a tertiary institution, whether it was the University of Cape Town or another university or training college. As tertiary institution attendance fees are relatively high, indeed sometimes prohibitive for many from the lower social classes in South Africa, the attendance of participants at such institutions was considered one of the most potentially useful indicators of middle to upper middle class membership for the small judgement sample used in this study. Given that most of the research participants were relatively young, using "tertiary institution attendance" as a substitute indicator of middle to upper middle class membership was seen as particularly appropriate, given that many in the sample were not employed full-time when the interviews were conducted, such that personal income or occupation would not have been very useful as social class indicators.

Another possible option for determining the social class of the participants which was taken into consideration when selecting research subjects is that of parental occupation. This is because as previously mentioned, the majority of the sample consisted of students, such that their own occupations would not be a particularly useful indicator of social class.

Another potentially useful indicator of social class is that of "neighbourhood type". This has been shown to be a valid indicator of social class, especially in cases where the researcher has an intimate knowledge of the speech community being investigated (Chambers 2003). In the case of Cape Town, the author was familiar with the neighbourhoods of this city, given that he had spent most of his life in Cape Town and thus was able to identify middle class neighbourhoods without much difficulty. For the Durban participants however, the author was not familiar with the

various neighbourhoods of this city and its immediate surrounding areas. The supervisor of this research, Professor Rajend Mesthrie, is familiar with this area and therefore the author relied on this knowledge of Durban and surrounds in order to determine, in the case of certain subjects, where neighbourhood type was taken into consideration, whether their neighbourhoods should be classified as middle-class or not. This method was used, for example, where the other indicators of social class were not readily in evidence, or in doubtful cases (for example, when relying on subjects' own impressions regarding the neighbourhoods in which they lived). The type of dwelling in which a given research participant was living was also taken into consideration as a means of distinguishing between middle class and working class participants, when conducting interviews at participants' places of residence. Personal income was not used as an indicator of social class for this research, due to the aforementioned fact that the majority of the subjects were students.

Another potentially confounding variable in the current research is that of age. It was necessary to sample from a specific age range, in order to control for the possible effects of this variable. The ages for the research participants range from 18 to 29 years, with a mean age of 21. A table detailing the ages of the participants can be found in the appendix.

2.3 DATA COLLECTION.

The data were collected from recorded interviews which were designed according to the pattern of the "Labovian" sociolinguistic interview, as it is described by Labov (1972), although slightly modified. Verbal consent was obtained from each subject, in accordance with accepted ethical practice.

The interviews were designed to elicit both spontaneous speech style as well as word list style from the interview subjects. Dividing interviews into other contextual styles was considered unnecessary as this would result in somewhat arbitrary divisions. The wordlists used for the interviews is an adaptation of Wells (1982) lexical sets and are provided in the appendix. Due to the fact that some of the interviews were conducted at different times by different interviewers,

several slightly different versions of these wordlists were used (all wordlist versions used have been provided in the appendix). Only those words which were the same in all lists were compared in the final analysis.

According to Labov (1972), spontaneous speech may be regarded as the counterpart to casual speech occurring in the context of a formal interview. Since correlations between linguistic variables and social variables are strongest in casual speech, the best way for the researcher who is limited to the confines of the interview setting to proceed is to elicit spontaneous speech. In order to achieve this, emphasis was placed on particular modules, which are also found in standard sociolinguistic interviews, such as the "danger of death" module, which was included in a modified form in the interviews for the current research, more specifically, interview subjects were asked about their experiences of crime. Other modules included school experiences, as well as childhood games. The purpose of this was to take them back to a time when "vernacular" speech was frequently used and to elicit narratives from them, in which spontaneous speech would most likely occur. Since the interview was semi-structured, participants were allowed to digress from the interviewer's questions, thus promoting spontaneous speech elicitation (Labov 1972).

2.4 ACOUSTIC ANALYSIS.

The interviews were converted to WAV format such that the tokens of the variables of interest were extracted from the interviews and these were subsequently analysed using PRAAT. This is a computer programme which can be downloaded for free from the site http://www.fon.hum.uva.nl/praat/ (Boersma & Weenink 2010) and is designed for acoustic speech analysis on one's personal computer. The interviews were opened in the programme and the tokens of the variables were then manually selected for phonetic analysis. The programme allows for the isolation of speech elements at the phonemic level and therefore individual speech

sounds can be selected based on the spectrographic image of the sound file displayed by the programme. PRAAT provides the researcher with formant measurements of the vowels occurring in the interview. These formants are the overtones caused by airstream vibrations as a result of vocal tract movements, such that different vowels have characteristic formant values (Ladefoged 2006).

Formant frequencies can be measured in Hertz (Ladefoged 2006). With these measurements, it is then possible to ascertain the corresponding position of vowels in the vowel space, such that the descriptions of vowels derived from these measurements can be compared to more traditional descriptions of vowels (Ladefoged 2006). This is because the values for the first formant (F1) are inversely related to the height of a given vowel, while values for the second formant (F2) are likewise in an inverse relationship to the front-back dimension, although this latter correlation is slightly weaker than that for F1 (Ladefoged 2006). PRAAT produces the measurements of these formants as a command output (Boersma & Weenink 2010).

These measurements were obtained for each vowel for each token of the relevant variables occurring in the interviews by using PRAAT scripts. The output values from PRAAT scripts were then copied and pasted into an Excel document. Only stressed vowel tokens were included in the analysis. Those tokens for which interference made the vowel readings unclear were not included. All transitions were ignored in the analysis. The maximum number of tokens for each individual speaker was 100 tokens for each of the three variables. For any given word, a limit of 15 tokens of that word was set, such that the data would not be skewed as a result of certain words occurring more frequently than others in the interviews. In instances where there were less than 100 tokens in the interview for one or more of the three lexical sets, the maximum number of tokens of that lexical set occurring in the interview were included in the analysis. This was often the case for the NURSE vowel, for example. In total, the KIT vowel tokens used in the final analysis numbered 1991, those for NURSE, 1545 and the number of tokens for the PRICE vowel, 1753. The total number of interview tokens included in the final analysis was therefore 5289, following the exclusion of /r/ and /l/. Figure 1, below illustrates the number of interview tokens for each variable for each speaker which were used in the final analysis.

Speaker	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**
Variable												
NURSE	89	38	65	76	66	73	13	46	55	28	92	42
KIT	76	79	87	72	87	77	68	79	88	91	84	82
PRICE	84	54	84	78	82	81	72	57	73	68	70	66
Speaker	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**V**	**W**	**X**
Variable												
NURSE	38	57	23	78	98	89	96	96	53	99	71	64
KIT	92	84	87	85	85	79	76	88	75	93	92	85
PRICE	67	70	87	72	68	70	79	63	77	86	71	74

Figure 1: Number of interview tokens for each variable for each speaker.

Once all the tokens had been logged, the logged data for the KIT vowel were then grouped according to phonetic environment. This is particularly important for the analysis of KIT, since regional variation has been reported in the literature for certain phonetic environments for this vowel, but not for others. The phonetic environments into which tokens of the KIT vowel were grouped are tabled in figure 2, below and these are based on the relevant phonetic environments described in the literature, in particular, by Lanham and Macdonald (1979), on which the hierarchy for the analysis of the KIT vowel, presented in figure 2 is also based. It was necessary to assume this hierarchy when grouping according to phonetic environment since the environments for the KIT vowel are not mutually exclusive.

Vowel	Environment
KIT	1. Velar (i.e. KIT preceding or following velar consonants) 2. Word-initial 3. Following /h/ 4. Pre-palato-alveolar 5. After /w/ 6. Unconditioned

Figure 2: Phonetic environments into which the data for the KIT vowel were grouped.

2.5 NORMALIZATION PROCEDURE.

Due to the fact that both males and females were included in the sample, it was necessary to normalize the data in order for the data to be comparable. This is because of the fact that the length of the vocal tract differs considerably between males and females, which effects vowel quality (Thomas & Kendall 2009). By normalising the data, only socially significant variation in vowel quality will be preserved (Thomas & Kendall 2009).

The method of normalization used in this research was developed by Watt and Fabricius (2003). One of the advantages of using this particular method is that it provides the analyst with the means to directly compare speaker's vowels visually (Watt & Fabricius 2003). This is achieved by means of the calculation of the midpoint of the vowel space for each speaker, based on their first and second formant value measurements in Hertz, which provides a more extensive mapping of speaker's vowels compared to other normalization methods.

Three steps are involved in this calculation. The first of these involves the calculation of maximum values for both F1 and for F2 for every speaker. The assumption is that the maximum values for F2 for any particular speaker are most likely to belong to the FLEECE lexical set. However, the maximum F1 value would most probably be found in START or TRAP vowel tokens, depending on the speaker. In the original Watt and Fabricius (2003) method, the values for the formants of these lexical sets, measured in Hertz, were taken to be the maximum F1 and F2.

The calculation of the minimum for F1 and F2 forms the second step of the normalisation calculations. However, due to the fact that many varieties of English today, White SAE included, do not have a true high back vowel from which a minimum F2 reading can be derived, it is necessary to construct a dummy high back vowel by taking the average of the minimum values for F1 for the FLEECE vowel as the minimum value for F2 of the artificially constructed "dummy vowel" (Watt & Fabricius 2003). The assumption which this method is based on is that the F1 of the dummy vowel will be the same as the F1 for FLEECE and also that the highest and backest vowel will have similar F2 and F1 values.

Once these calculations have been made, it is then possible to represent a given speaker's vowel space as a triangle. A diagrammatical representation of this triangular vowel space, as it is found in Watt and Fabricius (2003), is provided in figure 3 below.

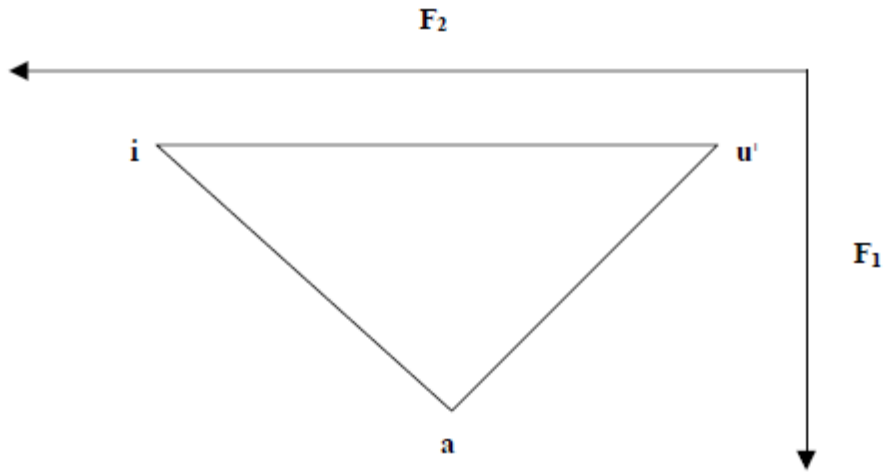


Figure 3: The triangular vowel space, taken from Watt and Fabricius (2003).

The next step in the normalization process would be to calculate the frequencies of those formants which represent the midpoint of the given speaker's vowel space, what Watt and Fabricius (2003) call the "centre of gravity". This is achieved by calculating "...the grand mean of F*n* for **i**, **a** and **u'**...". The midpoint, thus derived is referred to by Watt and Fabricius (2003) as "centroid *S*."

The final calculation in the normalization process is the division of the formant values in the data, by the centroid *S* value, thus yielding an *S* ratio. After this has been done, it is possible to compare the F*n*/*S* (F*n*) values of individual speakers, since all their vowel spaces have been redefined relative to the centroid *S* value (Watt & Fabricius 2003:164-165).

Another advantage of using this particular method of normalization is that it does not warp the vowel space, as is the case in some other methods and that the mapping of samples containing different individual speakers is more complete and is more precise when using the Watt and Fabricius (2003) method than would be the case if only the values given in raw Hertz were used.

One of the major disadvantages of using this method is that one would require a great deal time to perform the necessary calculations manually. Fortunately there is a less time-consuming way of doing these calculations, by using an online normalisation option, which can be found on the

norm website, http://ncslaap.lib.ncsu.edu/tools/norm/. Using this option, the data can be uploaded in the requisite format and an online form can be completed (Thomas & Kendall 2009).

The data obtained from the formant analysis by PRAAT were organised according to the specified format and were saved in a tab-delimited text file, which was then uploaded to the aforementioned website (Thomas & Kendall 2009). Following this, the online form was completed, in which the Watt and Fabricius method was selected as the normalisation method. The form was then submitted to the website and the output of "normalised speaker means" was saved in and Excel document. It is worth mentioning here, that the method for Watt and Fabricius normalization used by the website is slightly different from the original method as described in Watt and Fabricius (2003). The NORM website automatically selects the lowest F1 and F2 values as the minima for F1 and F2 for TRAP, FLEECE and GOOSE based on the token in the dataset which has the lowest F1 and F2 and the one token which has the highest F1 and F2 are taken as the maxima (Thomas & Kendall 2009), regardless of whether these tokens belong to these particular lexical sets or not. Once this has been done, the website follows the original method of Watt and Fabricius (2003), namely the division of the mean values for F1 and F2 for every vowel by the values for the *S* transform (Thomas & Kendall 2009). Mean vowel values are calculated using the website's computation prior to the *S* transform calculation.

2.6 VOWEL TRAJECTORY ANALYSIS.

In addition to normalisation and because of the fact that the phenomenon of glide-weakening of the PRICE vowel is also investigated in this research, a method of measuring the trajectory from vowel onset to vowel offset was employed in order to allow for a comparison of the extent of glide-weakening between the sub-samples. The method employed consisted of the calculation of Euclidean distances.

There are several other methods which may be used to calculate formant trajectories for historical diphthongs, based on the slope, direction and offset hypotheses. Unfortunately, due to space limitations, a comprehensive description of these methods will not be provided here, so the reader is therefore referred to (Di Paolo et al. 2011:100-102) for a more comprehensive description. Although each method has its own advantages, calculating Euclidean distances for vowel trajectories was considered to be the most appropriate method for the current study. Firstly, using the other methods, one may only obtain results for change in individual formants, or the trajectory direction of only one formant. Euclidean distance measurements however, have the advantage of enabling one to visually read direction and slope information from a scatter plot displaying vector arrows (Di Paolo et al. 2011:101). In this paper, as will be become evident in the results section, the heads of the arrows will represent the glide and the tails will represent the nucleus. Another potential application for Euclidean distance measurements is in investigating the differences for normalized vowel means, which is particularly useful for the purposes of the current research. The formula used for calculating Euclidean distances, taken from (Di Paolo et al. 2011:101), is as follows:

$$d=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$$

where x_1 and y_1 refer respectively to the normalized F2 and F1 values for a given vowel's nucleus and x_2 and y_2 refer respectively to the normalized F2 and F1 for the offset of a given vowel. Therefore these calculations were applied to the data for the PRICE vowel to measure the length of each speaker's vowel trajectories in order to make a comparison between the subsamples for glide-weakening. Another potentially useful method for comparing speakers' vowel trajectories would be to calculate the slope and direction for each vowel token. Unfortunately, due to time constraints and space limitations, a statistical analysis of potential differences in the slope and direction of the PRICE vowel trajectories has not been included in this study. However, since such differences may exist, it is expected that the results for the slope and direction calculations for the PRICE vowel trajectories will be reported in a forthcoming article.

2.7 STATISTICAL ANALYSIS.

Normalised values for all tokens were copied into an Excel document and then graphs were drawn up based on these normalised data to display any potential patterns, wherever possible. Following this, the data for each variable were tested for normality of distribution using the Shapiro Wilk test (Shapiro & Wilk 1965) for normally distributed data as well as an analysis of the mean, median, kurtosis and skewness of the data distribution.

Normality testing, all statistical analysis as well as the interpretation of the statistical test results was conducted by the Statistical Consulting Service of the University of Cape Town in consultation with the author (any opinion, findings and conclusions or recommendations expressed in this document are those of the author and the Statistical Consulting Service (UCT) does not accept responsibility for the statistical correctness of the research results reported). Normality testing revealed that the data are not reasonably normally distributed for any of the variables, except for the KIT vowel and for all of the environmental subgroupings for this vowel, the distributions of which are reasonably normal. It is therefore possible to test for statistically significant differences for this vowel and its environmental subgroupings using unpaired t-tests, since the assumption of normality required for such tests has not been violated. Since all of the alternative hypotheses are directional (for example, H_1 = "Cape Town speakers have a fronter KIT vowel than Durban speakers,") one-tailed t-tests were used in all cases. The hypotheses applicable to each test are provided in the subsections in which the test results are provided in the results section. For all of the other variables (including the PRICE onset and offset, NURSE, the word list results for PRICE and NURSE, as well as the Euclidean distance measurements), the data are not reasonably normally distributed and therefore it was necessary to use the non-parametric equivalent to the unpaired t-tests to test for significant differences for these variables. The non-parametric test used to test for significant differences for data which are not normally distributed was the Wilcoxon rank-sum test (Wilcoxon 1945, Mann & Whitney 1947). This test does not rely on any distributional assumptions and can therefore be used for statistical significance testing where the data are not normally distributed. Rank-sum tests, such as the Wilcoxon rank-sum test (Wilcoxon 1945, Mann & Whitney 1947), also known as the Mann-Whitney two-sample statistic, test the hypothesis that two independent samples are taken from

populations which have the same distribution. The probability values from these tests which are provided in the results section are estimates of the probability that a random draw from the first population is larger than a random draw from the second population. These tests are two-sided tests and therefore test two-sided hypotheses. All statistical analysis was conducted using STATA (computer program). For the casual style results for KIT, PRICE, NURSE and the Euclidean distance measurements, an average was calculated for each speaker and these averages were statistically compared. Where possible, averages were calculated for the various phonetic environments of the KIT vowel and these were statistically compared. The word list style results are based on data consisting of one token per speaker. Therefore subsample averages were calculated for word list style (for example, for the NURSE vowel in word list style, an average was calculated for the Cape Town subsample and an average was calculated for the Durban subsample), as opposed to speaker means and these subsample averages were statistically compared.

3 CHAPTER THREE: RESULTS.

This chapter contains the results for the current research which will be illustrated, where possible, by means of graphs. These graphs represent selected speakers' vowel systems, based on the normalised values of the monophthongal vowels occurring in the word list context. The tokens displayed in the graphs are mostly the same as those of Wells' (1982) lexical sets. The graphs are intended to provide the reader with a conception of the relative positions of typical vowels, thus providing relatively stable anchor points, which can be used to interpret the results for the KIT, PRICE and NURSE vowels presented in this chapter. The speakers whose values appear in these graphs were selected as "typical" members of their respective subsamples. The term "typical" is used here to describe speakers who have spent their entire lives in either Durban or Cape Town.

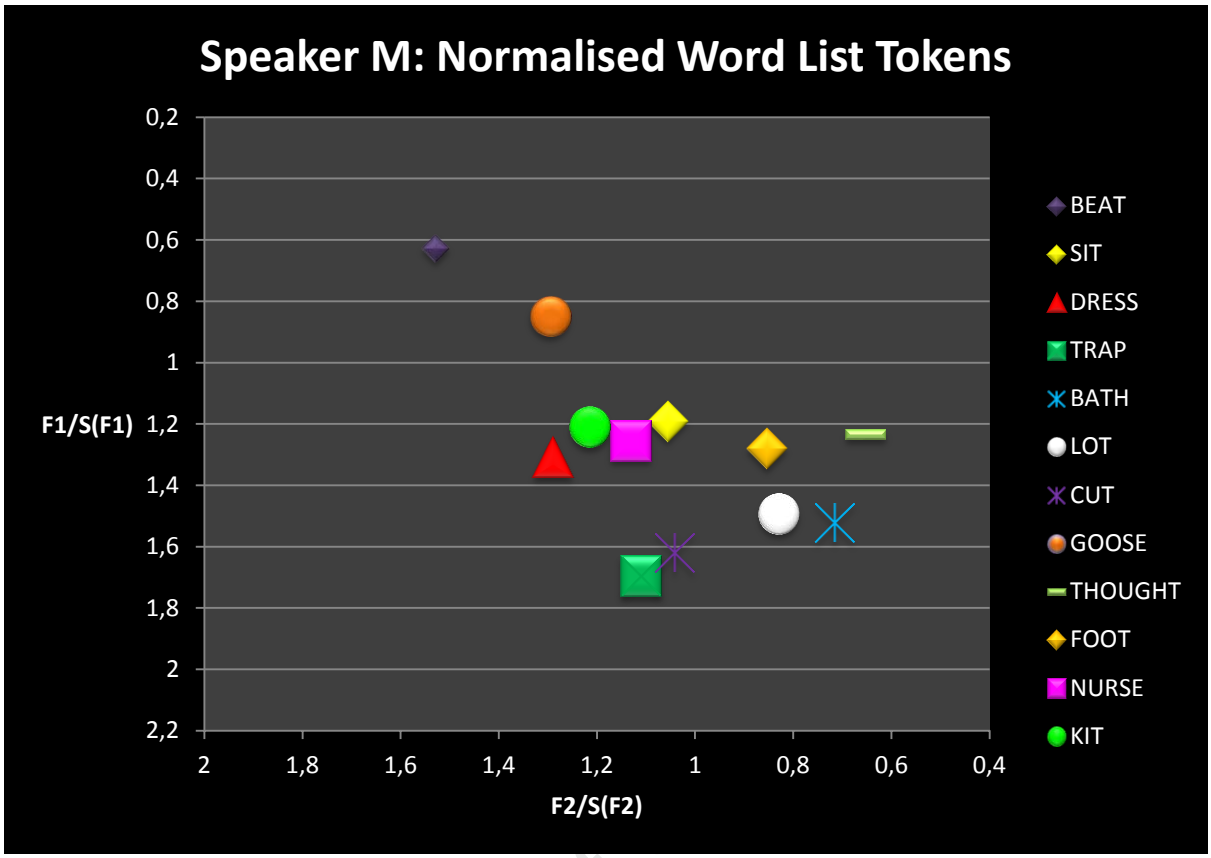


Figure 4: The vowel system of a typical Durban male speaker, Speaker M, word list style.

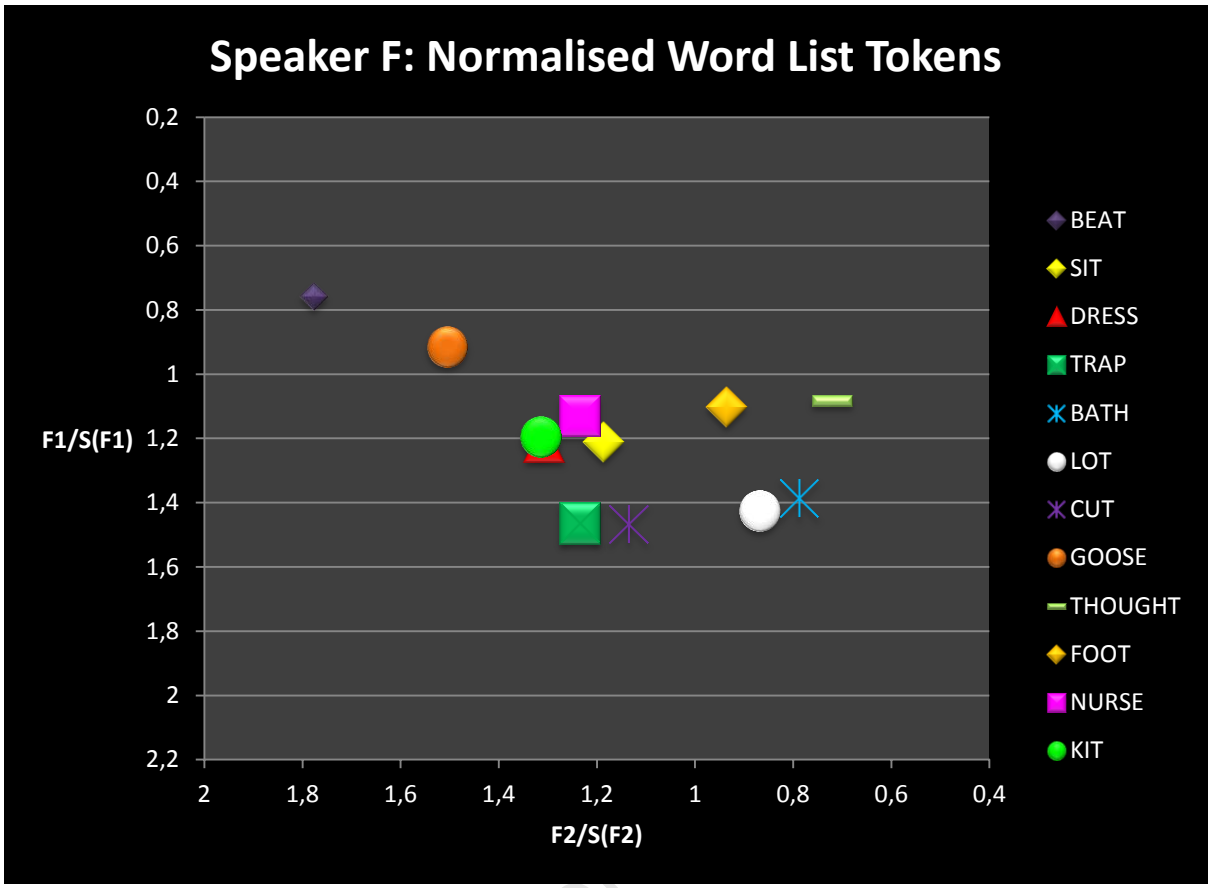


Figure 5: The vowel system of a typical Cape Town male speaker, Speaker F, word list style.

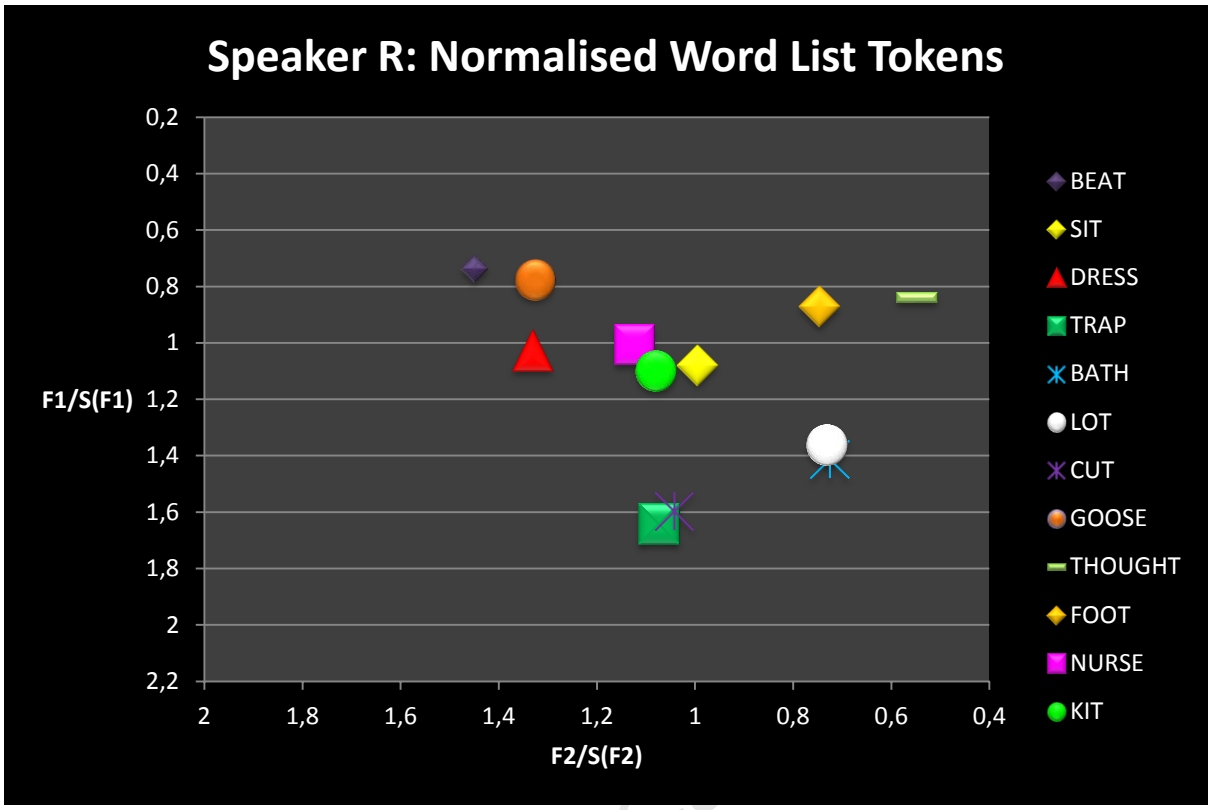


Figure 6: The vowel system of a typical Durban female speaker, Speaker R, word list style.

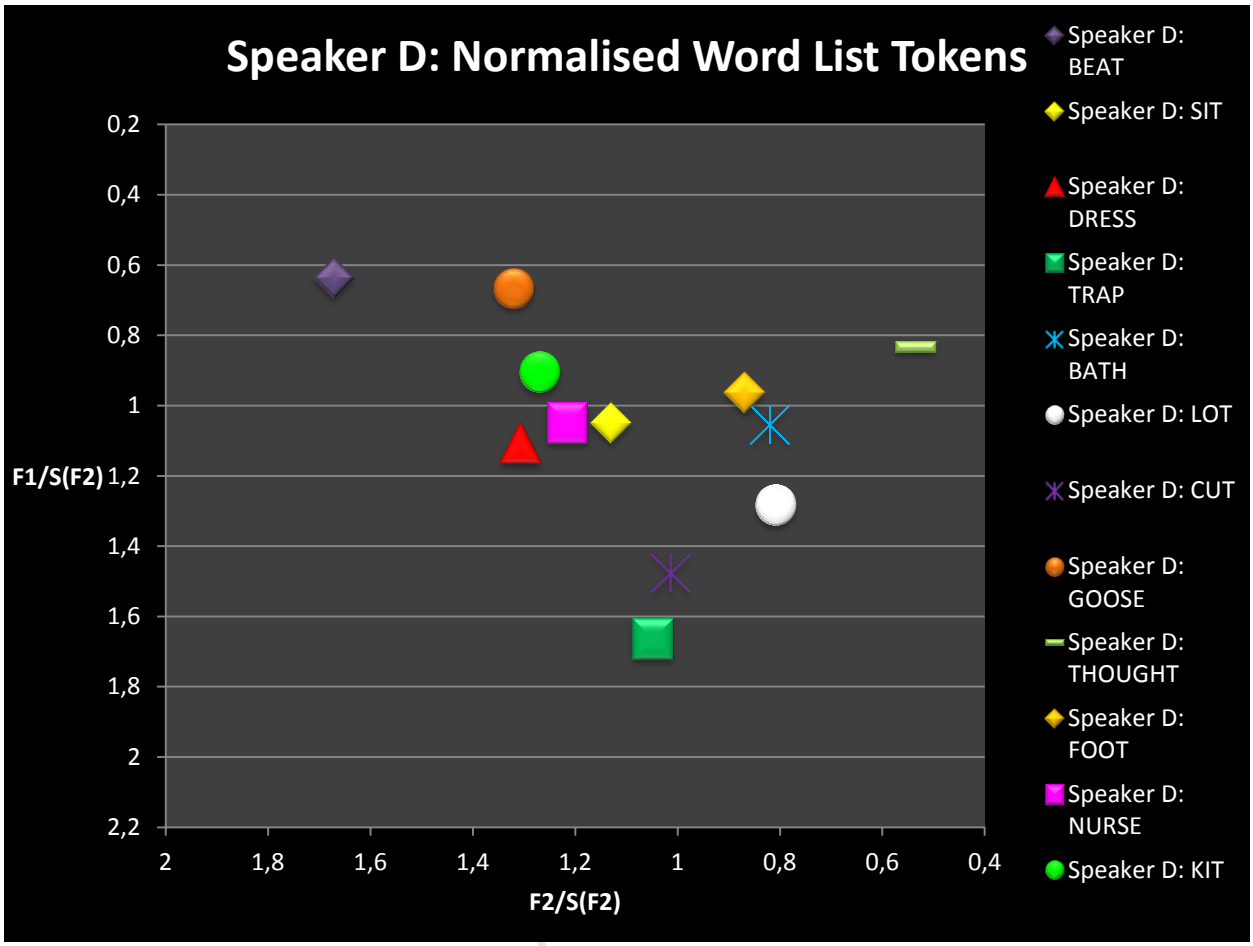


Figure 7: The vowel system of a typical Cape Town female speaker, Speaker D, word list style.

Having provided the basis for comparison in the previous five graphs, the following section provides the results from the current research for the three vowel variables.

3.1 THE KIT VOWEL.

Because certain phonetic environments may condition more centralised variants of the KIT vowel than other environments, it is necessary that the potential effects of the relevant phonetic environments are examined in the description of the data for this vowel. These phonetic environments have already been listed in the methodology section. Using statistical methods to compare the Cape Town and Durban subsamples is however problematic for certain KIT environments, since the tokens of the KIT vowel in some of these environments occur infrequently in the interviews. For some speakers there are no tokens occurring in the relevant environment at all.

For those environments for which there are an insufficient number of tokens in order to conduct a statistical analysis of the data, the raw normalised data have been provided. Where possible, the results of statistical tests for these environments have been reported and where there have been sufficient tokens to allow for the calculation of speaker means, graphs displaying these means have also been included.

There were a particularly small number of tokens of the KIT vowel preceded by /h/ occurring in the interviews. Examples of tokens which were categorised as tokens of KIT for this environment include words such as *hit* and *him*. The normalised F1 and F2 scores for each of the individual tokens of KIT occurring in this environment are therefore provided in figure 8 below.

Cape Town Males:			Cape Town Females:		
Speaker:	F1 Value:	F2 Value:	Speaker:	F1 Value:	F2 Value:
F	0.971 0.974 0.933	1.29 1.206 1.341	A	—	—
G	0.911	1.404	B	0.81	1.409
H	0.864 0.88 0.864 0.84 0.91 0.796	1.423 1.335 1.126 1.237 1.431 1.531	C	0.927	1.108
I	0.84 0.796 0.955	1.534 1.469 1.669	D	—	—
V	—	—	E	—	—
W	0.984 0.947	1.463 1.388	X	0.876 0.869 1.069 0.812 0.799 0.84 0.707 0.733 0.784 0.821	1.331 1.331 1.293 1.338 1.325 1.295 1.266 1.415 1.306 1.304

Durban Males:			Durban Females:		
Speaker:	F1 Value:	F2 Value:	Speaker:	F1 Value:	F2 Value:
J	—	—	N	—	—
K	—	—	O	0.983 1.046	1.52 1.34
L	0.986	1.397	P	0.805 0.881	1.214 1.23
M	—	—	Q	0.722 0.702	1.093 1.078
S	—	—	R	0.791	0.884
T	—	—	U	0.877	1.389

Figure 8: Normalised values for tokens of the KIT vowel, casual style, occurring after /h/

From the data tabled in figure 8 above, it is difficult to identify any clear patterns or correlations. However, the data suggest that for the female subsample at least, Durban speakers may have a slightly lower F2/S(F2) than most Cape Town female speakers which is consistent with the hypothesis that centralisation for the KIT vowel in this phonetic environment is more extensive in Natal. It must be stressed here however, that no conclusive claims regarding possible centralisation for this environment for Natal speakers can be made based on so few tokens.

Another environment for which there were very few tokens of the KIT vowel occurring in the interviews is the pre-palato-alveolar environment. Examples of words occurring in interviews which were classified as pre-palato-alveolar KIT include the words *vision* and *fish*. The normalised formant data for this environment for each of the individual tokens are provided in figure 9 below.

Cape Town Males:			Cape Town Females:		
Speaker:	F1 Value:	F2 Value:	Speaker:	F1 Value:	F2 Value:
F	1.144 1.078 0.918 0.895 0.905 0.875 0.981 1.065	1.251 1.24 1.35 1.241 1.137 1.186 1.291 1.268	A	—	—
G	0.904	1.239	B	0.951 0.951 0.736 0.939	1.022 1.047 0.97 1.271
H	0.939 1.057 0.964 0.86 0.846 0.89	1.264 1.236 1.269 1.291 1.26 1.218	C	—	—
I	0.838 0.838 0.838	1.346 1.355 1.355	D	—	—
V	0.85 0.875	1.397 1.435	E	0.822 0.777	1.107 1.149

	0.846	1.529		1.003	1.225
	0.829	1.422		0.758	1.229
	0.805	1.346		0.709	1.082
				0.569	1.168
				0.704	1.101
W	0.926	1.382	X	0.827	
	0.813	1.305			1.124
	0.931	1.307			

Durban Males:			Durban Females:		
Speaker:	F1 Value:	F2 Value:	Speaker:	F1 Value:	F2 Value:
J	0.708	1.203	N	0.96	1.161
	0.852	0.924		0.864	0.893
	0.935	1.126		0.946	1.044
	0.768	1.389		0.824	1.047
	0.85	1.215		0.609	0.884
	0.813	1.264		0.873	1.049
				0.89	1.027
				0.79	1.028
				1.017	0.885
				0.675	1.066
				0.814	1.344
				0.979	1.044
				0.663	1.159
				0.837	1.287
				0.753	1.157

				0.835	1.24
				0.814	1.182
				0.828	1.186
				0.828	1.186
K	0.854	1.074	O	1.009	1.185
	1.1	1.185		0.977	1.303
	1.154	1.262		0.828	1.238
				0.788	1.25
				0.824	1.302
				0.973	1.218
				0.899	1.279
L	1.296	0.88	P	0.859	1.257
	0.827	0.755			
M	1.065	1.266	Q	0.825	0.827
	1.039	1.319		0.617	0.897
	0.92	1.318		0.829	1.129
	1.058	1.282		0.711	1.087
	0.966	1.28			
	0.954	1.305			
	0.901	1.287			
	1.13	1.231			
	1.142	1.272			
	1.053	1.247			
	1.188	1.189			
	1.101	1.245			
	0.961	1.313			
	1.159	1.346			
S	1.046	1.145	R	0.711	1.052
	1.098	1.097		0.738	1.182

	0.963	1.085		0.779	1.011
	0.948	1.207		0.618	1.017
	0.915	1.425		0.936	1.024
	1.002	1.171		0.848	1.146
	1.048	1.202			
	0.946	1.165			
	1.048	1.131			
T	1.031	1.113	U	0.785	1.332
	1.041	1.201		0.828	1.095
	0.95	1.152		0.771	1.549
	0.905	0.96			

Figure 9: The normalised individual tokens for the KIT vowel, casual style, for the pre-palato-alveolar environment.

As is the case for the preceding /h/ environment, the data reported above do not give any clear indication of potential patterns for centralisation. The normalised speaker means for those speakers for whom there was more than one token of the KIT vowel in the pre-palato-alveolar environment are graphically displayed in figure 10 below.

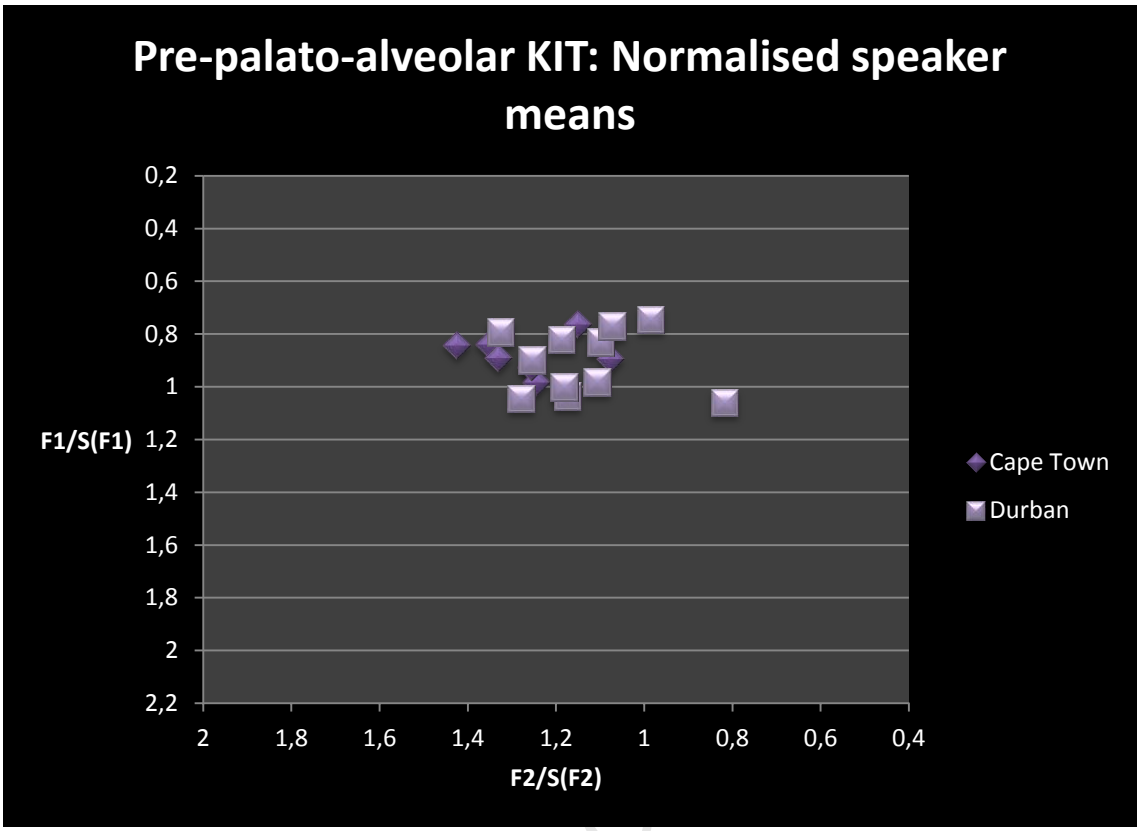


Figure 10: Normalised speaker means for KIT in the pre-palato-alveolar context, casual style; n=18 (2 female Cape Town speakers and 5 male Cape Town speakers; 5 female Durban speakers and 6 male Durban speakers).

Although the above graph is based on a relatively small number of tokens and it is therefore not possible to conclusively quantify the effect of this environment, it is nevertheless worth noting that the pattern observed for KIT occurring in this context is not very clear. However, there does still appear to be a pattern, which is somewhat similar to that which would have been predicted based on the claims of prior research. The KIT vowel in the pre-palato-alveolar position does appear to be slightly more centralised for the Durban speakers than is the case for the Cape Town speakers, but not obviously so.

The pattern is clearer for the male subsample, the subsample for which there are more calculated speaker means. This is in contrast to the female subsample, for which there are only two Cape Town speakers who have more than one token of KIT in this environment and therefore there are only two speakers for which means could be calculated.

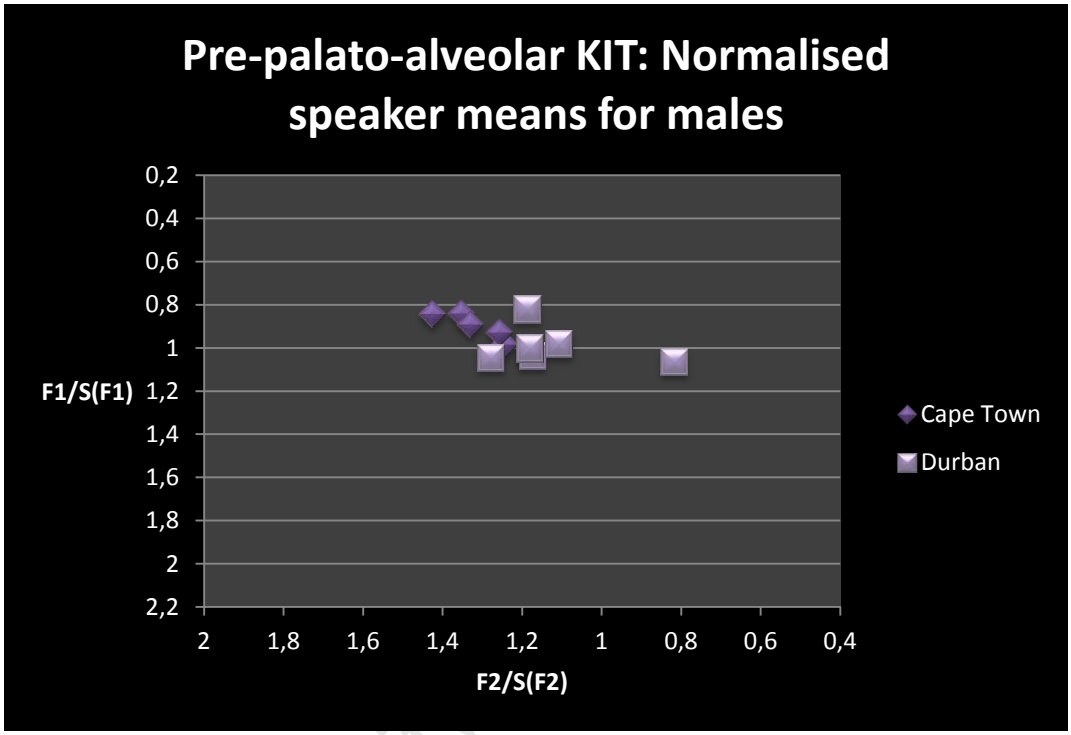


Figure 11: Normalised speaker means for pre-palato-alveolar KIT, casual style, for the male subsample; n=11 (5 Cape Town male speakers and 6 Durban male speakers).

It is evident from figure 11 above, that Durban male speakers display greater centralisation in this phonetic environment for KIT than their Cape Town counterparts. The majority of the male Durban speakers appear to have a far more centralised KIT vowel in this phonetic environment than the male Cape Town speakers for the same environment. This difference is also impressionistically perceptible to the author. It is therefore possible that, were there a sufficient number of pre-palato-alveolar KIT tokens occurring in the interviews, statistical tests would reveal a significant difference between these regions for this variable. The findings for the KIT vowel in the pre-palato-alveolar environment are similar to those for the word initial environment.

Although the word list data for pre-palato-alveolar KIT cannot be statistically compared, due to the fact that there was not a sufficient number of tokens for word list style, owing to the fact that the word list most often used by the UCT linguistics section was altered during the time that this research was being conducted (thus resulting in fewer tokens of word list style pre-palato-alveolar KIT for the male subsample for which an earlier form of the word list was used), there are nevertheless enough tokens to allow for a visual comparison of KIT in this environment, at least for the female subsample. The token used for pre-palato-alveolar KIT in the word list was the word *fish*. Figure 12 below, displays the results for the word list tokens of pre-palato-alveolar KIT for the sample as a whole.

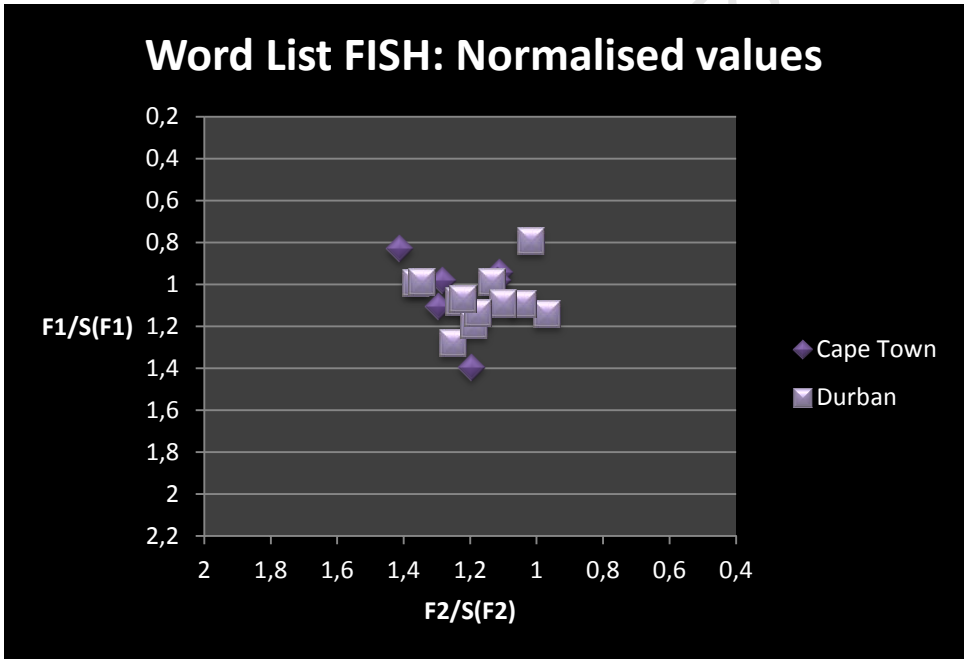


Figure 12: Normalised values for pre-palato-alveolar KIT for the total sample, word list style (n=18; 1 Cape Town male, 5 Cape Town females, 6 Durban females, 6 Durban males).

The pattern exhibited for the word list style tokens of pre-palato-alveolar KIT, as displayed in the above graph, is similar to that displayed by the sample for the casual style data for KIT in this phonetic environment. Since there is only one Cape Town male speaker for which a token of pre-palato-alveolar KIT in word list style is available, the graph for the male subsample for word list

style has not been provided here. However, there is only one speaker in the Cape Town female subsample for which no word list token of pre-palato-alveolar KIT is available and therefore the data for the female subsample can be visually compared using figure 13, below.

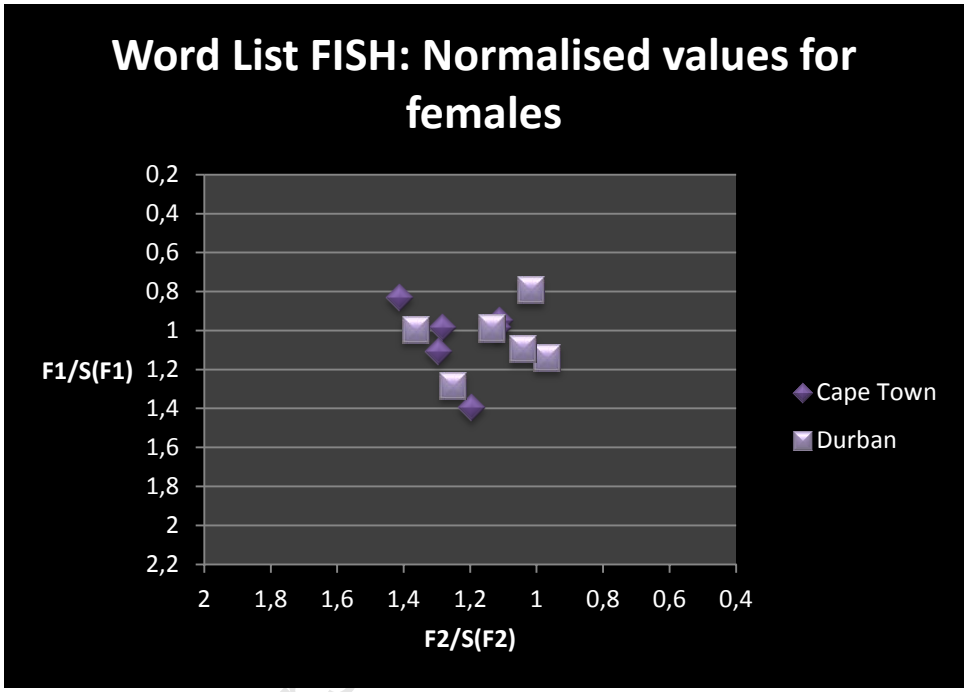


Figure 13: Normalised values for the female subsample for pre-palato-alveolar KIT, word list style.

The pattern seen in this graph is very similar to casual style pattern for this environment. The data for the tokens preceded by /w/ are provided in figure 14 below. Examples of tokens occurring in the interviews which fall into this environmental category include the words *with* and *win*.

Cape Town Males:			Cape Town Females:		
Speaker:	F1 Value:	F2 Value:	Speaker:	F1 Value:	F2 Value:
F	1.124	1.135	A	1.19	1.022
	1.058	1.203			
	1.083	1.191			
G	—	—	B	1.032	0.932
				0.877	0.964
H	1.004	1.366	C	0.905	0.885
				0.966	1.045
				0.877	1.062
I	0.884	1.513	D	1.02	1.163
				1.051	1.073
				1.106	1.087
V	0.94	1.129	E	0.726	1.058
	0.788	1.084		0.866	1.131
	0.914	1.081		0.888	1.149
	0.889	0.851		0.8	0.967
				0.769	1.069
				0.809	1.098
				0.834	1.127
				0.702	1.178

Durban Males:			Durban Females:		
Speaker:	F1 Value:	F2 Value:	Speaker:	F1 Value:	F2 Value:
J	—	—	N	—	—
K	1.068 0.938 1.115	1.074 0.972 1.235	O	0.939 1.046 1.15 0.778 0.885 0.961 0.911	1.204 1.291 1.256 1.335 1.149 1.199 0.962
L	0.953 0.869	0.951 1.255	P	0.836	0.83
M	—	—	Q	0.883 0.729 0.919	1.023 1.099 1.034
S	0.991	1.101	R	—	—
T	1.088	0.9	U	0.86 0.991 0.936 0.922 0.843 0.836	1.375 1.17 1.071 1.163 1.184 1.177

Figure 14: Formant data for tokens of KIT preceded by /w/, casual style.

Although speaker means could not be calculated for all speakers in the sample for this environment of the KIT vowel, due to a lack of tokens for certain speakers, speaker means were calculated for those speakers for whom there was more than one token for the KIT vowel in this context. These speaker means are graphically represented in figure 15, below.

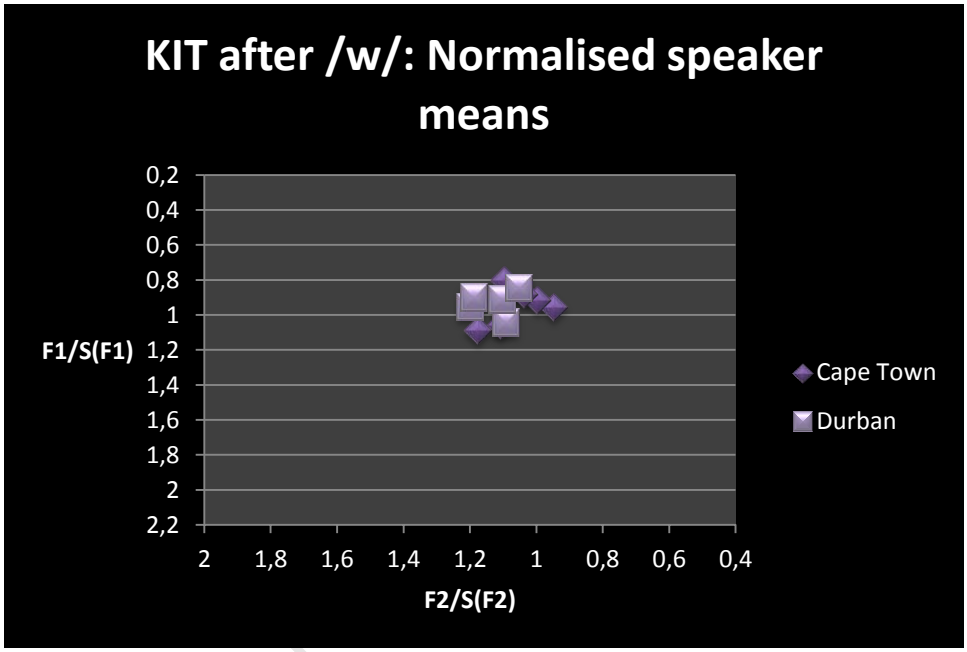


Figure 15: Normalised speaker means for the KIT vowel tokens preceded by /w/, casual style (n=11; 2 Durban male speakers, 3 Durban female speakers, 2 Cape Town male speakers, 4 Cape Town female speakers).

The pattern displayed in figure 15, above, is not very distinct. It does however appear as though Cape Town speakers may have a backer KIT vowel in this phonetic environment than Durban speakers. Figure 16 below is the graph for the male subsample for the speaker means of KIT tokens preceded by /w/. There are an insufficient number of speaker means calculated for this subsample for any definite conclusions to be drawn based on a visual comparison.

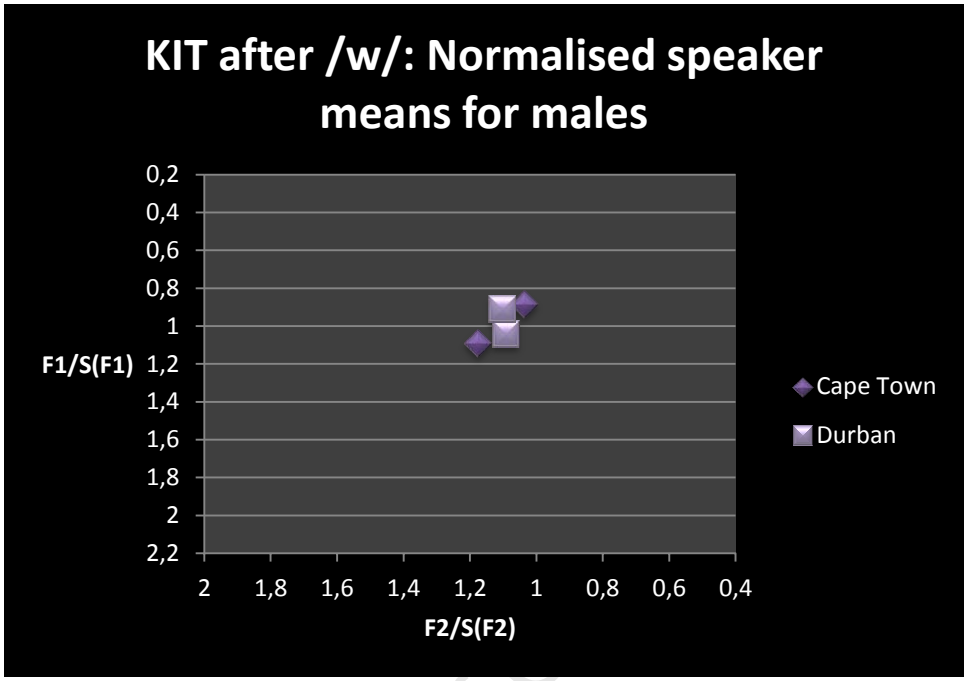


Figure 16: Normalised speaker means for the KIT tokens preceded by /w/ for the male subsample, casual style (n=4).

There are however, more speaker means calculated for the female subsample. The speaker means are graphically represented in figure 17, below.

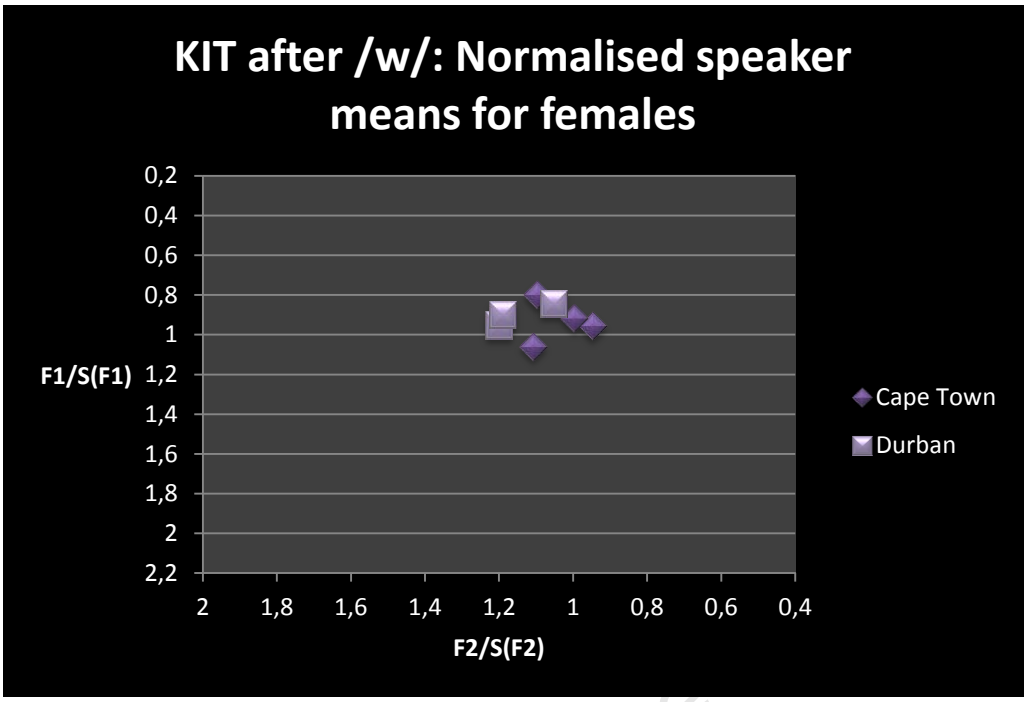


Figure 17: Speaker means for the tokens of KIT preceded by /w/ for the female subsample (n=7).

It appears from figure 17 above, that Cape Town female speakers exhibit more retracted values for the KIT vowel when it is preceded by /w/ than their Durban counterparts. This result is unlike the results for the KIT vowel for the other environments, as will be seen, where it seems that if anything, Cape Town speakers usually exhibit a fronter KIT vowel.

Figure 18, below, displays the normalised speaker means for the whole sample for word-initial KIT in casual style. Examples of tokens falling into this environmental category would include the words *it* and *if*.

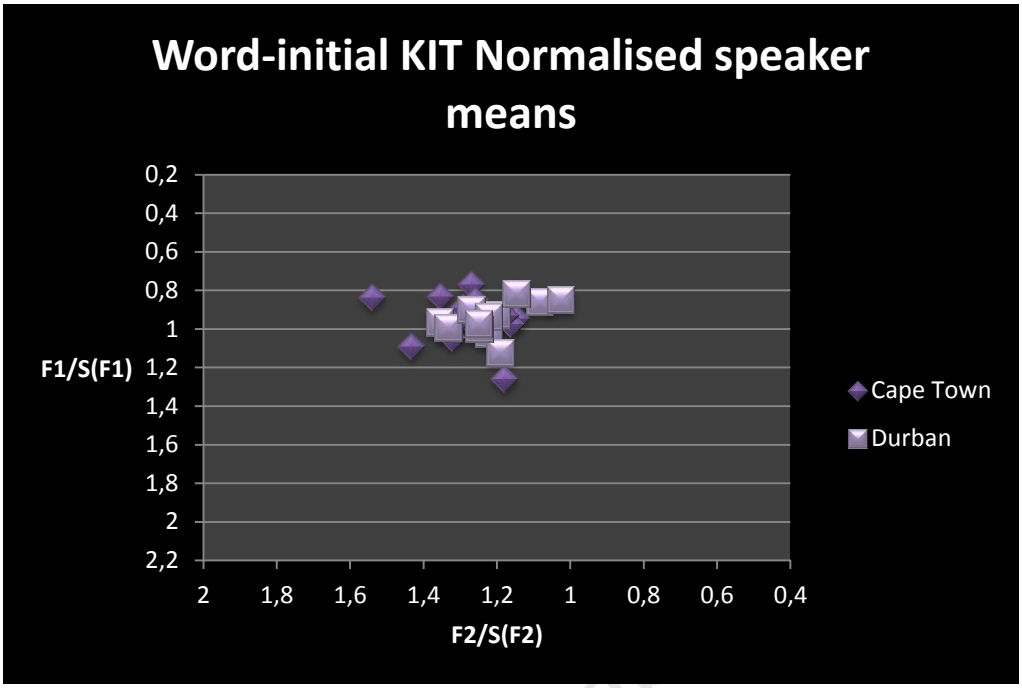


Figure 18: The normalised speaker means for word-initial KIT, casual style (n=24).

It appears from this figure, that the Durban speakers may have a slightly more centralised KIT vowel in this environment than the Cape Town speakers, although the pattern is far from clear. Figure 19 below, displays the speaker means for the female subsample for word-initial KIT in casual style.

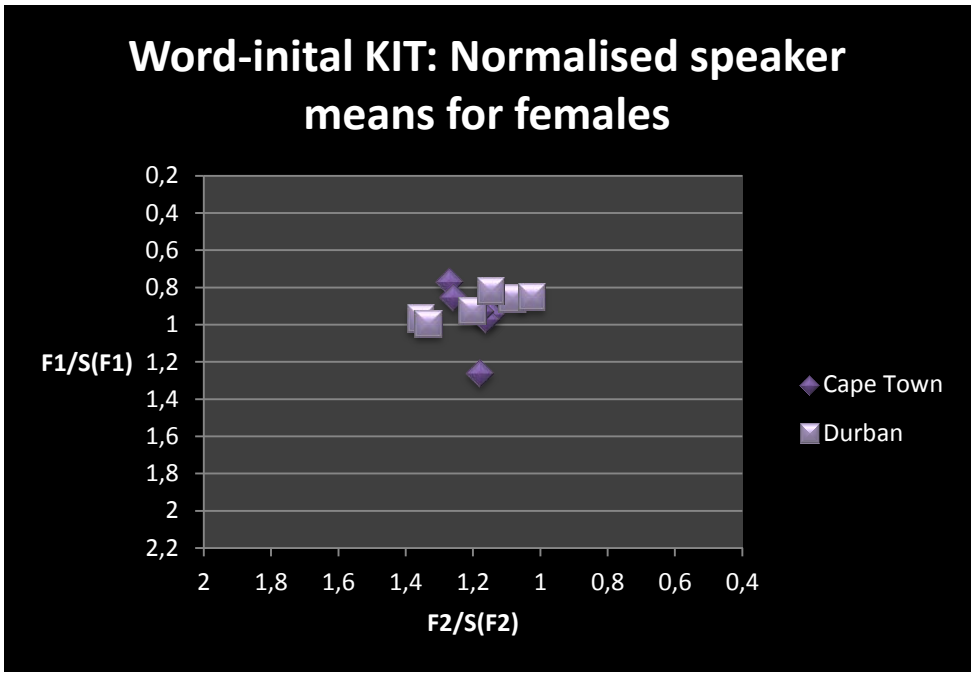


Figure 19: Speaker means for word-initial KIT for the female subsample, casual style (n=12).

There is no particularly obvious pattern for word-initial KIT for the female subsample, as illustrated in figure 19, above. It is once again the male subsample which exhibits the clearest pattern for this context. Figure 20 below graphically displays the speaker means for the male subsample for the KIT vowel in the word-initial environment.

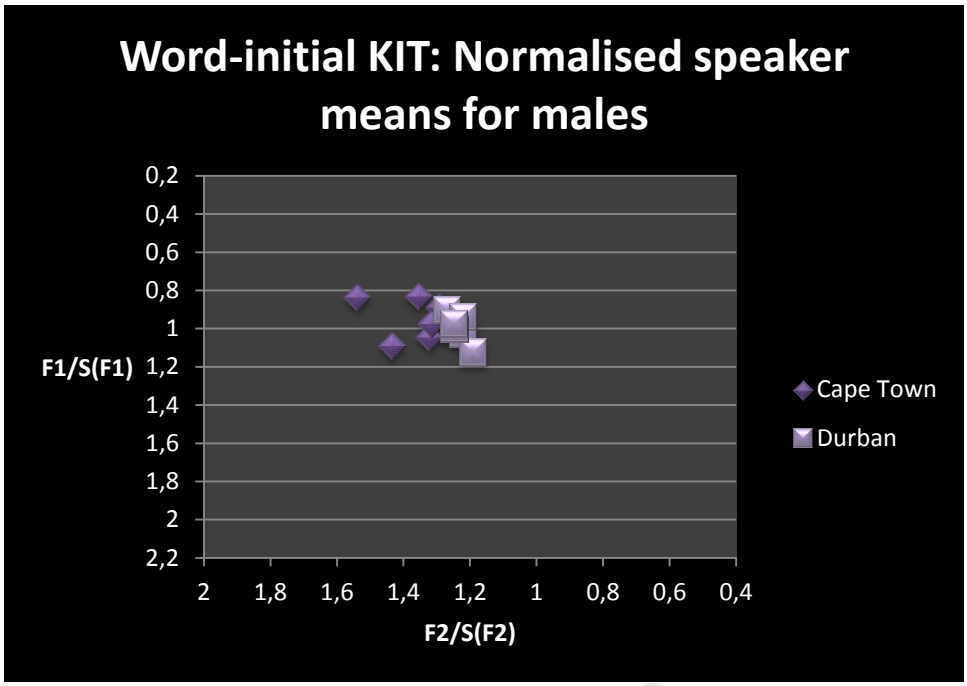


Figure 20: The normalised speaker means of the male subsample, casual style, for word-initial KIT (n=12).

The Durban male speakers, whose speaker means are displayed in figure 20 above exhibit more extensive centralisation for the KIT vowel in the word-initial environment than the Cape Town male speakers.

There were sufficient tokens for each speaker to allow for a statistical comparison using t-tests for the KIT vowel in the word initial environment. The results of this analysis are displayed in figure 21, below. The alternative hypotheses were that F1/S(F1) would be greater for Durban speakers and that F2/S(F2) would be greater for Cape Town speakers. The t-tests reveal that there is a significant difference at the 95 percent confidence level for the male subsample for F2/S (F2) for the KIT vowel in the word-initial environment and that the difference approaches significance for the sample as a whole. Therefore, Durban male speakers exhibit significantly more centralisation for the KIT vowel in this environment than Cape Town male speakers do.

	Total Sample (n=24)	Male Subsample (n=12)	Female Subsample (n=12)
p value for F1/S(F1)	0.4948	0.1778	0.7480
p value for F2/S(F2)	0.0583	0.0078	0.4067

Figure 21: T-test results for word-initial KIT, casual style.

The data for the KIT vowel in the velar and unconditioned environments does not reveal as obvious a pattern as that for the word-initial and pre-palato-alveolar environments. Figure 22 below displays the speaker means for the casual style tokens of the KIT vowel occurring in the velar environment. Example of tokens for this phonetic environment would include the words *sick* and *kids*.

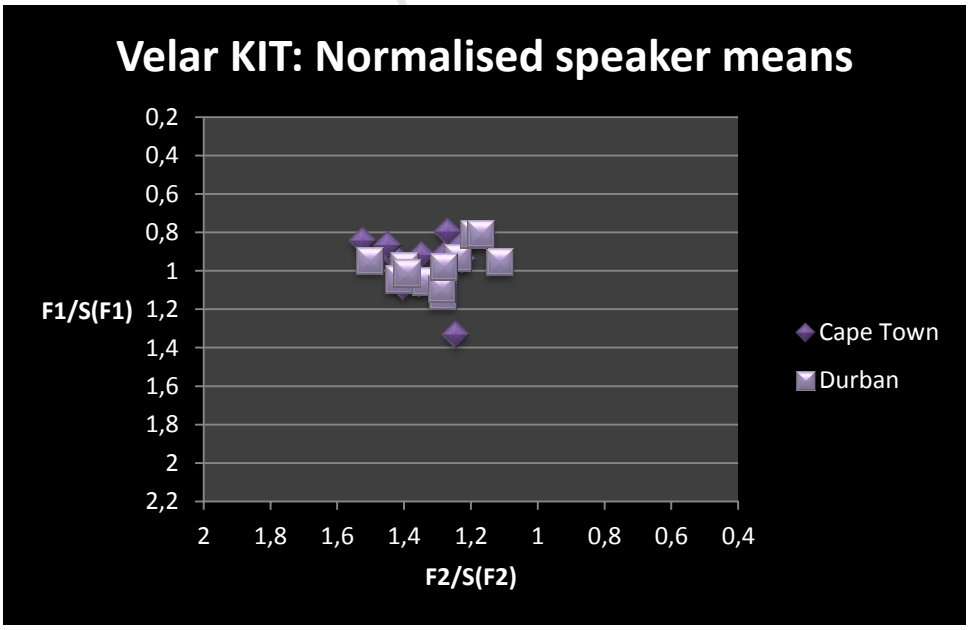


Figure 22: Normalised speaker means for the KIT vowel in the velar environment, casual style (n=24).

As can be seen from figure 22 above, the Cape Town and Durban speakers appear to be somewhat similar with regard to the realisation of the KIT vowel in this phonetic environment. This is an environment for which one might expected to find similar results for both Durban and Cape Town speakers, since it is the only environment according to Lanham and Macdonald (1979) where a higher allophone is reported to be conditioned in both regions.

When examining the data from the male and female subsamples separately, however, a pattern does start to emerge, even for this environment, although it is not as clear as that for pre-palato-alveolar KIT. The normalised speaker means for the female subsample for the KIT vowel in the velar environment, in casual style are represented in figure 23 below.

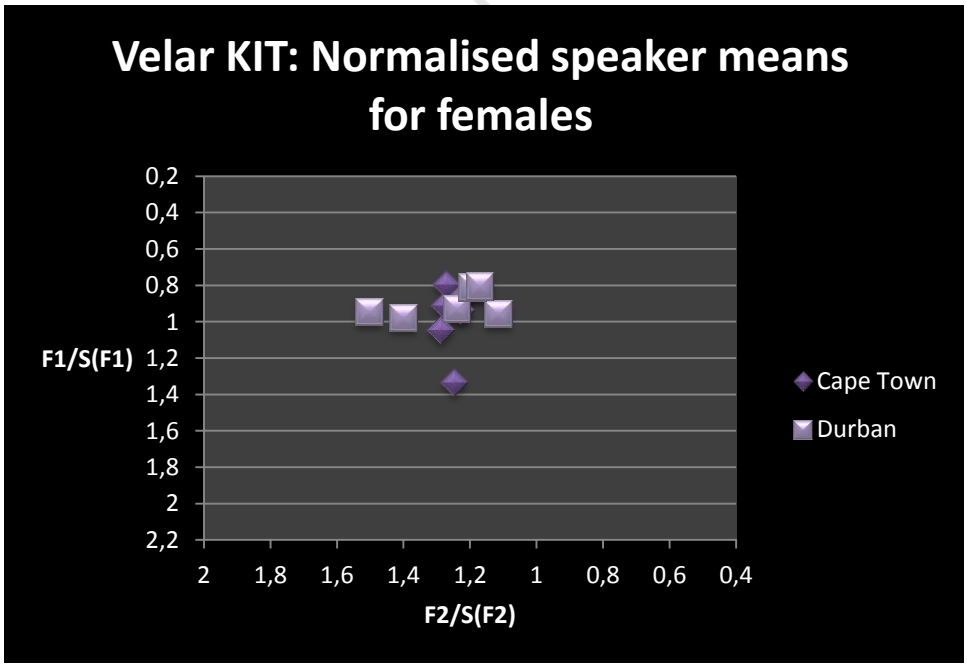


Figure 23: The normalised speaker means for the female subsample for the KIT vowel in the velar environment, casual style (n=12).

Although two Durban speakers obscure the overall pattern in figure 23, it nevertheless appears as though most Cape Town females display a slightly fronter KIT vowel than the Durban females. This pattern is clearer for the male subsample. The speaker means for the male subsample for the tokens of the KIT vowel occurring in the velar environment, in casual style are graphically depicted in figure 24 below.

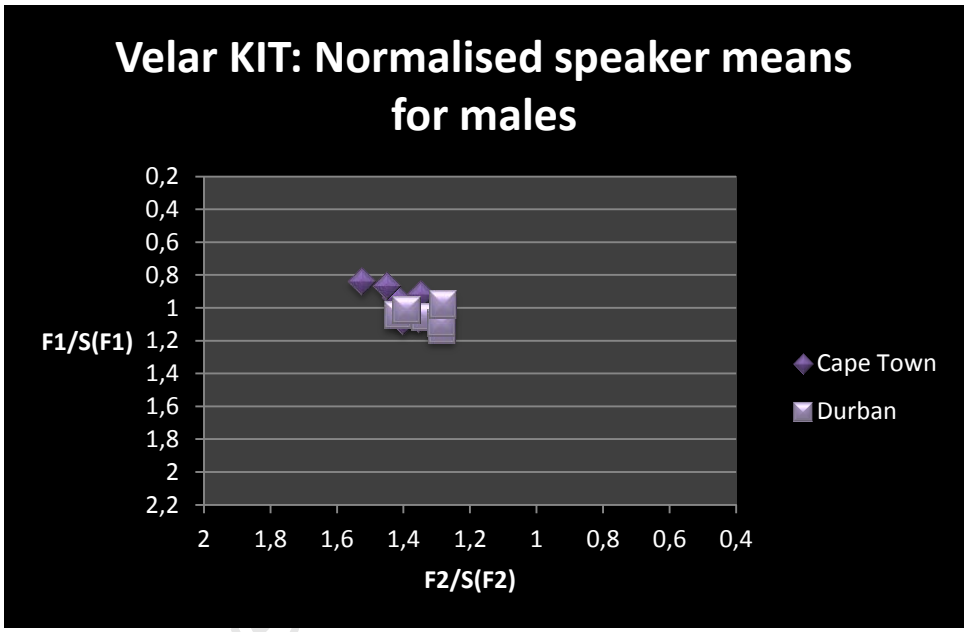


Figure 24: The normalised speaker means for velar KIT for the male subsample, casual style (n=12).

As is apparent from figure 24 above, Durban males may have a slightly lowered as well as somewhat centralised KIT vowel for the velar environment than their Cape Town counterparts do. It may therefore be the case that the KIT vowel is more centralised for Durban speakers (especially males) even in environments where no observable difference in centralisation would be expected.

The velar environment was another environment for which enough tokens were present for each speaker to allow for a statistical comparison using t-tests. The results of the t-tests are provided in figure 25, below. The alternative hypotheses were that F1/S (F1) would be greater for Durban speakers and that F2/S (F2) would be greater for Cape Town speakers. The difference for F2/S (F2) is significant for the male subsample for velar KIT at the 95 percent confidence level. Durban male speakers therefore exhibit significantly greater centralisation for KIT in the velar environment than Cape Town male speakers. The male subsample also displays a significant difference at the 95 percent confidence level for F1/S (F1) for velar KIT. Cape Town males therefore exhibit a significantly higher KIT vowel in the velar environment than Durban males for this same environment, in casual style.

	Total Sample (n=24)	Male Subsample (n=12)	Female Subsample (n=12)
p value for F1/S(F1)	0.3992	0.0314	0.8063
p value for F2/S(F2)	0.1887	0.0057	0.6268

Figure 25: T-test results for velar KIT, casual style.

The last environment for the KIT vowel which would need to be considered is the unconditioned environment. This environment includes tokens of the KIT vowel in all environments other than those already dealt with. Example tokens would include the words *sit* and *did*. The unconditioned environment does not appear to exhibit a definite pattern upon initial observation and the two subsamples seem fairly similar. Figure 26 displays the speaker means for the total sample for tokens of the KIT vowel in the unconditioned environment, in casual style.

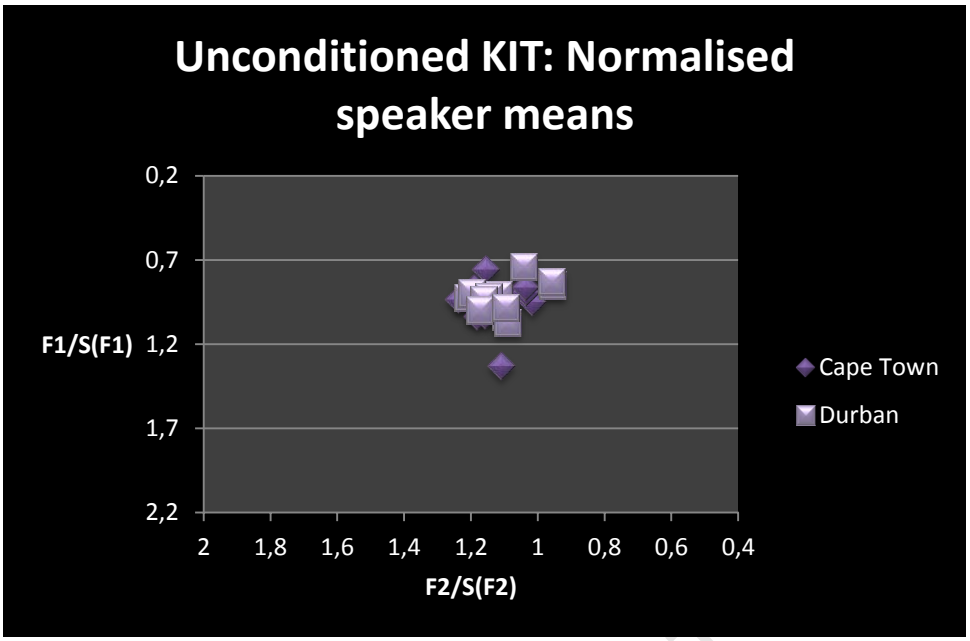


Figure 26: Speaker means for unconditioned KIT, casual style (n=24).

Cape Town and Durban speakers appear to be quite similar to each other in their realisation of the KIT vowel in this environment. The female subsample likewise displays no obvious pattern. Figure 27 below displays the normalised speaker means for the female subsample for the unconditioned KIT vowel.

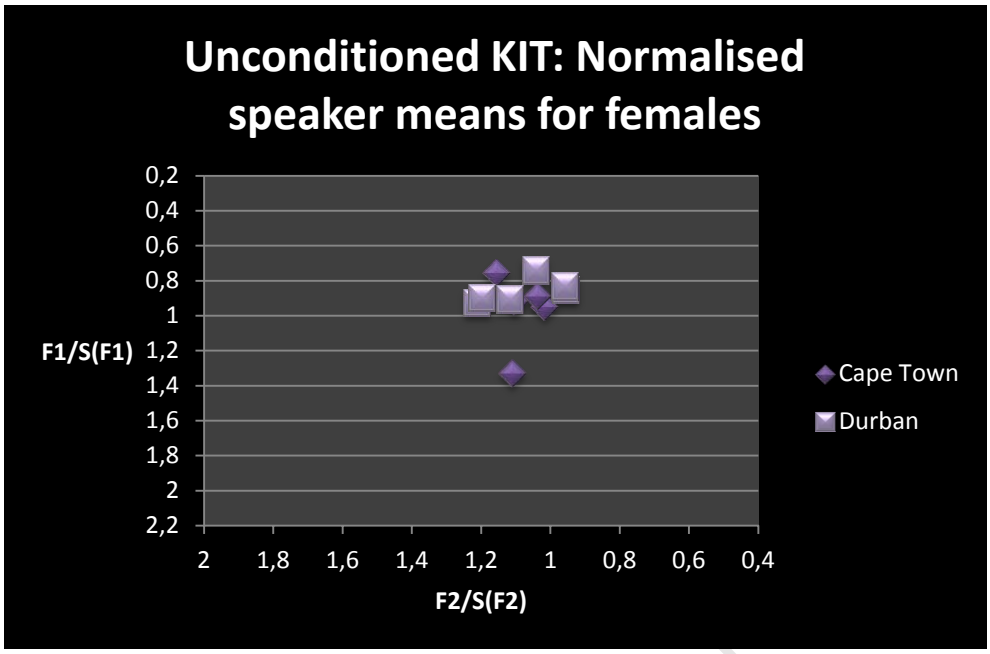


Figure 27: Normalised speaker means for the female subsample for unconditioned KIT, casual style (n=12).

Figure 27 demonstrates that the female speakers do not appear to differ remarkably in their realisation of the KIT vowel in the unconditioned environment.

For the male subsample, the pattern is also not particularly clear, although a pattern is evident. Figure 28 displays the normalised speaker means for tokens of the KIT vowel occurring in the unconditioned context, in casual style.

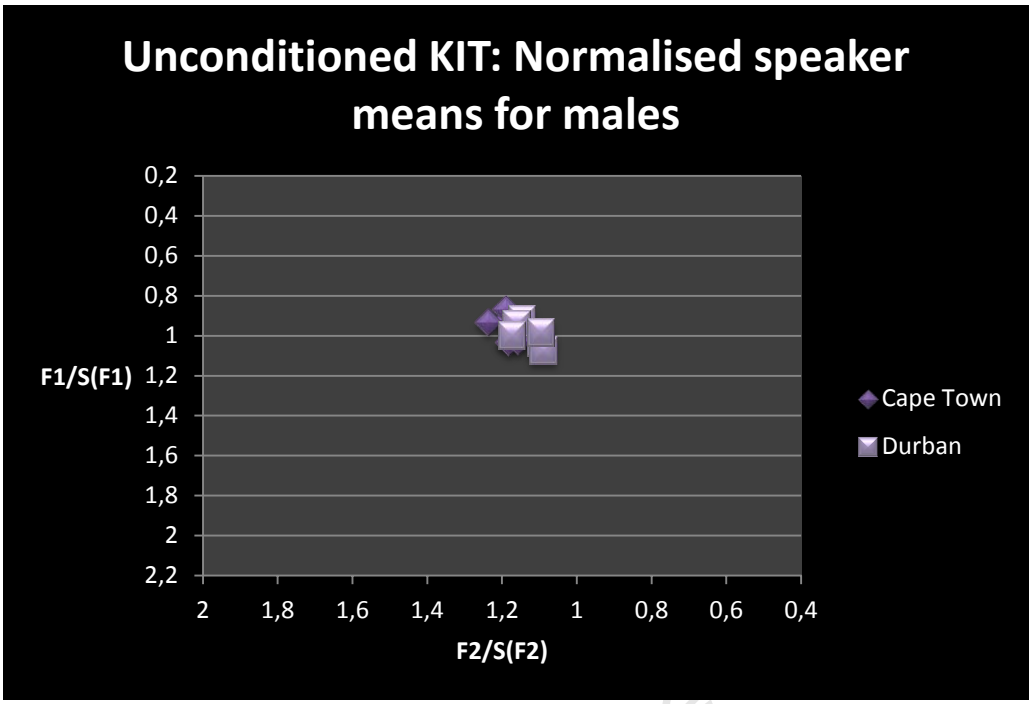


Figure 28: The normalised speaker means for the KIT vowel in the unconditioned environment for the male subsample, casual style (n=12).

Although, as indicated by figure 28 above, the KIT vowel in the unconditioned environment is quite similar for Cape Town and Durban males, a pattern is evident. Durban males do appear to exhibit a slightly more centralised (and possibly lowered) KIT vowel than the Cape Town males, even in the unconditioned phonetic environment.

Figure 29 below, displays the t-test results for the KIT vowel in the unconditioned environment. The alternative hypotheses were that F1/S (F1) would be greater for Durban speakers and F2/S (F2) would be greater for Cape Town speakers. From this table it is evident that there is a significant difference at the 95 percent confidence level for F2/S (F2) for the male subsample, but not for the female subsample or for the sample as a whole. Durban male speakers therefore exhibit significantly greater centralisation for KIT in the unconditioned environment than Cape Town male speakers.

	Total Sample (n=24)	Male Subsample (n=12)	Female Subsample (n=12)
p value for F1/S(F1)	0.7049	0.1527	0.8421
p value for F2/S(F2)	0.2647	0.0534	0.5346

Figure 29: T-test results for KIT in the unconditioned environment, casual style.

Therefore, while most of the relevant phonetic environments for the KIT vowel display some evidence of regional variation, especially for the male subsample, it is worth investigating whether there is evidence which supports the hypothesis that the KIT vowel of Natal English can generally be characterized as being more centralised than it is in Cape English, for all environments, as Bekker (2009) conjectures.

On first inspection of the results for the KIT vowel (for all tokens of this vowel taken together), there does not seem to be any clear difference between Durban speakers and Cape Town speakers. Figure 30 below, displays the results of the normalised speaker means for the KIT vowel for the entire sample. There appears to be no clear difference either for the normalised speaker means for F1 or for the normalised speaker means for F2.

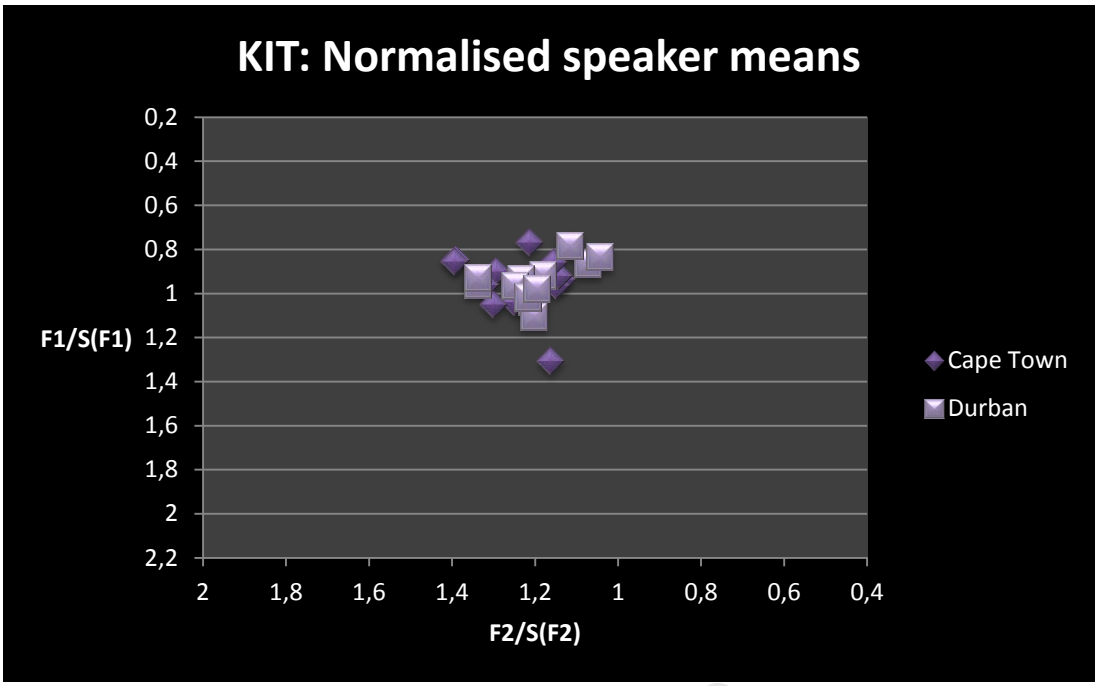


Figure 30: Normalised Speaker Means for KIT (all environments) occurring in casual style for the total sample (n=24).

For the female subsample, there was also no clear pattern for the means for the KIT vowel. Figure 31 displays the normalised speaker means for KIT for the female subsample. As can be seen from this graph, there is no clear pattern for KIT for this subsample, either for centralisation or for vowel height.

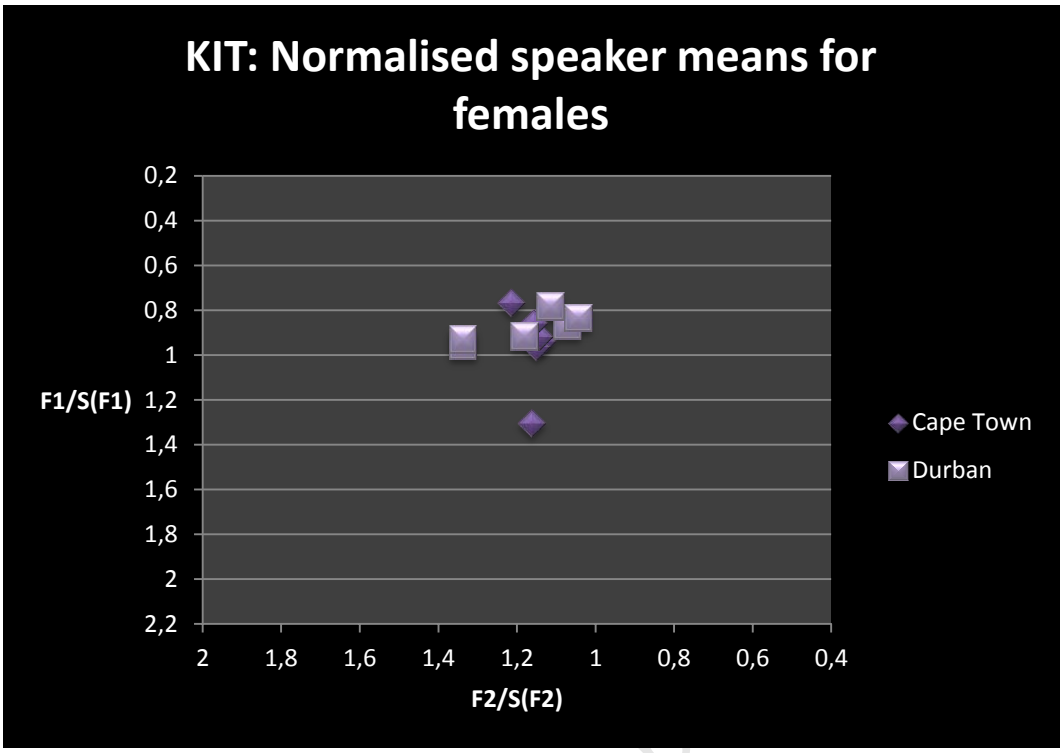


Figure 31: The normalised speaker means for the female subsample for the KIT vowel (all environments); (n=12).

On first inspection of the results obtained from the data for the male subsample, however, a pattern does emerge for the KIT vowel. Figure 32 below, displays the normalised speaker means of the casual style tokens of the KIT vowel for the male subsample. As can be seen from this graph, KIT appears to be both fronter, as well as somewhat closer for the Cape Town males.

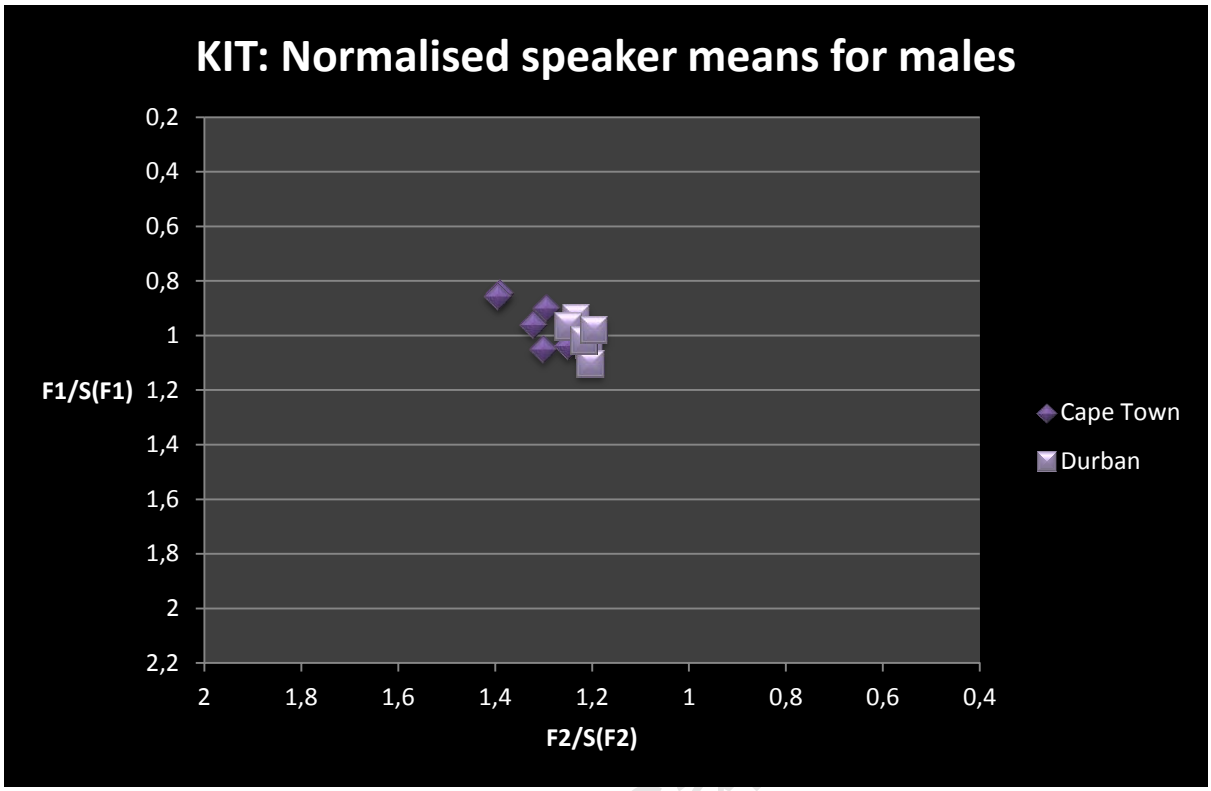


Figure 32: Normalised speaker means for the KIT vowel (all environments) for the male subsample, casual style (n=12).

The t-test results for the KIT vowel in casual style for the total sample, as well as for the female and male subsamples are provided in figure 33 below. The alternative hypotheses, based on the literature as well as on the graphs, were that F1/S (F1) would be greater for Durban speakers and F2/S (F2) would be greater for Cape Town speakers. As is evident from this table, there is a significant difference at the 95 percent confidence level for KIT in casual style for the male subsample for F2/S(F2), where Cape Town males exhibit a significantly fronter KIT vowel than Durban males. The difference for F1/S (F1) for the male subsample approaches significance at the 95 percent confidence level.

	Total Sample (n=24)	Male Subsample (n=12)	Female Subsample (n=12)
p value for F1/S(F1)	0.5487	0.0839	0.8203
p value for F2/S(F2)	0.1393	0.001	0.6317

Figure 33: T-test results for the KIT vowel (all environments), casual style.

There is no obvious pattern for the word list results for the KIT vowel for the sample as a whole. Figure 34 displays the results for the KIT vowel for the total sample. It appears as though the word list tokens of KIT may be slightly fronter for the Cape Town speakers, although this is not a very obvious pattern.

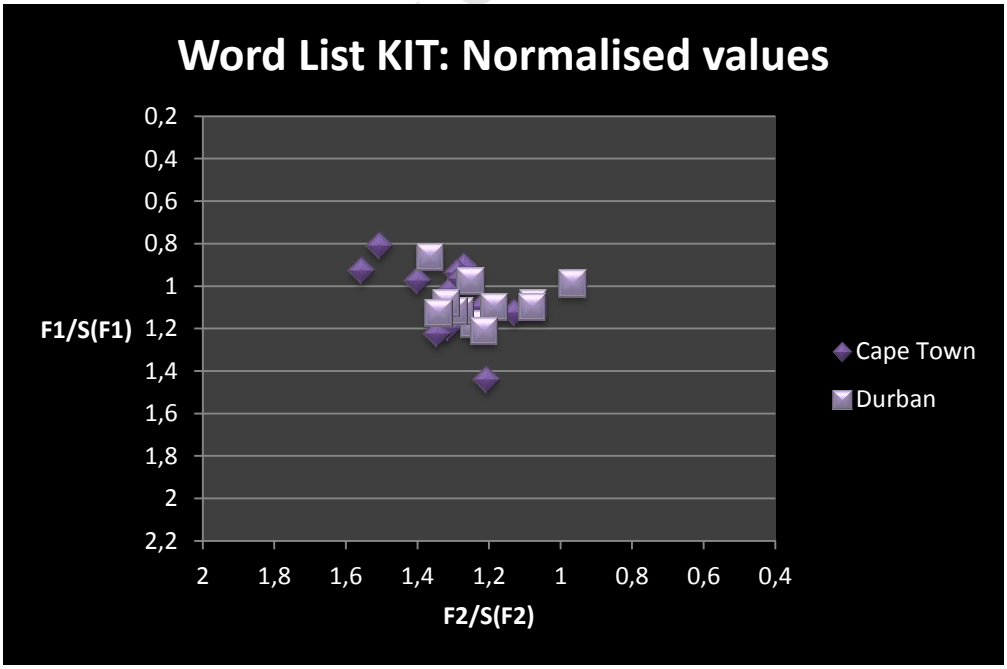


Figure 34: Normalised speaker means for the KIT vowel, word list style (n=24).

A similar pattern is evident for the word list tokens of KIT for the male and female subsamples. Figures 35 and 36 represent the normalised values for the word list tokens of KIT for these subsamples. A slight difference in fronting is apparent, where Cape Town speakers seem to have a fronter KIT vowel for the word list tokens than their Durban counterparts. This pattern is most visually apparent for the female subsample as portrayed in figure 35.

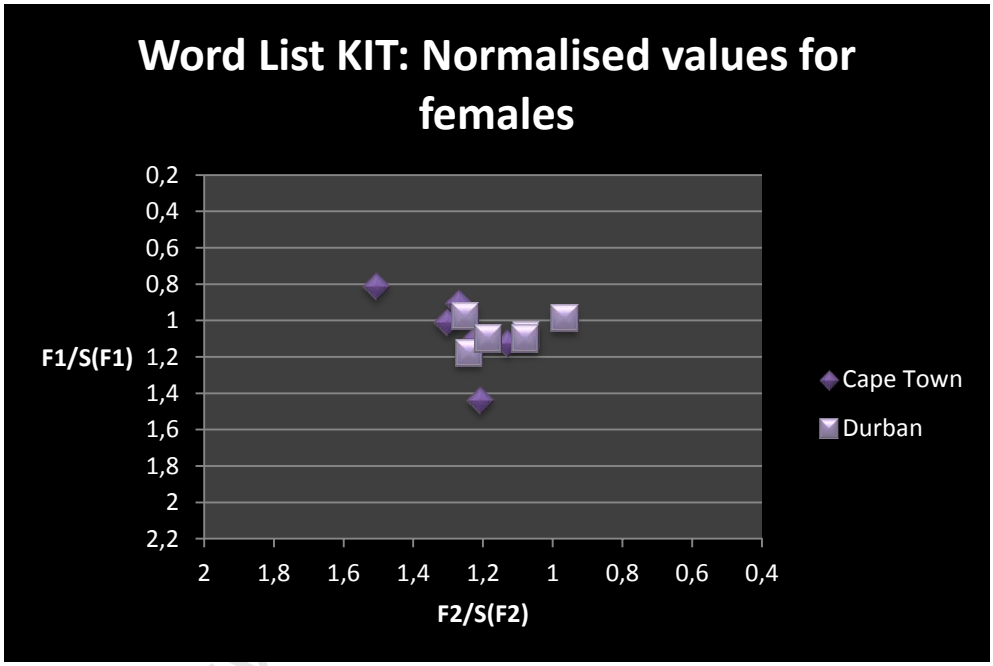


Figure 35: Normalised values for the female subsample for the KIT vowel, word list style (n=12).

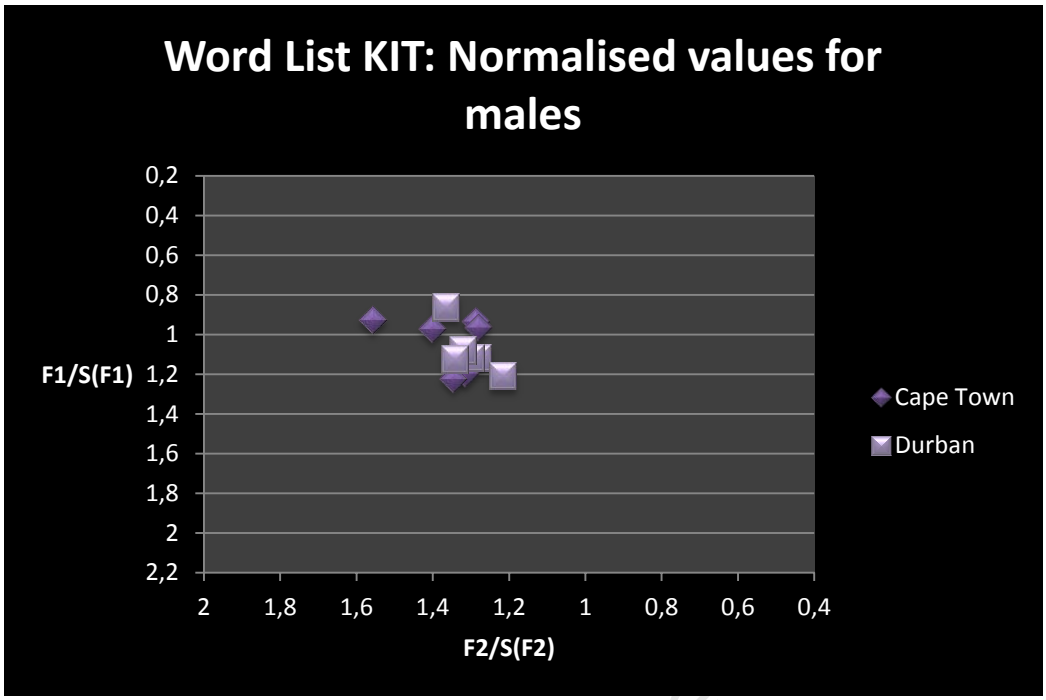


Figure 36: Normalised values for the male subsample for the KIT vowel, word list style (n=12).

The t-test results for KIT in word list style for the total sample as well as for the male and female subsamples are provided in figure 37, below. The alternative hypotheses were that F1/S (F1) would be greater for Durban speakers and F2/S (F2) would be greater for Cape Town speakers. As is evident from figure 37, there is a significant difference at the 95 percent confidence level for F2/S (F2) for both the total sample, as well as for the male and female subsamples. Durban speakers, both males and females therefore exhibit a significantly more centralised KIT vowel in word list style than Cape Town speakers do.

	Total Sample (n=24)	Male Subsample (n=12)	Female Subsample (n=12)
p value for F1/S(F1)	0.2878	0.2267	0.4711
p value for F2/S(F2)	0.0174	0.0404	0.0368

Figure 37: T-test results for KIT, word list style.

A summary of the t-test results for all of the environments of the KIT vowel casual style data is provided in figure 38, below.

Environment	Total Sample	Males	Females
After /h/	Insufficient data	Insufficient data	Insufficient data
Pre-palato-alveolar	Insufficient data	Insufficient data	Insufficient data
After /w/	Insufficient data	Insufficient data	Insufficient data
Word initial	Significant for F2/S(F2)	Significant for F2/S(F2)	Not significant
Velar	Not significant	Significant for F1/S(F1) and F2/S(F2)	Not significant
Unconditioned	Not significant	Approaching significance for F2/S(F2)	Not significant
All environments	Not significant	Significant for F2/S(F2); approaching significance for F1/S(F1)	Not significant

Figure 38: Summary of t-test results for all KIT vowel environments for casual style data.

3.2 THE NURSE VOWEL.

The analysis yielded no obvious pattern for the casual style tokens of the NURSE vowel. Figure 39 below, displays the normalised speaker means for the NURSE vowel for all the speakers in the sample. This graph does not display a very clear pattern for the NURSE vowel, with slight variation in both the front-back dimension and the high-low dimension, although there does appear to be some evidence of a fronter NURSE vowel in Cape Town.

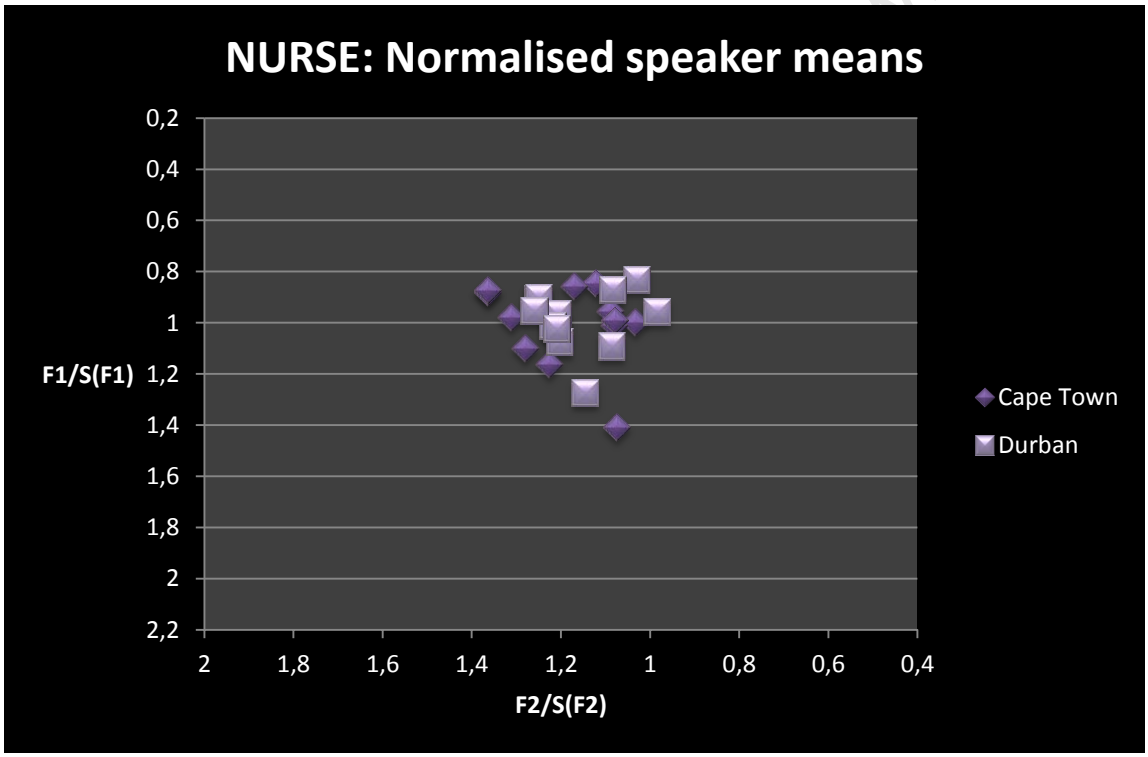


Figure 39: Normalised Speaker Means for NURSE for the total sample, casual style (n=24).

A clearer pattern emerges when at the male and female subsamples are examined separately. Figure 40 displays the normalised speaker means for the NURSE vowel in casual style for the female subsample. However, the pattern is still not very distinct and is similar to the pattern in the previous graph in this respect.

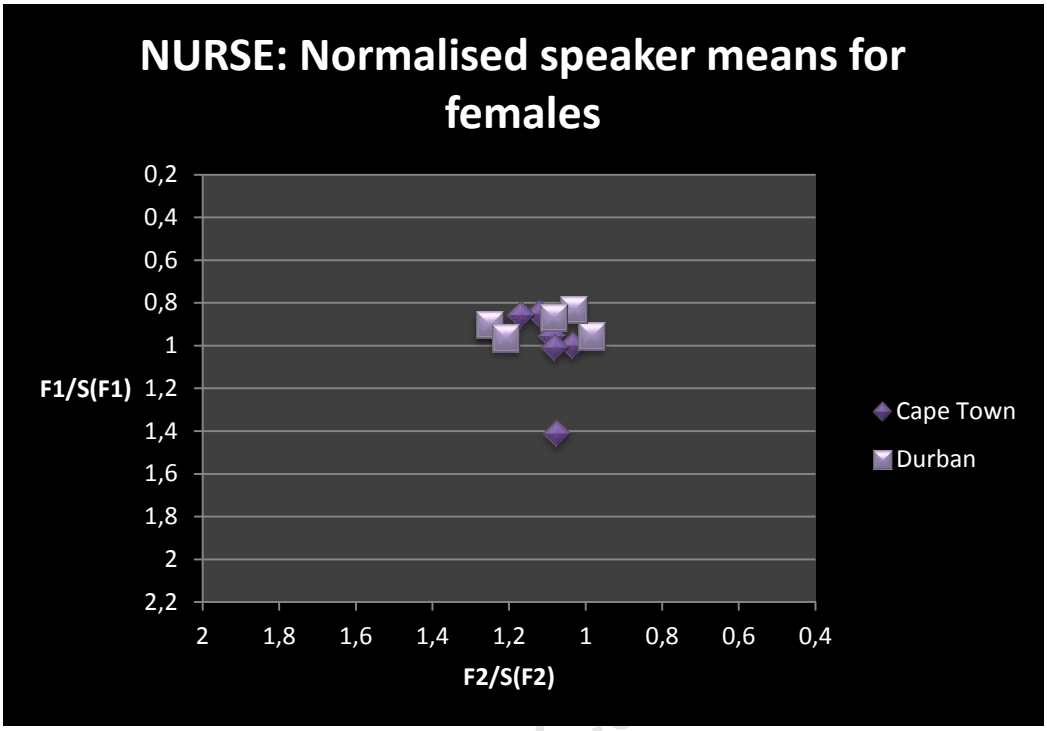


Figure 40: Normalised speaker means of the NURSE vowel for females, casual style (n=12).

For the male subsample however, the pattern is far more clear. Figure 41 displays the normalised speaker means for the NURSE vowel for the male subsample. As can be seen in the graph, the NURSE vowel appears to be fronter for Cape Town males than for Durban males.

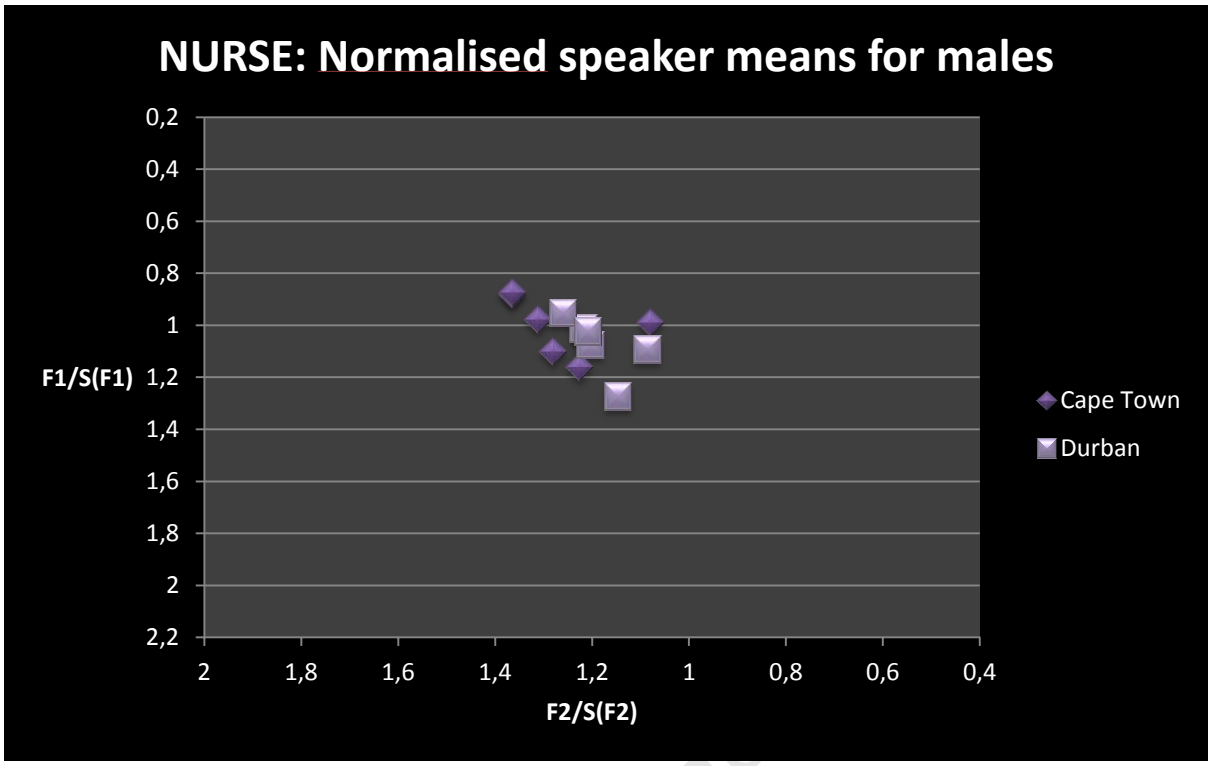


Figure 41: Normalised speaker means for males for interview tokens of the NURSE vowel (n=12).

A non-parametric test, namely, the Wilcoxon rank sum test, was used in order to statistically compare the data for the NURSE vowel. The results of the Wilcoxon rank sum test for the NURSE vowel in casual style are provided in figure 42, below.

	Total Sample (n=24)	Male Subsample (n=12)	Female Subsample (n=12)
p value for F1/S(F1)	0.9540	0.3367	0.3367
p value for F2/S(F2)	0.7290	0.0782	0.6310

Figure 42: Wilcoxon rank sum test results for the NURSE vowel, casual style.

The alternative hypotheses, based on the literature as well as on the graphs, were that there would be a difference for F1/S (F1) and F2/S (F2). None of the results for NURSE in casual style are significant at the 95 percent confidence level, as is evident from figure 42. However, the difference between the Cape Town and Durban speakers in the male subsample for F2/S (F2) approaches significance.

The normalised word list tokens for the NURSE vowel, much like those of the interview tokens do not display a very obvious pattern. Figure 43 provides a graphical representation of the normalised word list token values for NURSE for the total sample. When compared with the results for the interview tokens, the normalised word list values for the NURSE vowel exhibit an even less distinct pattern with regards to the fronting of NURSE.

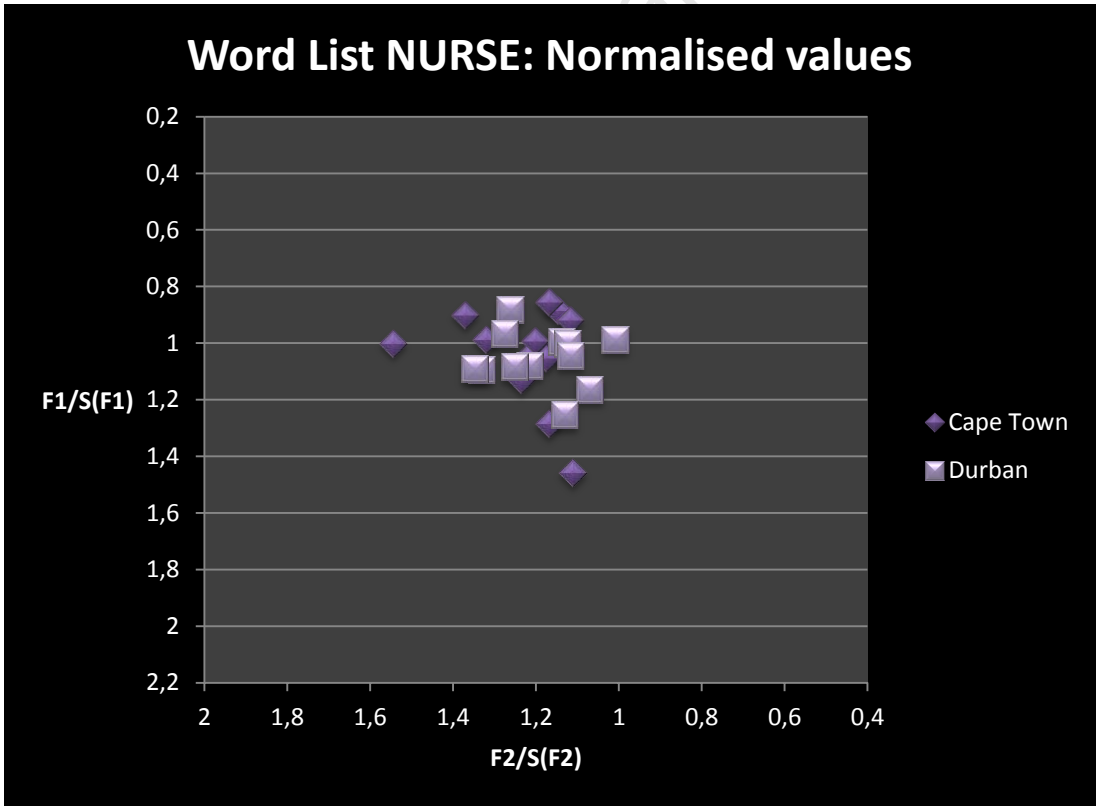


Figure 43: Normalised values for word list tokens of NURSE for the total sample (n=24).

For the female subsample, the observed pattern for the word list tokens is very similar to that observed for the casual style tokens. Figure 44 displays the normalised values for the word list tokens of the NURSE vowel for the female subsample.

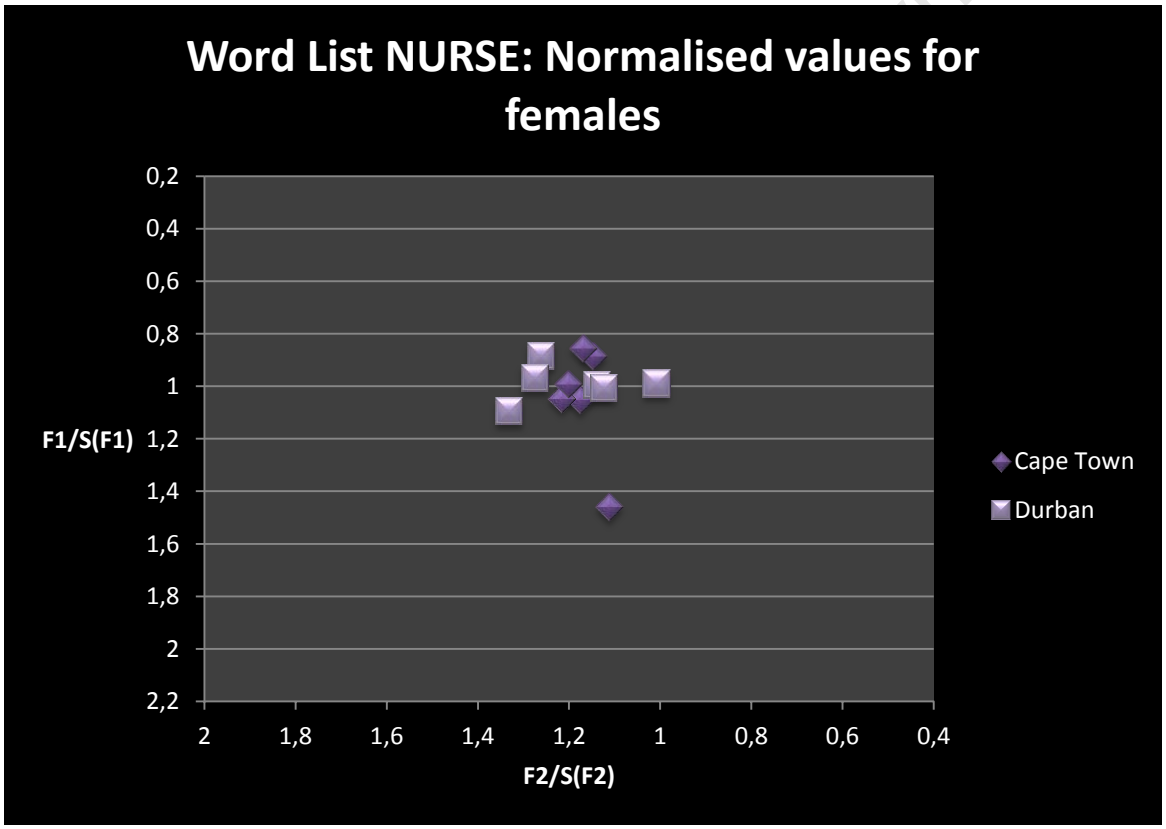


Figure 44: Normalised values for the NURSE vowel for the female subsample, word list style (n=12).

The male subsample appears to display a similar pattern for word list NURSE tokens as that exhibited by the male subsample for the casual style tokens. Figure 45 displays the results for the word list tokens of NURSE for the male subsample. Here, a similar trend towards the fronting of NURSE is apparent, but this is not as clear as the pattern observed for the casual style results for the NURSE vowel.

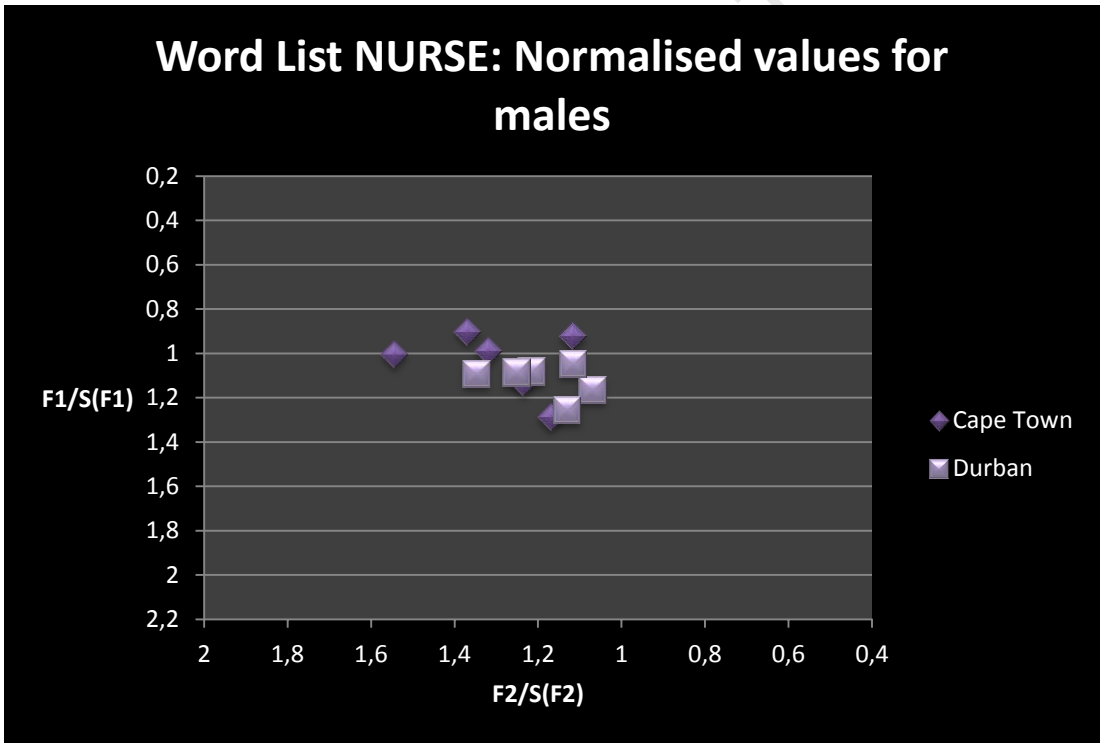


Figure 45: Normalised values for the NURSE vowel for the male subsample, word list style (n=12).

The alternative hypothesis was that F1/S (F1) and F2/S (F2) would be different. There are no significant differences for the NURSE vowel in word list style at the 95 percent confidence level, either for the total sample, or for the subsamples, as is indicated by figure 46 below, which displays the results of the Wilcoxon rank sum test for the NURSE vowel in word list style.

	Total Sample (n=24)	Male Subsample (n=12)	Female Subsample (n=12)
p value for F1/S(F1)	0.4356	0.2002	0.7488
p value for F2/S(F2)	0.5634	0.2290	0.7488

Figure 46: Wilcoxon rank sum test results for NURSE, word list style.

3.3 THE PRICE VOWEL.

For the onset of the PRICE vowel, there is no immediately apparent difference between Durban and Cape Town speakers. Figure 47 displays the results for the normalised interview tokens of the onset of the PRICE vowel for the total sample. It appears as though the onset of PRICE may be slightly higher for Cape Town speakers than it is for Durban speakers, but this is not a very obvious pattern.

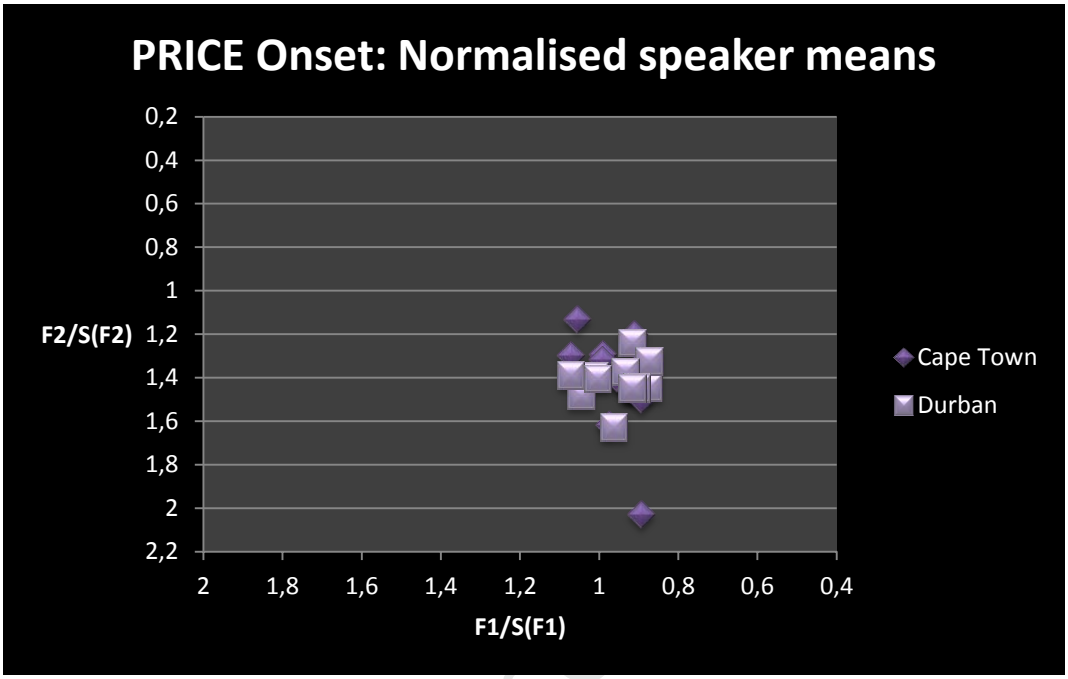


Figure 47: Normalised speaker means for the entire sample for the onset of the PRICE vowel, casual style (n=24).

For the female subsample, the pattern is even less clear. Figure 48 displays the results of the normalised speaker means for the onset of PRICE for the female subsample.

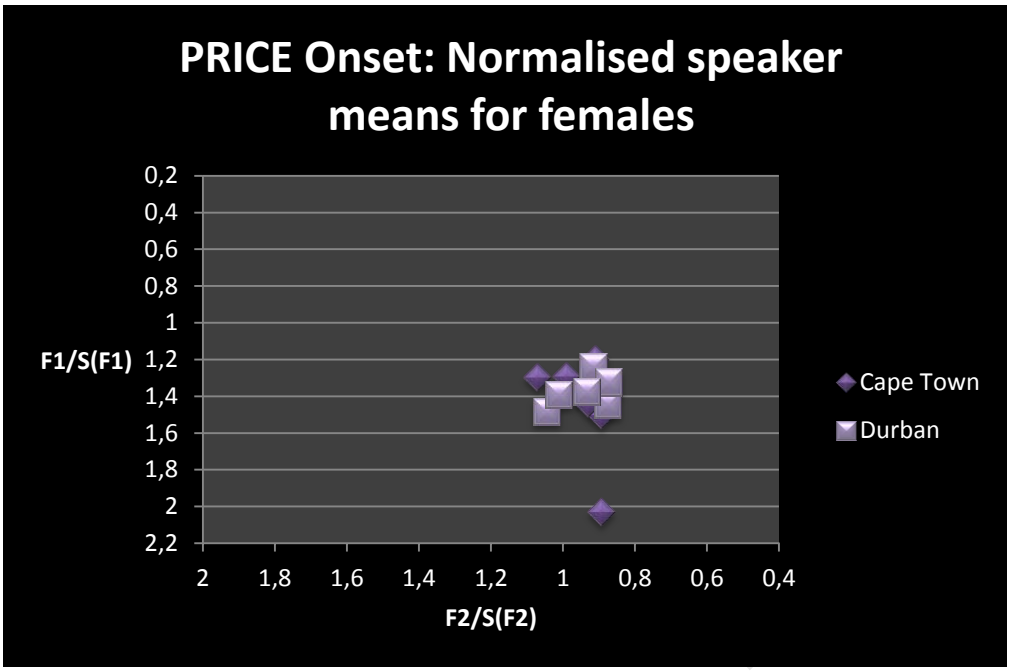


Figure 48: Normalised speaker means for the onset of the PRICE vowel for the female subsample (n=12).

The pattern of a slightly raised onset for the PRICE vowel for Cape Town speakers observed for the sample as a whole is in evidence in the male subsample. Figure 49 displays the normalised speaker means for the onset of the PRICE vowel for the male subsample.

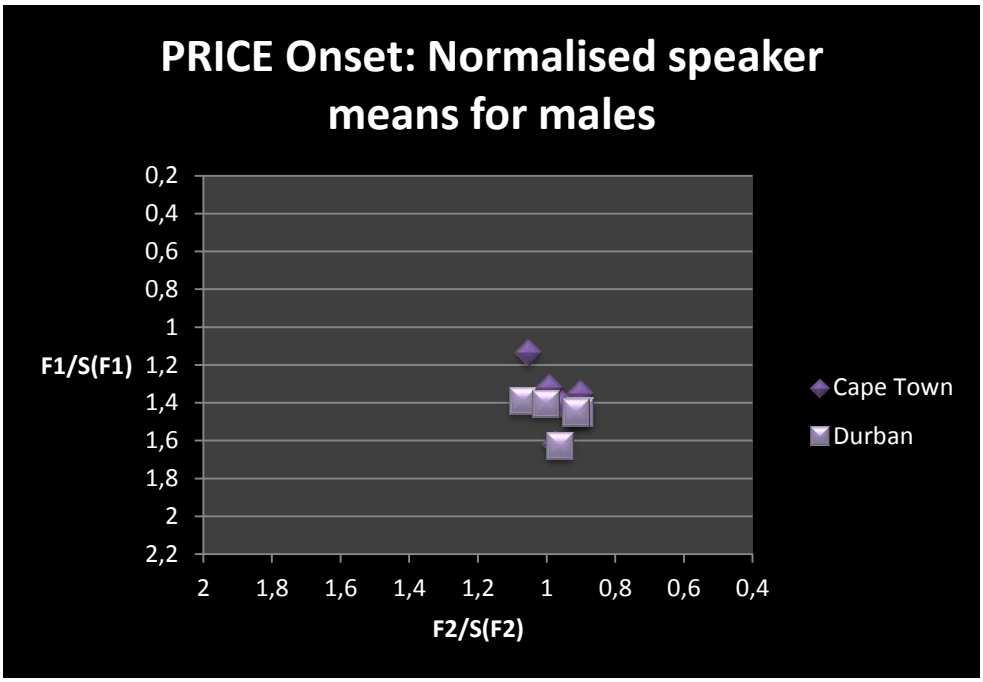


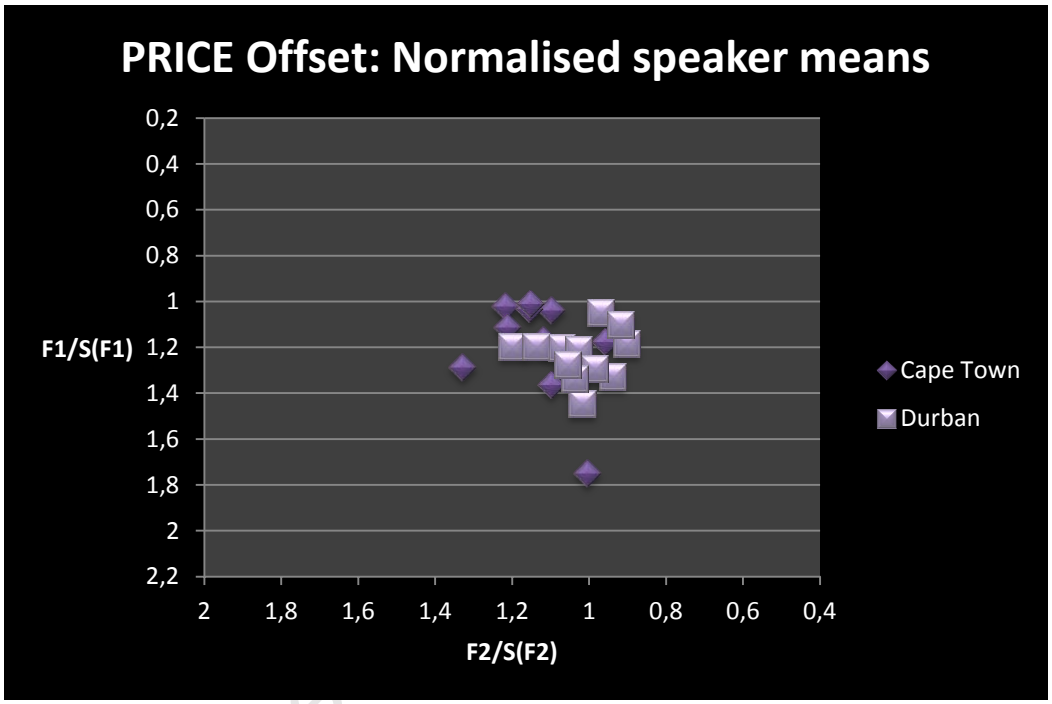
Figure 49: Normalised speaker means for the onset of the PRICE vowel for the male subsample, casual style (n=12).

The results of the Wilcoxon rank sum tests for the onset of the PRICE vowel in casual style are provided in figure 50, below. Based on the literature as well as the graphs, the alternative hypotheses were that F1/S (F1) would be greater for Durban speakers and F2/S (F2) would be greater for Durban speakers. As is evident from this table, there are no significant differences for the onset of the PRICE vowel in casual style.

	Total Sample (n=24)	Male Subsample (n=12)	Female Subsample (n=12)
p value for F1/S(F1)	0.4884	0.2623	1.0000
p value for F2/S(F2)	0.8174	0.8728	0.8728

Figure 50: Wilcoxon rank sum results for the onset of PRICE, casual style.

For the offset of the PRICE vowel, there does appear to be a difference between Cape Town and Durban speakers. Figure 51 provides a graphical representation of the normalised speaker means for the offset of the PRICE vowel for the total sample. In this graph, it is evident that the offset for the PRICE vowel is somewhat raised and also appears to be slightly fronter for the Cape Town speakers than is the case for the Durban speakers.



Graph 51: Normalised speaker means for the offset of the PRICE vowel for the total sample, casual style (n=24).

For the male subsample, a relatively well-defined pattern was observed. Figure 52 below, displays the normalised speaker means for the offset of the PRICE vowel for the male speakers. On initial inspection of this graph, it is evident that the Cape Town male speakers for the most part, appear to have a higher as well as fronter offset for the PRICE vowel than Durban male speakers.

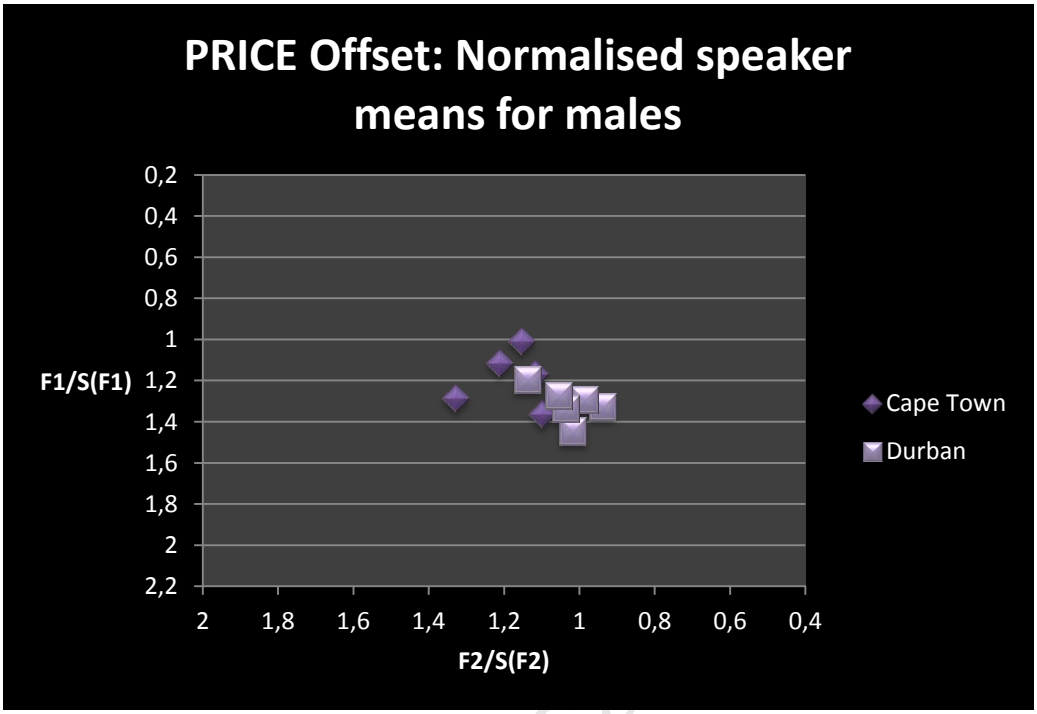


Figure 52: Normalised speaker means for the offset of the PRICE vowel for the male subsample, casual style (n=12).

On initial inspection of the results, the female subsample appears to exhibit a similar pattern to that of the male subsample. Figure 53 displays the normalised speaker means for the offset of the PRICE vowel for the female subsample. There appears to be a difference in vowel height as well as fronting, which is similar to the pattern observed for the male subsample.

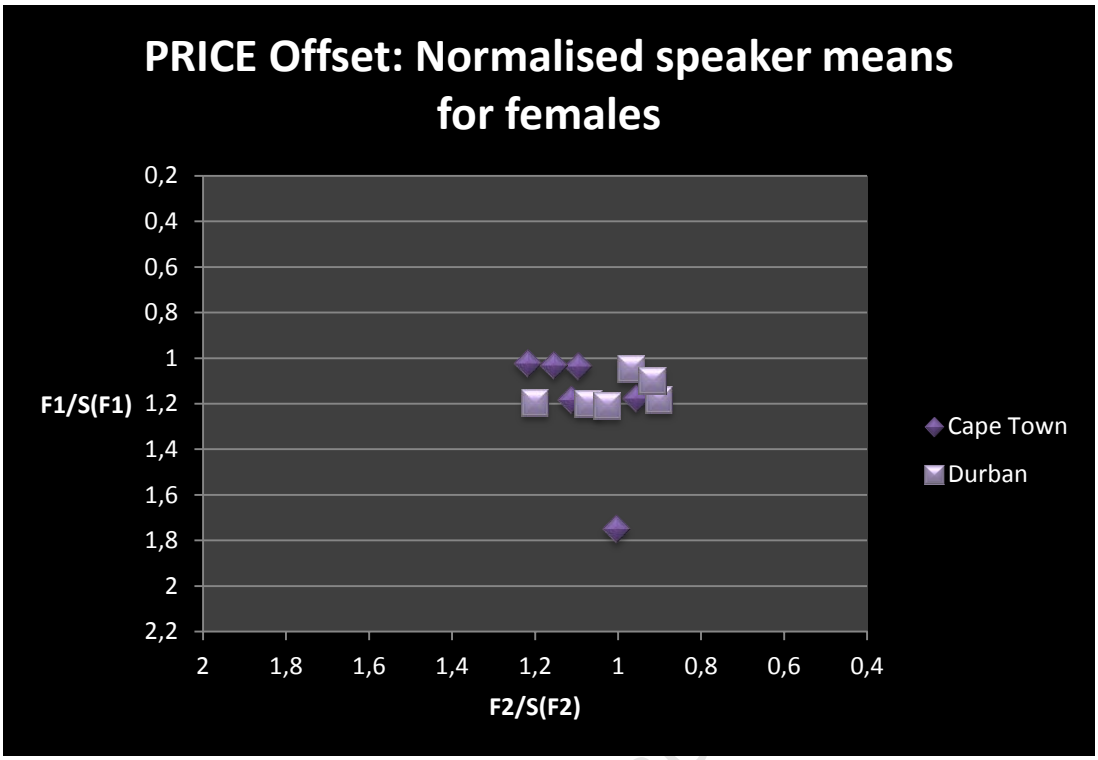


Figure 53: Normalised speaker means for the offset of PRICE for the female subsample, word list style (n=12).

The results of the Wilcoxon rank sum test for the offset of the PRICE vowel in casual style are provided in figure 54, below. The alternative hypothesis was that there would be a difference in F1/S (F1) and F2/S (F2). As can be seen from this table, there are significant differences for F2/S (F2) for the total sample as well as for the male subsample, but not for the female subsample. Therefore Cape Town speakers generally, exhibit a significantly fronter PRICE vowel offset than Durban speakers and Cape Town male speakers exhibit a significantly fronter PRICE vowel offset than Durban males.

	Total Sample (n=24)	Male Subsample (n=12)	Female Subsample (n=12)
p value for F1/S(F1)	0.1659	0.2002	0.2002
p value for F2/S(F2)	0.0179	0.0374	0.2002

Figure 54: Wilcoxon rank sum test results for the PRICE vowel offset, casual style.

For the word list tokens of the PRICE vowel, there is some evidence of a pattern emerging. Figure 55 provides a graphical representation of the normalised values for the word list tokens of the onset of the PRICE vowel for the total sample. Cape Town speakers appear to have a more diffuse distribution of values for the onset for the PRICE vowel for the word list tokens than Durban speakers and seem to have fronter values than Durban speakers.

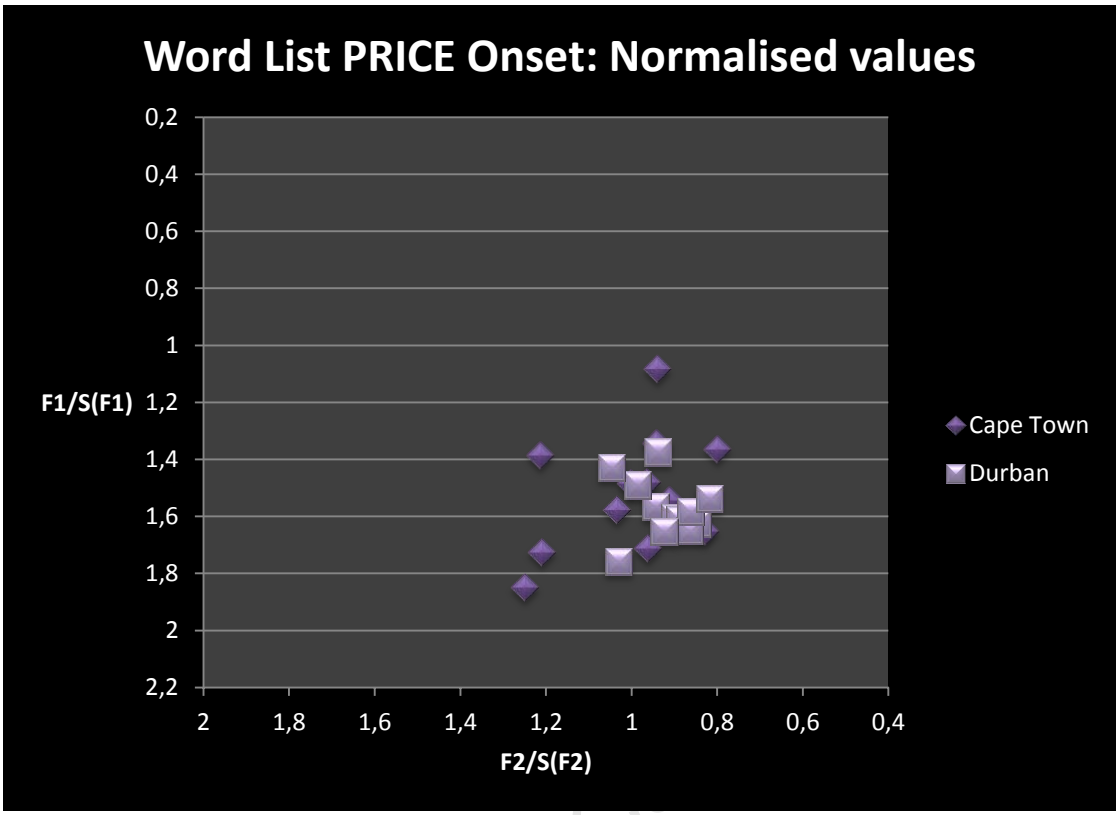


Figure 55: Normalised values for the onset of the PRICE vowel for the whole sample, word list style (n=24).

For the male subsample, no particularly clear pattern is evident for the onset for the PRICE vowel for the word list tokens. Figure 56 displays the normalised values for the males for the onset of the word list tokens of the PRICE vowel.

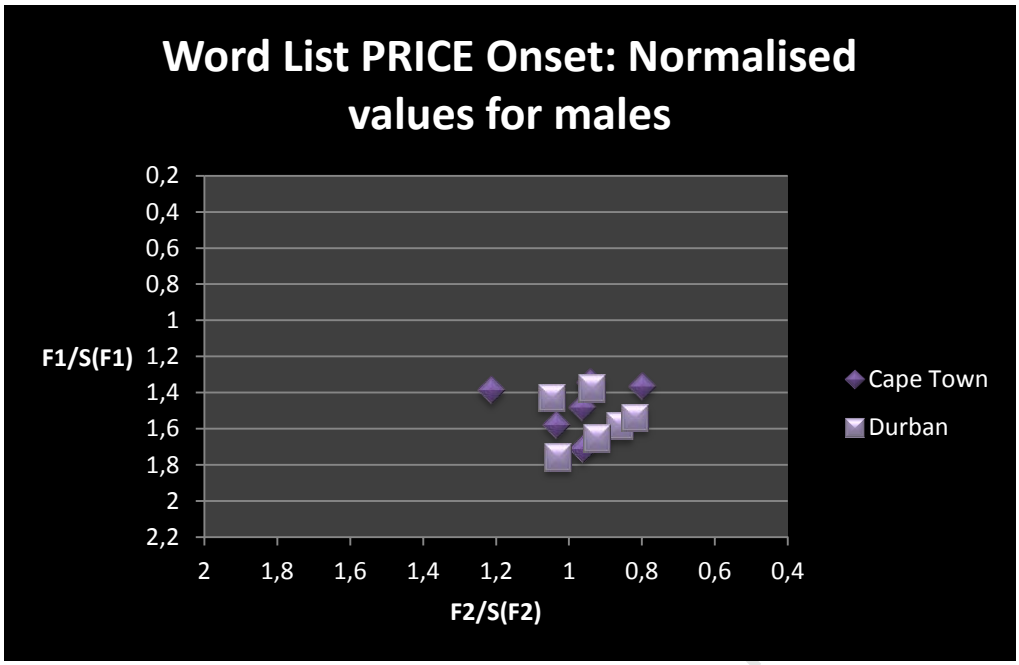


Figure 56: Normalised values for the onset of the PRICE vowel for the male subsample, word list style (n=12).

The pattern for the onset of the PRICE vowel for the word list tokens for the female subsample is almost as unclear as that for the male subsample. Figure 57 displays the results for the normalised values of the onset of the PRICE vowel for the word list tokens. The majority of the female speakers seem to have similar onsets for the word list PRICE vowel tokens. Where there are deviations from this pattern, it is the Cape Town female speakers who deviate.

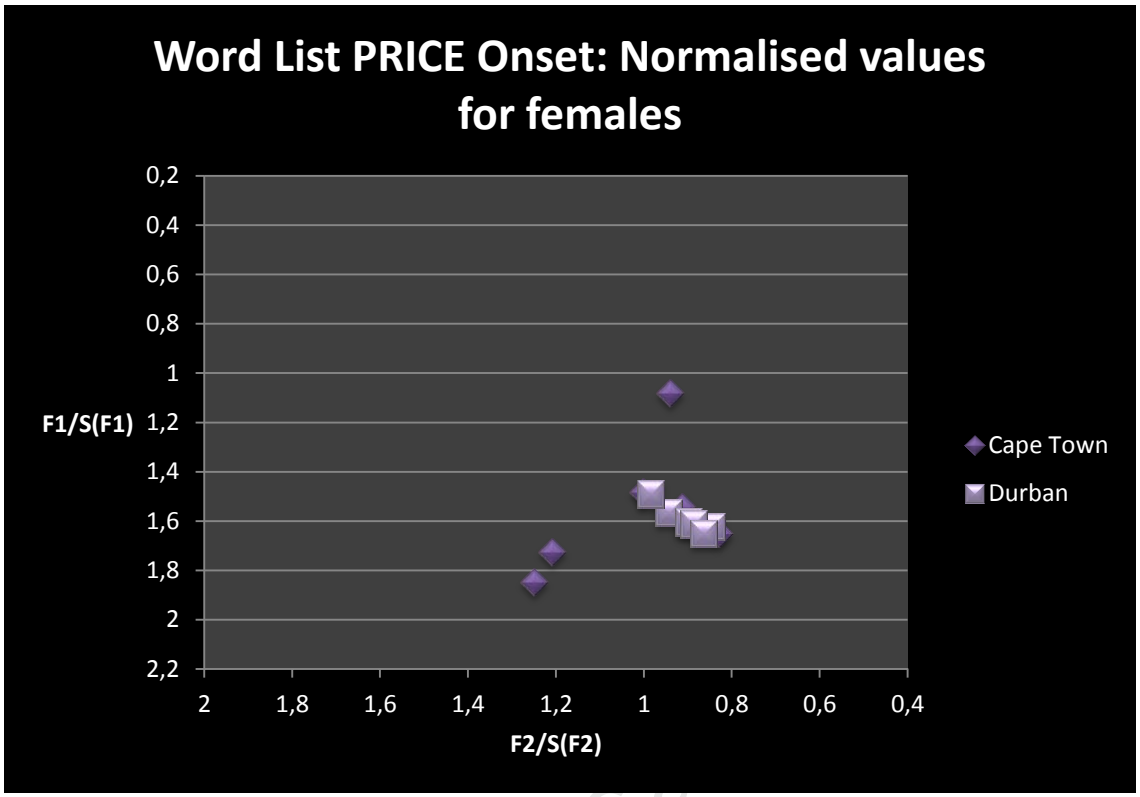


Figure 57: Normalised values for the onset of PRICE for the female subsample, word list style (n=12).

The results of the Wilcoxon rank sum test for the onset of the PRICE vowel in word list style are provided in figure 58, below. The alternative hypothesis for F1/S (F1) was that F1/S (F1) would be greater for Durban speakers and the alternative hypothesis for F2/S (F2) was that it would be greater for Durban speakers. There are no significant differences for the onset of the PRICE vowel in word list style.

	Total Sample (n=24)	Male Subsample (n=12)	Female Subsample (n=12)
p value for F1/S(F1)	0.4189	0.2623	0.8728
p value for F2/S(F2)	0.1190	0.4233	0.2002

Figure 58: Wilcoxon rank sum test results for the PRICE onset, word list style.

For the offset for the word list tokens of PRICE, a similar pattern to that found for the interview tokens for this vowel is observed, although as would be expected, the values are more spread out for the word list tokens, which can be accounted for by the fact that there were so few of them when compared to the number of interview context tokens. Figure 59 displays the results for the normalised values of the offset of the PRICE vowel for the word list tokens for the total sample. As is evident from the graph, Cape Town speakers appear to have fronter, as well as higher values for the offset of the PRICE vowel than their Durban counterparts, which is a similar pattern to that observed for the interview tokens, suggesting that the realisation of the PRICE vowel may be contextually uninfluenced in terms of speech style.

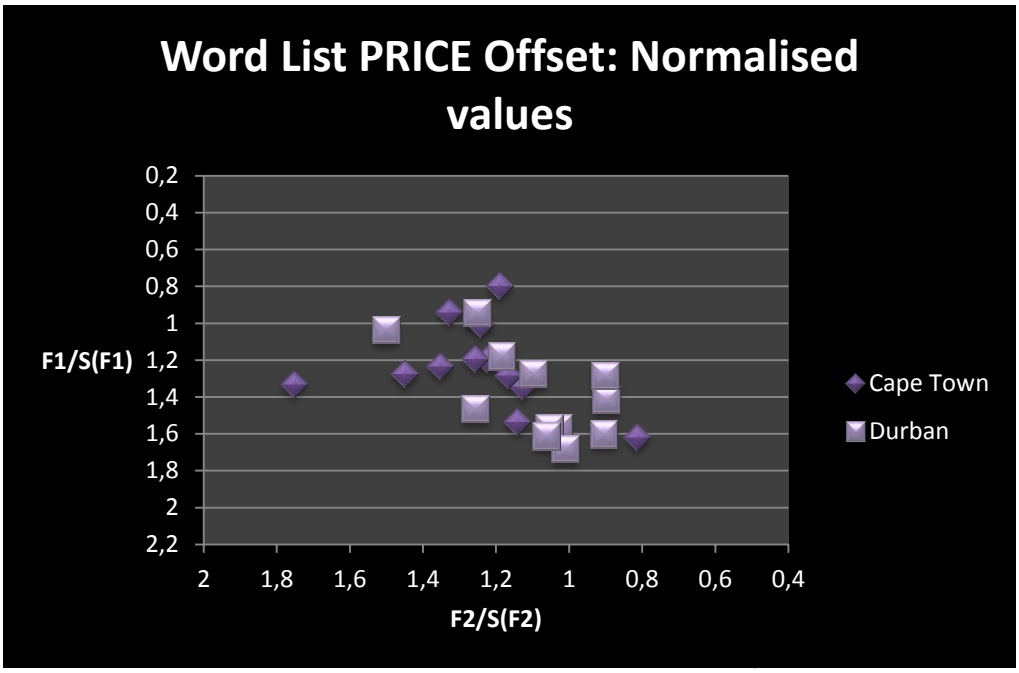


Figure 59: Normalised values for the offset of the PRICE vowel for the total sample, word list style (n=24).

The pattern for the offset for the word list style tokens of the PRICE vowel for the male subsample is similar to that for the interview tokens of this vowel. Figure 60 displays the normalised values for the offset of PRICE for word list tokens for the male subsample. The observed pattern for the offset of this vowel for the word list tokens in this subsample appears to be even more apparent than that observed for the interview context. The Cape Town males appear to have a fronter as well as higher offset for the PRICE vowel for the word list tokens.

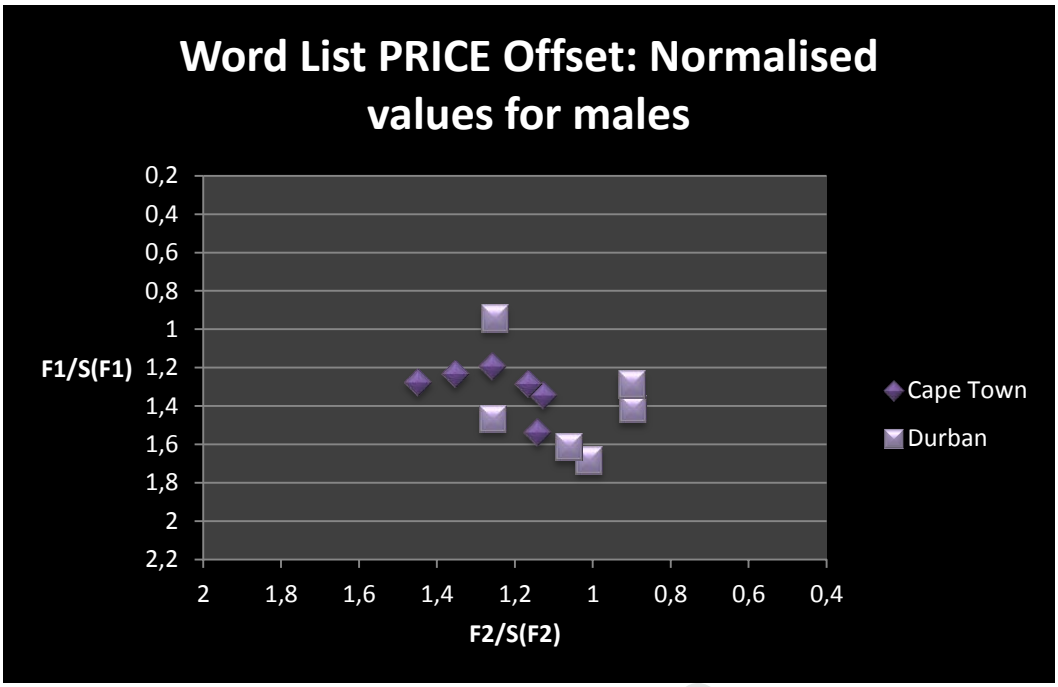


Figure 60: Normalised values for the offset of the PRICE vowel for the male subsample, word list style (n=12).

A similar pattern to that exhibited by the male subsample for the offset of the PRICE vowel in the word list context is observed for the female subsample. Figure 61 displays these values. Cape Town females appear to display fronter as well as higher values for the offset of the PRICE vowel for the word list tokens than the Durban females do.

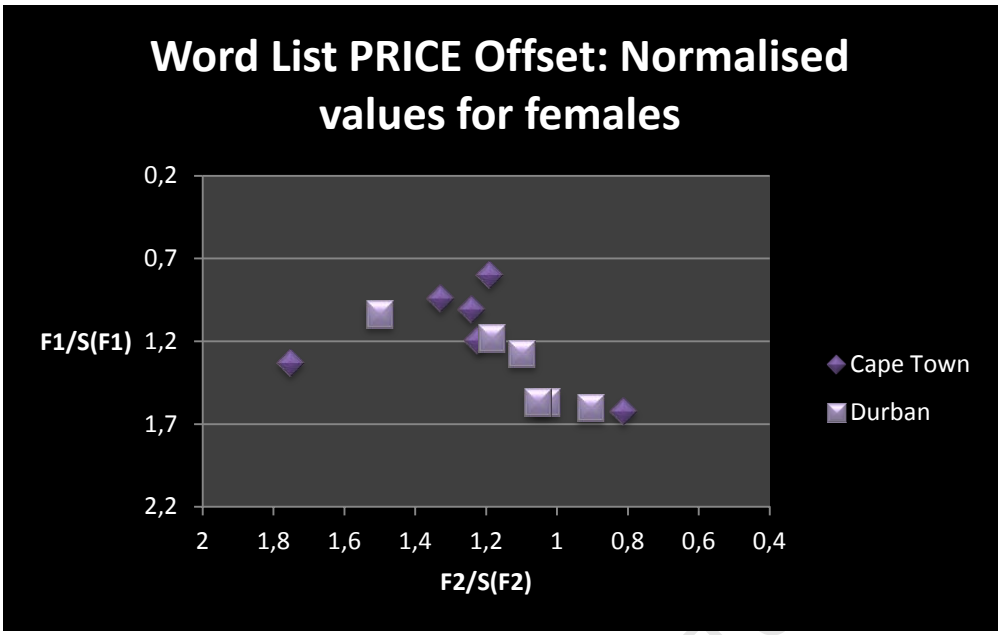


Figure 61: *Normalised values for the offset of the PRICE vowel for the female subsample, word list style* (n=12).

The results from the Wilcoxon rank sum test are provided in figure 62, below. The alternative hypotheses were that F1/S (F1) and F2/S (F2) would be greater for Cape Town speakers. There is a significant difference for the total sample at the 95 percent confidence level for F2/S (F2). Cape Town speakers therefore have a significantly fronter PRICE offset in word list style than their Durban counterparts. The difference between Cape Town males and Durban males for F2/S (F2) approaches significance at the 95 percent confidence level.

	Total Sample (n=24)	Male Subsample (n=12)	Female Subsample (n=12)
p value for F1/S(F1)	0.1190	0.2002	0.2623
p value for F2/S(F2)	0.0433	0.0547	0.2002

Figure 62: Wilcoxon rank sum test results for the PRICE offset, word list style.

While the observed significant differences in F2/S(F2) for the offset of the PRICE vowel, both in casual style and in word list style, suggest that glide-weakening is more extensive for Durban speakers, this is in itself is not sufficient in order to establish whether there is more extensive glide-weakening among Durban speakers or not.

This is because there are several hypotheses which can be used to explain which qualities of glide-weakened vowels are most salient to speakers in judging whether a given historical diphthong is glide-weakened or not. If it is in fact the offset which speakers pay the most attention to in making this decision, then we do have some evidence from the statistical tests that glide-weakening is indeed more extensive among Durban speakers, particularly among Durban males. However, because this might not be the most salient aspect of the phenomenon of glide-weakening for speakers and may possibly not even be particularly salient for speakers at all, another method for calculating the extent of glide-weakening was used in this research. The method judged to be the most appropriate one for this analysis was the calculation of Euclidean distance measurements for the vowel trajectories. This method and the reasons for its use have been provided in the methodology section.

On first inspection of the results of the trajectory calculations based on the Euclidean distance measurements, a certain pattern emerges. Figure 63 displays the results for these trajectory calculations for the PRICE vowel. In this graph and in the following graphs, Cape Town speakers' vowel trajectories are represented by red arrows and Durban speakers' vowel trajectories by yellow arrows. As can be seen from this graph, the vowel trajectories of the PRICE vowel for the Cape Town speakers appear to be longer, for the most part, than those for the Durban speakers.

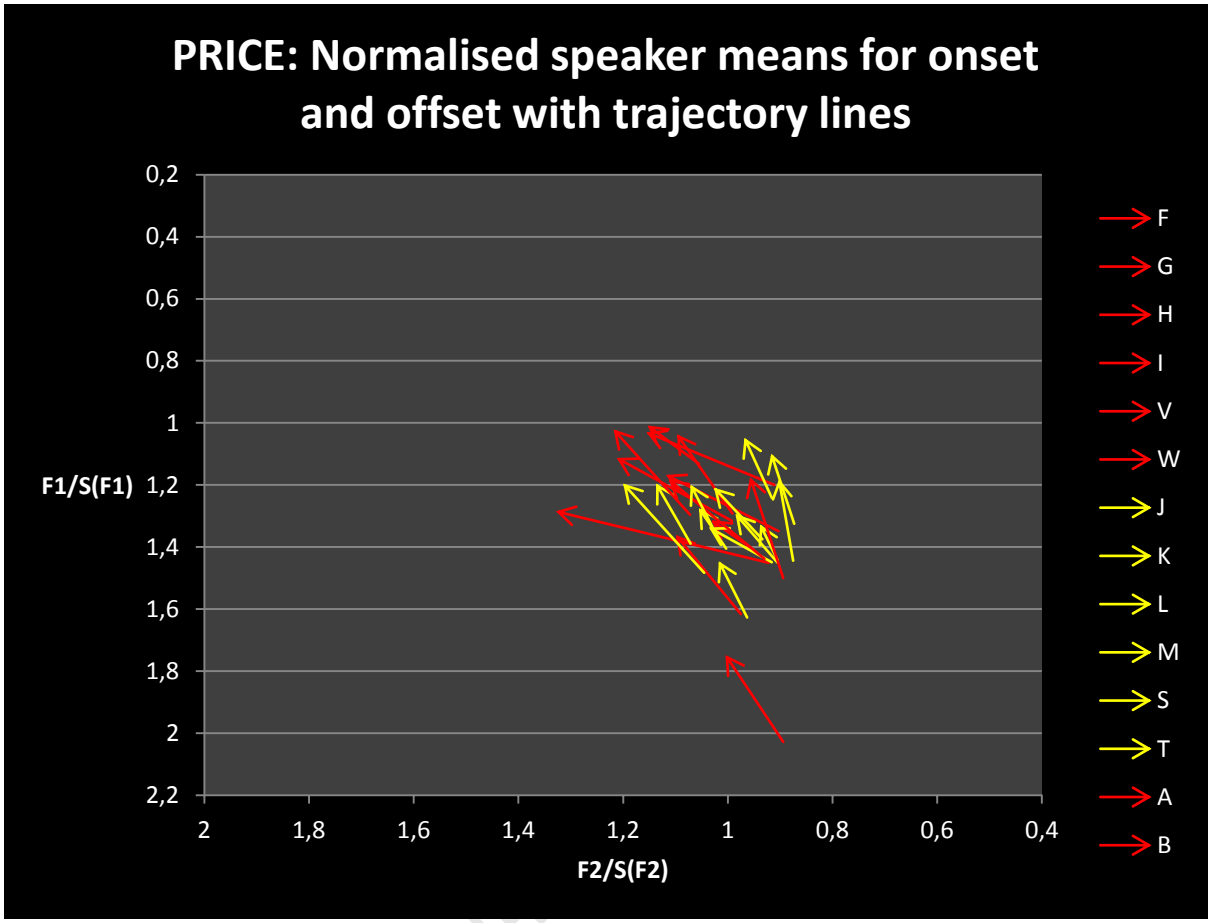


Figure 63: Trajectory lines for the PRICE vowel based on the normalised speaker means, casual style (n=24).

For the female speakers, the results display a similar pattern to that displayed by the group as a whole. Figure 64 below, displays the normalised speaker means for the onset and offset of the PRICE vowel with the trajectory lines drawn in for the onset and offset for each speaker in the female subsample. As can be seen from this graph, it appears as though the majority of the Cape Town female speakers have longer trajectories for the PRICE vowel than their Durban counterparts.

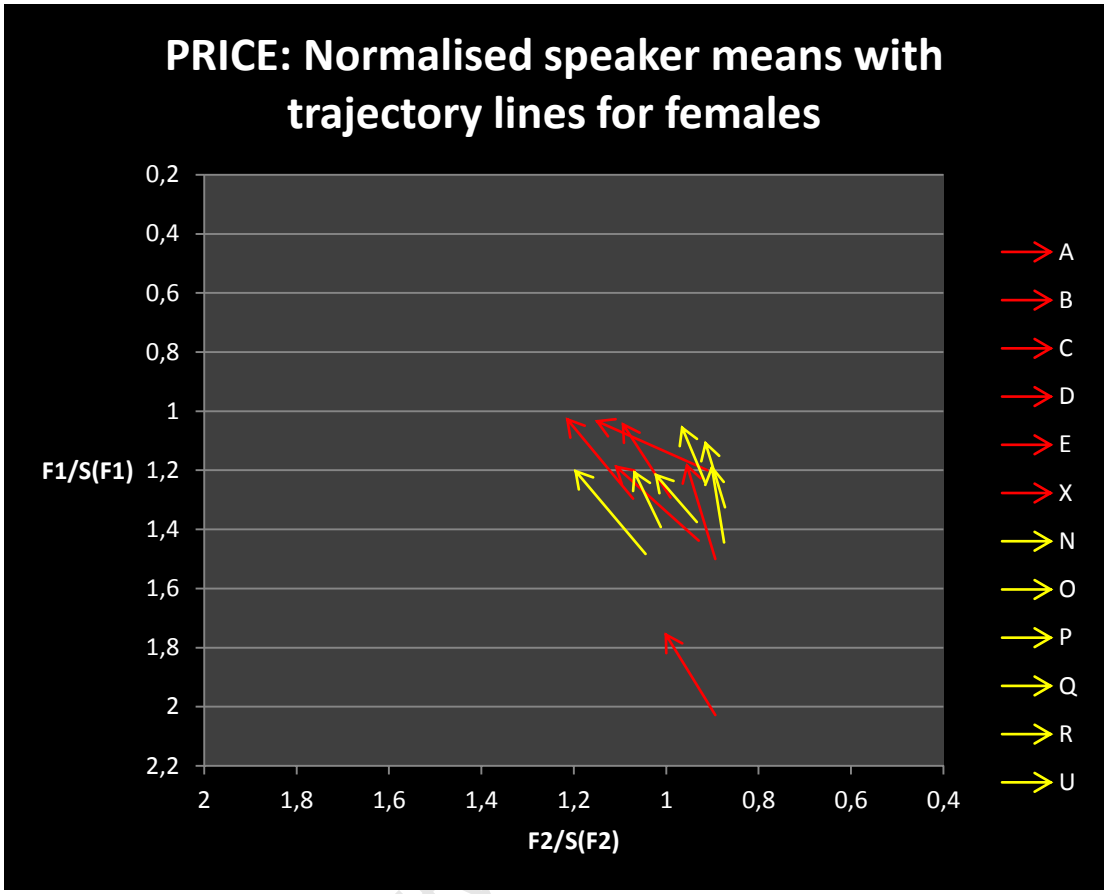


Figure 64: Trajectory lines for the PRICE vowel based on normalised speaker means of the female subsample, casual style (n=12).

The male subsample exhibits a similar pattern for the trajectories of the PRICE vowel to that of the female subsample. Figure 65 displays the trajectory lines for the interview tokens of the PRICE vowel for each of the speakers in the male subsample based on the mean normalised values. As is evident from this graph, the Cape Town males appear to have longer trajectories for the PRICE vowel than the Durban males.

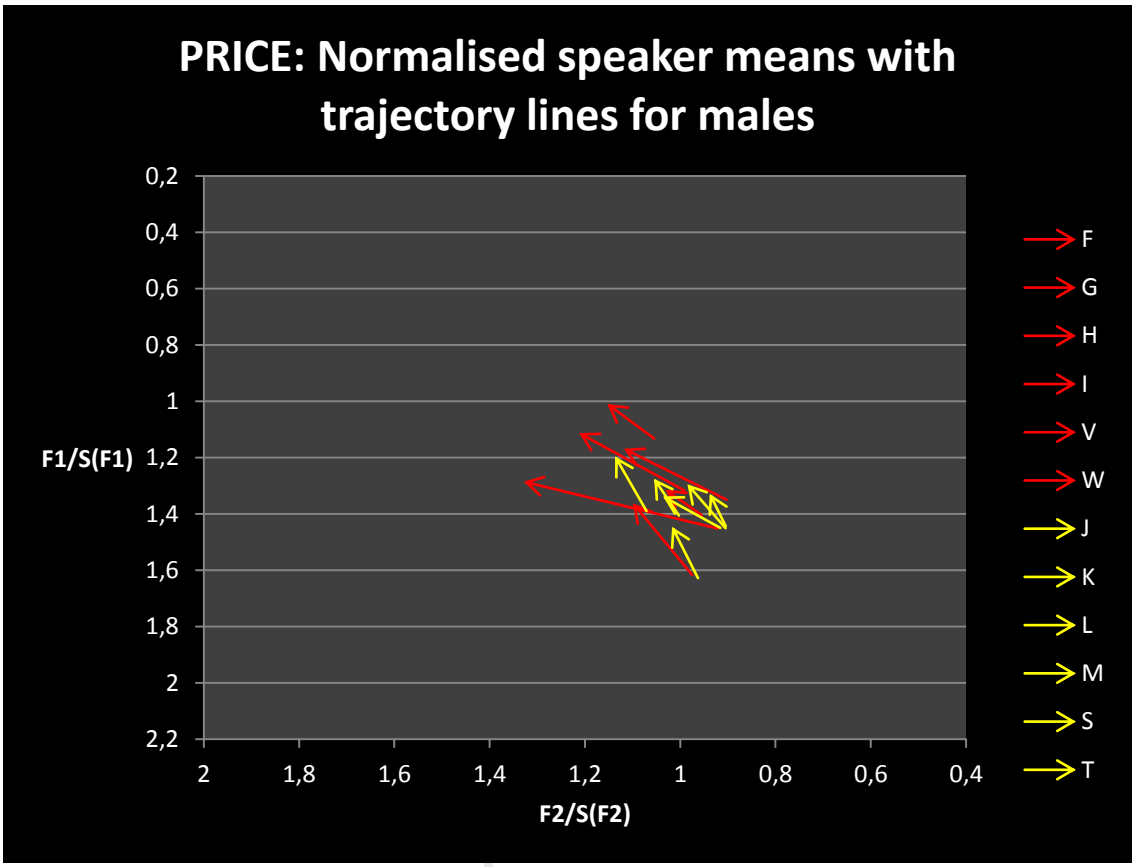


Figure 65: Trajectory lines for the PRICE vowel for the male subsample, casual style (n=12).

The results for the Wilcoxon rank sum test for the Euclidean distance measurements are provided in figure 66, below. The alternative hypothesis was that the vowel trajectories are longer for Cape Town speakers. There is a significant difference between Durban and Cape Town speakers for the Euclidean distance measurements. There is also a significant difference for the Euclidean distance measurements for the female subsample, but not for the male subsample. Therefore, Cape Town speakers have significantly longer trajectories for the PRICE vowel than Durban speakers and Cape Town female speakers exhibit significantly longer trajectories for the PRICE vowel than Cape Town female speakers.

	Total Sample (n=24)	Male Subsample (n=12)	Female Subsample (n=12)
p value	0.0081	0.1441	0.0374

Figure 66: Wilcoxon rank sum test results for the Euclidean distance measurements of the PRICE vowel.

Word list tokens of the PRICE vowel display a similar overall pattern to that displayed by the interview tokens for the PRICE vowel. However, since there were a relatively small number of word list tokens compared to the number of interview tokens, the pattern is not quite as clear. Figure 67 displays the trajectory lines for each speaker in the sample based on the normalised values for the word list tokens of the PRICE vowel. As is evident from the graph, the sample displays a similar pattern to that observed for the interview tokens, although there are a few differences. Although the trajectories appear to be longer for the Cape Town speakers in general than they are for Durban speakers, as seen already for the interview tokens, there are two Durban speakers and one Cape Town speaker that exhibit a diphthongal movement from a higher nucleus to a lower offset for the PRICE vowel in word list style and there is also one Durban speaker who exhibits a offset that is backer than the onset.

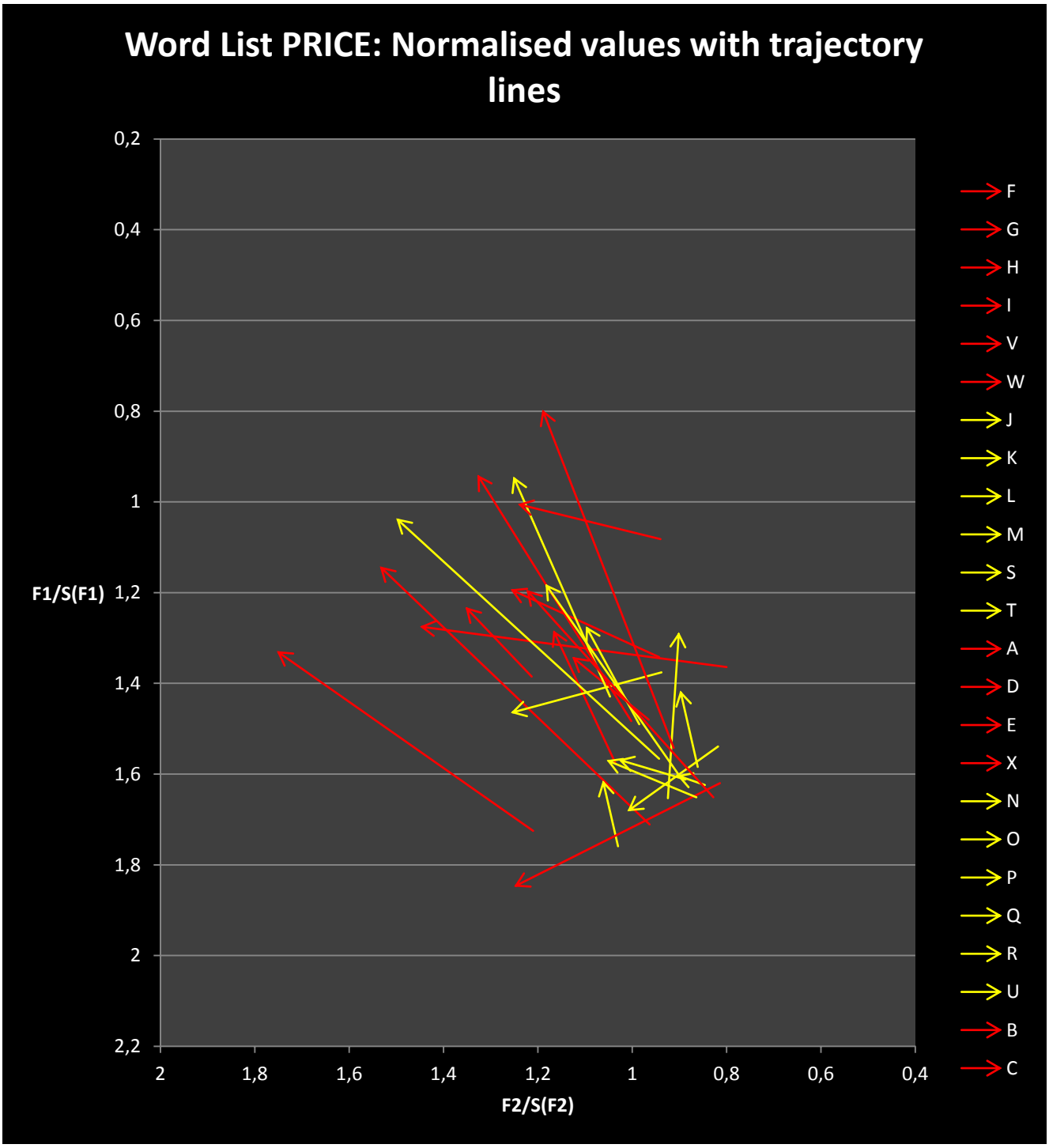


Figure 67: Trajectory lines of the PRICE vowel for the total sample, based on the normalised values, word list style (n=24).

The female subsample exhibits a very similar pattern to that displayed by the total sample in word list style. Figure 68 displays the trajectory lines of the PRICE vowel for the word list tokens based on the normalised values for these tokens for the female subsample. As is the case for the sample as a whole, the Cape Town speakers appear to exhibit longer trajectories for the PRICE vowel.

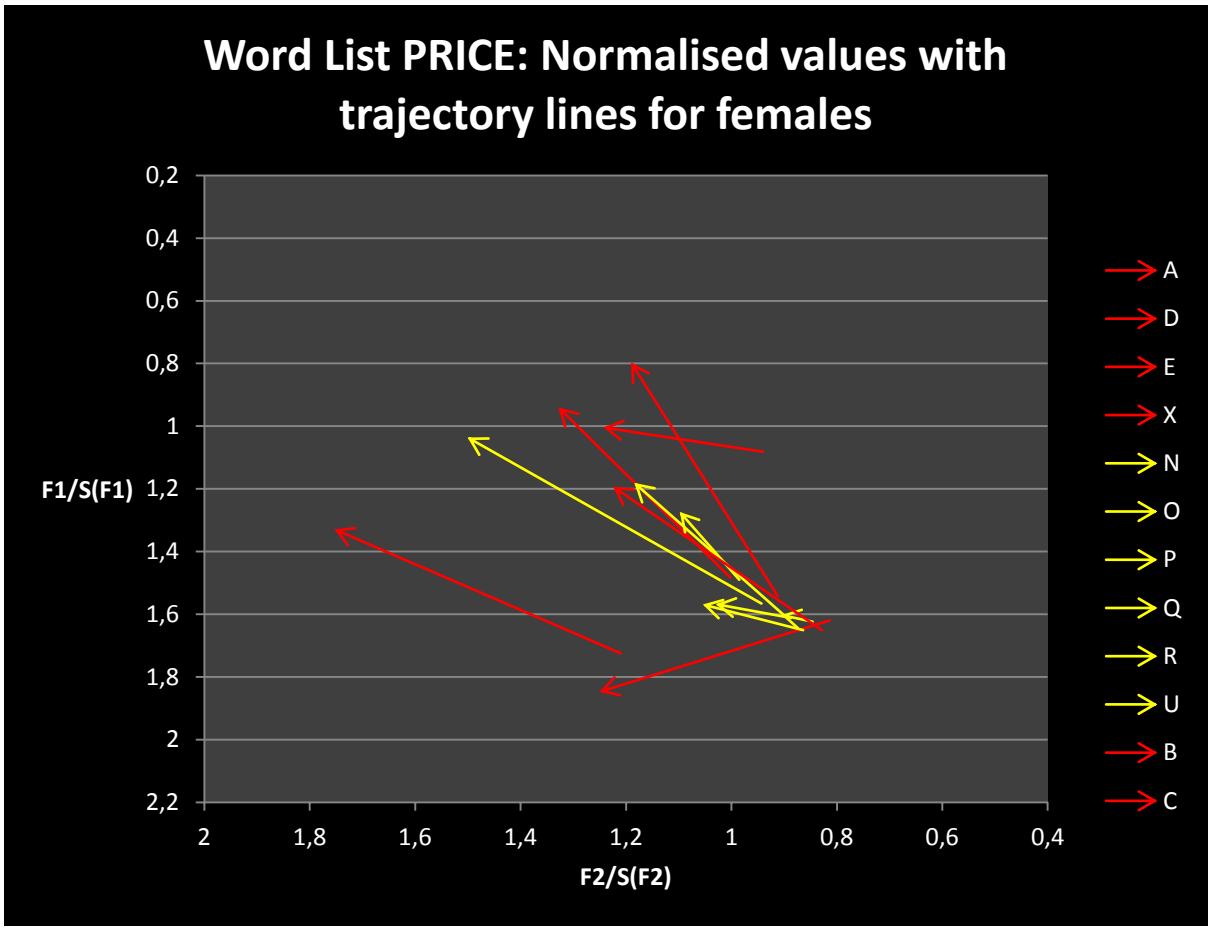


Figure 68: Trajectory lines based on the normalised values of the PRICE vowel for the female subsample, word list style (n=12).

For the male subsample, a similar pattern is observed. Figure 69 displays the trajectory vector lines for the PRICE vowel based on the normalised values for this vowel in the word list style for the male subsample. While it appears as if the Cape Town males may have slightly longer trajectories than the Durban males, the difference is not as obvious as is the case for the female subsample.

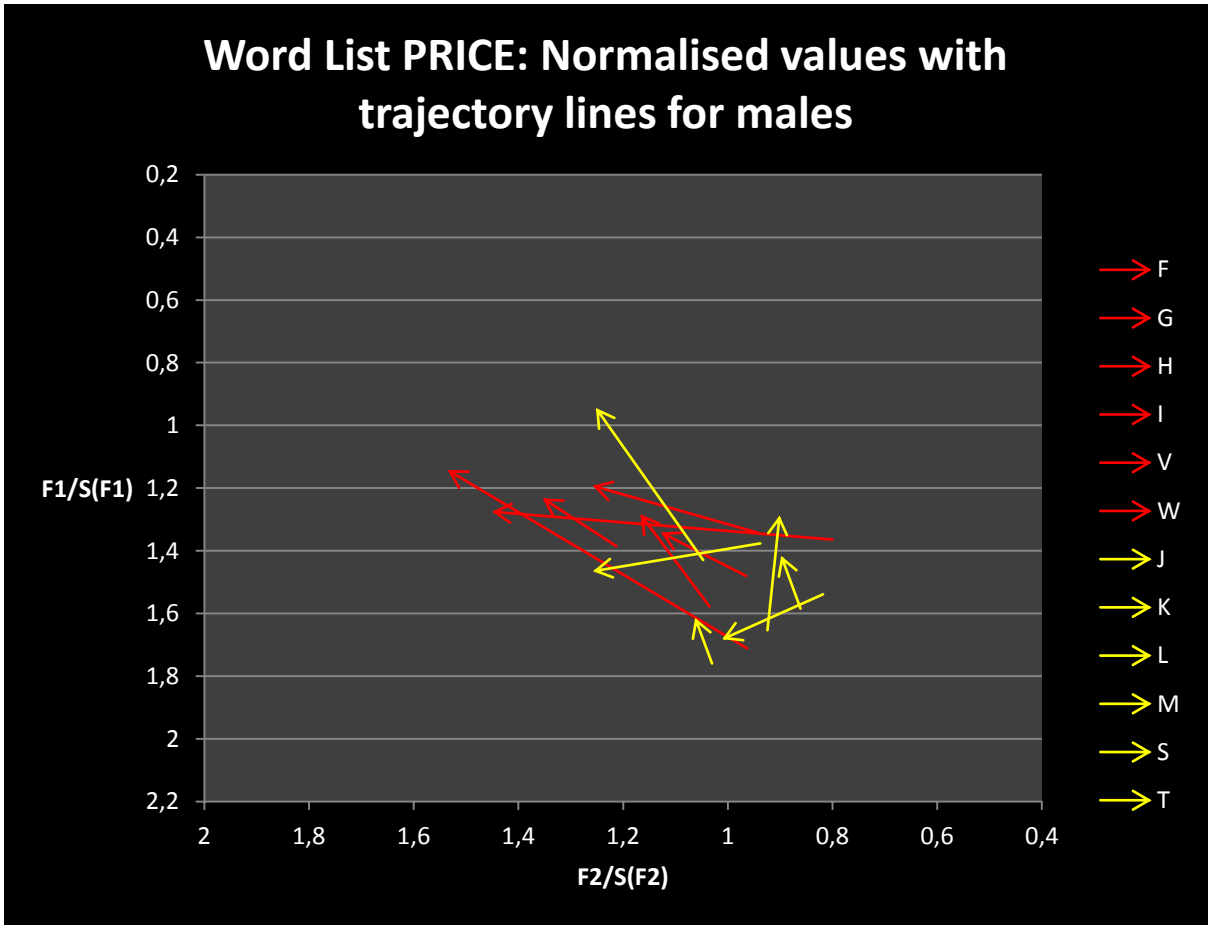


Figure 69: Trajectory lines for the PRICE vowel based on normalised values of PRICE for the male subsample, word list style (n=12).

The Wilcoxon rank sum test results for the Euclidean distance measurements for the word list tokens of the PRICE vowel are provided in figure 70, below.

	Total Sample	Male Subsample	Female Subsample
p value	0.1332	0.8726	0.0782

Figure 70: Wilcoxon rank sum test results for the Euclidean distance measurements of PRICE, word list style.

The above table reveals that there are no significant differences between Cape Town and Durban speakers for the Euclidean distance measurements for the word list tokens. The difference for the female subsample however, approaches significance. Thus the overall pattern for the Euclidean distance measurements of the PRICE vowel for word list style, is similar to that for casual style, namely, that the female speakers provide the strongest evidence for a regional difference for trajectory length.

Figure 71, below, provides a summary of the Wilcoxon rank sum test results for the PRICE vowel onset and offset for the casual style data. Figure 72 provides a summary of the Wilcoxon ranks sum test results for the Euclidean distance measurements for the casual style tokens.

Variable	Total Sample	Male Subsample	Female Subsample
PRICE vowel onset	Not significant	Not significant	Not significant
PRICE vowel offset	Significant for F2/S(F2)	Significant for F2/S(F2)	Not significant

Figure 71: Summary of the Wilcoxon rank sum test results for the PRICE vowel onset and offset casual style data.

	Total Sample	Male Subsample	Female Subsample
Euclidean distance	Significant	Not significant	Significant

Figure 72: Summary of the Wilcoxon rank sum test results for the Euclidean distance measurements of the PRICE vowel casual style data.

4 CHAPTER FOUR: SUMMARY, DISCUSSION AND CONCLUSION.

4.1 SUMMARY AND DISCUSSION.

The results as have been described above are varied as well as somewhat unexpected in some cases and there may be a number of possible explanations which could account for the observed findings. In the following summary and discussion, an attempt will be made to describe these potential explanations, informed by the earlier research and an attempt will be made to integrate these explanations where this is possible. It is hoped that this discussion will contribute towards a better understanding of some aspects of regional variation in General SAE.

The research findings provide some evidence for the existence of regional variation for certain variables of General SAE. They also provide some support for the hypothesis that certain other variables which were perhaps at some stage in the past, very prominent linguistic markers of region, no longer serve this function to the extent they once did, at least for the majority of those who are part of the White, General SAE speech community today.

The discussion will begin with the findings for the NURSE vowel. This is a variable, which Lanham and Macdonald (1979) claimed demonstrated regional associations. A fronted, raised and rounded NURSE vowel, occurring most often in contexts following /j/, was considered to be a salient Natal English variable (Lanham & Macdonald 1979). This environmental conditioning for this variable was reported only for the Natal region (Lanham & Macdonald, 1979:44). However, Lanham and Macdonald (1979:44) also observed that the highest quantities of the fronted NURSE variable occurred in both the Eastern and Western Cape.

The findings of the current research provide some support for this latter observation by Lanham and Macdonald (1979). The NURSE vowel does appear to be somewhat fronter for Cape Town speakers than it is for Durban speakers, although this effect can only be clearly seen in the male subsample. There were no significant differences between the subsamples for either vowel height or fronting, however the difference in fronting for the NURSE vowel approaches significance for the male subsample. The effect of NURSE fronting is even less obvious for the word list tokens, where no significant differences in the fronting or raising of the NURSE vowel were found. There are several points worth stating here, in light of the abovementioned results for the NURSE vowel in General SAE. Firstly, although Lanham and Macdonald (1979) claimed that fronting, rounding and raising were all characteristics of their NURSE variable, which did show some evidence of having regional correlations, the only feature of the NURSE vowel which appears to show any evidence of a regional correlation at all is fronting.

It must be conceded however, that the possible rounding of the NURSE vowel was not investigated in the current research. This phenomenon was not investigated primarily due to the method of analysis employed, namely instrumental acoustic analysis. Lip-rounding is known to have an effect on the second formant and for certain vowels, also on the first formant (Stevens 1998). Assuming lip-rounding and that the quality of the NURSE vowel is a relatively invariant [ø], following Bekker's (2009) description, then it would be expected that there would be a lowering of F2 as well as minimal lowering of F1 (Stevens 1998). Based on my own impressions, it seems that there are no clear differences in the degree of lip-rounding between the Cape Town subsample and the Durban subsample. Most speakers in both subsamples exhibit slight to moderate lip-rounding, with only one or two individuals in each subsample exhibiting either far less or far more advanced lip-rounding than the majority of participants that form the sample.

It is nevertheless a possibility that the observed pattern for the male subsample may be as a result of the effects of lip-rounding. If, for example, there was a regional difference for the rounding of the NURSE vowel between Cape Town and Durban males, where lip-rounding was greater for Durban males, this would lower F2 for the majority of the Durban male speakers in the sample. Assuming that the NURSE vowel is in all other respects the same for Durban and Cape Town speakers, the lowered F2 reading for Durban males could account for the observed pattern, thus

creating the impression that Cape Town male speakers have a fronter NURSE vowel than Durban male speakers, when this may not be the case. If there were more rounding of the NURSE vowel for Cape Town male speakers, thus resulting in a lower F2 for the Cape Town male subsample, this would indicate that the fronting of the NURSE vowel by Cape Town males is even greater than the results of this research suggest.

There may therefore be significantly more fronting of the NURSE vowel by Cape Town males, but the effects of lip-rounding may have concealed the strength of this effect, resulting in an underestimation of NURSE fronting in Cape Town. It is therefore possible, not only that significant regional differences exist for the rounding of the NURSE vowel, but that there may be significantly more fronting of NURSE in Cape Town than in Durban, or conversely, that there may be little difference in the fronting of the NURSE vowel at all. As already mentioned however, based on my own impressions for both casual style and word list style, these possibilities do not seem very likely.

Secondly, even though there is some evidence of a pattern which points to a regional correlation for the fronting of the NURSE vowel, this is still not a statistically significant pattern. The findings of the current research are therefore generally consistent with Bekker's (2009:393) description of the NURSE vowel in General SAE as being "...relatively invariant, monophthongised, comparatively raised, rounded and fronted..." . Any regional variation which may be present for this particular variable appears to be minimal.

Thirdly, the clearest pattern for this variable was observed only for the male subsample, where the difference in fronting approaches significance. This provides some evidence of a gender effect for the fronting of the NURSE vowel, which had not been observed or remarked upon before in the literature. It is possible that the regional effect for NURSE was stronger at the time of Lanham and Macdonald's (1979) research and that the pattern may have been evident for both males and females. When General SAE variables diffused more widely throughout South Africa, Cape Town female speakers may have adopted them more readily than their male counterparts, resulting in a more clearly observable pattern for the fronting of the NURSE vowel for the male

subsample, although this is only one possible explanation and is highly speculative. The findings of this research are therefore consistent with the hypothesis that the prominence of the NURSE vowel as a regional marker may have decreased. However, due to the difference in methods used (in particular, the difference between impressionistic versus instrumental acoustic methods) between those of the current research and that of Lanham and Macdonald (1979), these results cannot be directly compared and therefore any hypothesised decrease in the prominence of any variable as a regional marker, including the NURSE vowel, cannot be conclusively established based on these results. Lastly, it must be conceded that the effect of a preceding /j/ on the NURSE vowel was not systematically studied in the current research. This is because of the small number of tokens in this class occurring in the dataset, rendering any legitimate comparison on the basis of these data untenable. It is therefore possible that the NURSE vowel may exhibit regional variation for this specific environment, or possibly even for specific lexical items, such as the token *year*, for example.

For the KIT vowel, we observe a similar overall pattern to that of the NURSE vowel, in that the observed differences are most evident for the male subsample in casual style. Lanham and Macdonald's (1979) research describes a more centralised variant of the KIT vowel occurring in Natal in environments where fronter variants would be expected to occur elsewhere. The findings of the current research provide a minimal amount of evidence in support of such a difference in centralisation, but this is far from conclusive. It was found that Durban males have a significantly more centralised KIT vowel than Cape Town males in casual style for all environments. The difference in vowel height also approaches significance for the male subsample. For the sample as a whole however, there are no significant differences overall. This is in contrast with the word list style results, where not only was a significant difference found for the sample as a whole, but also for the male and female subsamples.

It is possible that style-shifting may account for the dissimilarity in terms of statistical significance, between casual and word list style for the KIT vowel. One possibility is that Cape Town speakers may have adopted the more centralised, typically Natal English value for the KIT vowel in less formal speech contexts, but that in more monitored styles, they may engage in style shifting behaviour by using a less centralised variant. Another, perhaps less likely possibility

given the evidence provided by previous researchers regarding the advance of Natal English variables in General SAE, is that Durban female speakers may be engaging in style shifting by further centralising the KIT vowel in word list style. If a more centralised KIT vowel may be regarded as a "prestige" variant, based on the assumption that Natal English variables, at least at some point, received greater social approbation as reported by Lanham and Macdonald (1979), then it seems plausible that in word list style, speakers would be more likely to use more centralised values for the KIT vowel. This however, seems less plausible as an explanation for the results than the hypothesized style-shifting (by fronting of the KIT vowel) on the part of Cape Town speakers. Assuming a more centralised KIT vowel is a prestige feature in this speech community (including speakers from both Cape Town and Durban), one would then expect Cape Town speakers to exhibit a similar degree of centralisation in the word list context resulting in a non-significant difference for KIT in this context. Once again, however, caution must be taken when drawing conclusions regarding style-shifting or hypercorrection for word list style when the number of word list tokens used in this context was so small compared to the number of interview tokens and also because the analysis of word list tokens was limited to only one lexical item.

Before concluding the discussion of the results for the KIT vowel, it must be mentioned that the results of the current research may understate much of the regional variation which may exist for the KIT vowel in the General SAE speech community. This is because a statistical analysis of the effects of all of the relevant phonetic environments was not conducted, owing to the small number of interview tokens of the KIT vowel occurring in each of the relevant phonetic environments as described in the literature. It is therefore possible that for certain restricted phonetic environments, for example, KIT in pre-palato-alveolar position, or perhaps only for certain lexical items (e.g. the word *fish*) as suggested by Bekker (2009), the KIT vowel may exhibit much greater regional variation in General SAE than the research findings suggest.

Speaker means for different phonetic environments were graphically compared however, where there were a sufficient number of tokens to allow for this comparison and where there were an

insufficient number of tokens to allow for the calculation of speaker means, all the normalised values for the individual tokens were provided. The data for the KIT vowel when preceded by /h/ reveals that there may be a difference between Cape Town female speakers and Durban female speakers for centralisation, with Durban speakers possibly having a more centralised KIT vowel than Cape Town speakers in this environment. For the other environments, graphs were provided in which speaker means were displayed. There is some evidence of a more centralised value for the KIT vowel in the pre-palato-alveolar context, particularly among males, although unfortunately there are not enough tokens for the female subsample to allow for a graphical comparison of speaker means for this subsample and thus any potential gender effect for the centralisation of KIT in this environment cannot be established. The findings of this study for the KIT vowel in the pre-palato-alveolar environment are consistent with the hypothesis that the KIT vowel in this environment is more centralised in Durban than it is in Cape Town, at least for male speakers. This finding is also in line with what has been reported in previous research, such as that of Bekker (2009), although to establish conclusively whether this is the case, more research would be necessary, where a sufficient number of tokens could be gathered to allow for a statistical analysis of this hypothesized regional effect.

The results for the KIT vowel when preceded by /w/ suggest that Cape Town speakers, perhaps mostly female Cape Town speakers, exhibit a more retracted KIT vowel for this environment than Durban speakers. A regional difference for this particular environment does not seem to have been noted in the literature before and therefore calls for further investigation to determine whether the observed pattern is indicative of a true regional difference for this environment.

The KIT vowel in the word-initial environment in casual style does appear to be slightly more centralised for Durban speakers than it is for Cape Town speakers and once again, this trend appears to be strongest for the male subsample. The difference is significant for the male subsample in this environment and approaches significance for the sample as a whole.

The KIT vowel in the velar and unconditioned environments in casual style likewise appears to be more centralised for Durban speakers, particularly for the male subsample, where the difference is statistically significant. There is also a statistically significant difference in vowel height for velar KIT, revealing that KIT is significantly higher for Cape Town speakers in this environment. Although the trend towards more extensive centralisation for Durban speakers is

not as obvious for the unconditioned environment, the difference in centralisation approaches significance for the male subsample for the KIT vowel in this environment.

In summary therefore, the findings of the current research provide evidence of a more centralised KIT vowel among Durban speakers, particularly among males. There is some evidence of this trend for all the phonetic environments investigated, although the clearest pattern can be seen for the word-initial, pre-palato-alveolar and velar environments, although there is also some indication of increased centralisation for the unconditioned environment as well for the male subsample. The trend towards the centralisation of the KIT vowel in Durban, especially among males, manifests itself as a statistically significant difference for the KIT vowel overall for this subsample.

The one variable investigated in this study for which the most evidence of regional variation exists is the PRICE vowel. It is however glide-weakening, rather than the nucleus of this vowel which provides the most evidence of regional variation.

Lanham and Macdonald (1979) reported a backed and raised onset for the PRICE vowel in the Cape and a front and tense onset for this vowel in Natal. The results of the current research provide only a minimal amount of evidence in support of the regional differences for the onset of the PRICE vowel as reported by Lanham and Macdonald (1979). A pattern is evident for the sample as a whole and for the male subsample, where there appears to be a slightly raised onset for the PRICE vowel for Cape Town speakers. However, there was no significant difference for F1/S (F1) either for the total sample, or for the male subsample. The findings of the current research therefore do indicate the existence of a non-significant pattern for the onset of PRICE which is similar to that which would have expected based on Lanham and Macdonald's (1979) account.

I will therefore tentatively suggest that the prominence of the onset of PRICE as a regional marker may have been greater at the time of Lanham and Macdonald's (1979) study, but that it may since have decreased in prominence (although it seems likely that this variable may nevertheless index other variables such as social class). This seems likely not only because of the observed results of this research, but also because of the findings of other researchers, including

Lanham and Macdonald (1979). As a result of the advance of Natal English variables at the expense of Cape English variables in the development of the present day standard variety, General SAE, a fronted and glide-weakened PRICE vowel appears to have become the most typical realisation of the PRICE vowel in this variety, as has been observed by Bekker (2009). Therefore, regional differences which may have existed for this vowel in the past, such as the backing or raising of the nucleus in the Cape, are manifested in the present day by a barely recognizable and non-significant pattern in General SAE.

There are however, other possible explanations which could account for the lack of substantial evidence for regional differences for the onset of the PRICE vowel in General SAE. One possibility is that the differences reported by Lanham and Macdonald (1979) were not as significant as these researchers suggest, even at the time of their research. Any differences between Durban and Cape Town speakers for the onset of the PRICE vowel may have remained more or less the same or may have even increased. In any event, this cannot be conclusively established because of the differences in methodology between Lanham and Macdonald (1979) and the current research. However, if it is assumed that the regional differences for the onset of PRICE reported by Lanham and Macdonald (1979) were as significant as these authors suggest they were, the current research does provide some evidence of a decrease in prominence of a fronted (for Durban speakers) or backed and raised (for Cape Town speakers) onset of the PRICE vowel as a regional marker. The word list tokens results for the PRICE vowel onset are similar to the results for the PRICE vowel onset in casual style. Both the difference in vowel height and the difference for the front-back dimension were found to be non-significant for the PRICE vowel onset in word list style.

The results for the word list context must however, be interpreted with caution. This is because the results for the word list tokens are based on only one token of the word *price* for each speaker, with no repeat measurements of this token. Comparing the results obtained from these measurements to the casual style results of the interview context tokens, numbering 1753 would not constitute a legitimate comparison. The second reason why caution should be exercised in interpreting the word list style results is that the token used as the word list token in the current research contains a preceding /r/. The effects of liquids, such as preceding /r/, on F2 have been

well documented and are known to inhibit fronting for back vowels as well as causing a backing of front vowels (i.e. F2 lowering) (Di Paolo et al. 2011). Mesthrie (2010) in his article also recommends the exclusion of tokens containing /r/ and /l/ from the final analysis. This compromises the validity of the conclusions drawn from the word list context results.

The results for the PRICE vowel offset and trajectory length provide the clearest evidence of regional variation. These results suggest the existence of regional differences between Cape Town and Durban for the glide-weakening of the PRICE vowel.

There is a significantly fronter offset for Cape Town speakers for the sample as a whole as well as for the male subsample, while no significant differences were found for the female subsample although the pattern for this subsample is similar to the overall pattern. These results lead to the conclusion that the fronting of the PRICE vowel offset by Cape Town males, or alternatively, the backing of the PRICE vowel offset by Durban males is considerable, such that this effect yields a significant result for the sample as a whole.

A remarkably similar pattern for the offset of the PRICE vowel in casual style is displayed by speakers for word list style. Here however, while the difference in F2/S (F2) for the sample as a whole is significant, the difference in F2/S (F2) for the male subsample approaches significance and is not significant for the female subsample.

The results for the offset of the PRICE vowel for the two contextual styles are therefore quite similar. This leads to the conclusion that there is a strong effect for the fronting of the offset by Cape Town males, or alternatively, towards the backing of the offset of PRICE by Durban males, apparently regardless of contextual style.

While I will not offer a complete account for this similarity between casual style and word list style for the offset of PRICE, it must be stated that this similarity may potentially point to the categorically contextually uninfluenced and glide-weakened PRICE vowel as described by Bekker (2009).

It was considered necessary to use additional methods in order to more thoroughly investigate the potential differences in glide-weakening for the PRICE vowel between the two regions, since the observed differences for the offset merely pointed to a possible difference in glide-weakening without being a direct measure of the phenomenon of glide-weakening itself. A more appropriate method for determining the extent of glide-weakening would involve a comparison of trajectories in order to determine whether there are statistically significant differences for trajectory length. The method selected for this purpose was the calculation of Euclidean distance measurements as explained in the methodology section.

The results for the Euclidean distance calculations revealed that Cape Town speakers have significantly longer trajectories for the PRICE vowel in casual style than do Durban speakers based on speaker means for the Euclidean distance measurements. Cape Town females likewise display significantly longer trajectories for PRICE, while the difference in trajectory length for the male subsample is not significant, suggesting a relatively strong tendency towards glide-weakening for Durban female speakers.

To summarize the findings for PRICE glide-weakening, there is some evidence that regional variation exists for the glide-weakening of the PRICE vowel in General SAE, with more advanced glide-weakening in Durban than in Cape Town for young, White speakers, particularly females.

It is worth considering that neither Lanham and Macdonald (1979), nor any of the other researchers included in the literature review claimed that regional differences existed for the glide-weakening of PRICE as opposed to, for example, the backing of the nucleus of the PRICE vowel. The only observed regional differences for the PRICE vowel, were for the nucleus of PRICE, since glide-weakening was present for both the Cape English PRICE variable and for the Natal English PRICE variable, according to Lanham and Macdonald (1979), although complete

monophthongisation was mentioned by them most often in the context of the Natal English variable, namely, fronted PRICE. The findings of the current research present a somewhat different picture, namely that the onset of PRICE is not as prominent a marker of region as glide-weakening is.

The findings of this research also point to the existence of gender differences with regards to the glide-weakening of the PRICE vowel. A significant difference was found for the male subsample and for the sample as a whole for the fronting of the offset of the PRICE vowel and no significant difference was reported for the females in casual style. This leads to the conclusion that the effect of fronting for the offset among males is particularly strong. For the Euclidean distance measurements however, the opposite pattern was discovered, namely, a significant difference for the females but not for the males, suggesting an especially strong effect for glide-weakening for the PRICE vowel trajectories for females. This finding is similar to that for word list style, where the difference between Cape Town and Durban speakers approaches significance for the female subsample only. Therefore Cape Town males have significantly fronter offsets for PRICE than their counterparts in Durban, while Cape Town females have significantly longer trajectories for the PRICE vowel than their Durban counterparts. This provides some indication of a possible gender effect for the glide-weakening of the PRICE vowel, which would require further research, which should include an analysis of slope and direction for the PRICE vowel trajectories.

There are several explanations which could account for the regional differences observed for glide-weakening. The discovery of these regional differences was unexpected due to the fact that differences in glide-weakening between regions were not explicitly mentioned in earlier research. One possible explanation is that the less glide-weakened variants of the PRICE vowel found among Cape Town speakers, may be a result of an aversion to what may be perceived as a marker of Johannesburg English. It is possible that many Cape Town speakers may be aware of the "kugel" stereotype, as it is described by Bekker (2009) and may therefore also be aware of the accent associated with this stereotype, which may be negatively evaluated.

In a footnote, Bekker (2009:175) describes this accent as having associations "...with the *nouveau riche*, the wealthier "Northern" suburbs of Johannesburg and the Jewish ethnic group." While not explicitly mentioning the term "kugel," Da Silva (2007:116) does mention that a

fronted (and fully monophthongised) PRICE vowel is "...particular to certain speech communities in the Johannesburg area, namely affluent northern suburbs such as Sandton, and is associated with the social variables "female" and "Jewish.""

It is possible that many Cape Town speakers may view this stereotype as originating from and being characteristic of the city of Johannesburg. The General SAE variable which is most characteristic of the accent associated with this stereotype is the PRICE vowel, in particular, the fronted and glide-weakened PRICE vowel already mentioned.

Bekker (2009) has suggested that monophthongisation of the fronted PRICE vowel may have lost its status as a prestige marker, while the fronting of this vowel still remains prestigious to some degree. If this analysis is correct, then it would go some way towards explaining the observed differences between Durban and Cape Town for glide-weakening. In other words, the glide-weakening of PRICE, rather the fronting of PRICE may index the "kugel" stereotype in the General SAE community. There may be a particularly strong aversion towards this stereotype in Cape Town, more so than in Durban and it is possible that this stereotype may be more negatively evaluated by speakers in Cape Town than by those in Durban. This may then result in glide retention for the PRICE vowel on the part of Cape Town speakers, many of whom would presumably not wish to be associated with this stereotype.

Bekker (2009:175) describes this possibility when he states "...I would imagine that the retention of a glide (however weakened) is meant to index dissociation *vis-à-vis* this group." While this study was not designed to test this hypothesis directly, the results of this research are consistent with the explanation offered by Bekker (2009), at least for PRICE monophthongisation, especially if it is assumed that negative attitudes towards the "kugel" stereotype are stronger in Cape Town than in Durban.

However, more research would be required to investigate this hypothesis, as stated by Bekker (2009). Possible directions for further research would therefore include social evaluation studies where attitudes towards certain variables (such as PRICE glide-weakening) in different cities, such as Cape Town and Johannesburg, could be investigated.

Another possible explanation other than a change in the indexical value of PRICE monophthongisation is that there may have been certain differences in glide-weakening even when Lanham and Macdonald (1979) conducted their research, since Lanham and Macdonald (1979) only mention complete monophthongisation in the context of the Natal English, fronted PRICE variable and not for the Cape English, backed PRICE variable. It is therefore possible that Lanham and Macdonald (1979) may have underestimated the extent to which the feature of glide-weakening may have acted as a regional marker.

It does however seem unlikely that Lanham and Macdonald (1979), not to mention the many other researchers investigating White SAE, would have missed such regional variation for the glide-weakening of PRICE, were the variation as prominent during that time as it appears to be currently, based on the results reported in this study. It therefore seems more likely that the regionally-based differences in glide-weakening for the PRICE vowel are a relatively recent development, regardless of the possible origins of these differences. Even if they had existed earlier, it seems likely that these differences would have been negligible.

Another problem with this explanation is that it still appears as though there may have been an increase in the regional differences for PRICE monophthongisation, which this explanation does not account for. The strength of Bekker's (2009) explanation is that it provides a possible mechanism which could operate as the basis for such regional differentiation, namely a change in the indexical value of monophthongised PRICE, a change which may be more advanced in some cities than in others.

The findings of the current research also reveal a possible gender effect for the regional differences observed for the glide-weakening of the PRICE vowel. Male Cape Town speakers, while also (presumably) exhibiting a less glide-weakened PRICE vowel than their Durban counterparts, seem to achieve this effect by producing fronter offset values for PRICE, rather than by producing vowels with longer trajectories as the female speakers appear to do. That is, both males and females exhibit significant regional differences for the glide-weakening of the PRICE vowel, but this is achieved in different ways for each gender. Why this should be the case is not known and this phenomenon would also require further research.

4.2 CONCLUSION.

In conclusion, the principal aim of this research was to investigate the possible existence of regional variation for certain vowels in General SAE as spoken by young, White speakers from the cities of Cape Town and Durban, by using instrumental acoustic techniques. The findings of this research reveal certain patterns for some of the variables included in the investigation, while for other variables, the patterns are not as clear or are absent. The findings for the glide-weakening of the PRICE vowel provide the most evidence of regional variation, where it was found that glide-weakening is more extensive for Durban speakers than it is for Cape Town speakers. The most convincing evidence of a difference in glide-weakening comes from the female subsample, while the male subsample provides us with evidence of a fronter offset for the PRICE vowel for Cape Town speakers. A possible explanation for the observed difference between the two regions for the glide-weakening of the PRICE vowel was provided, namely a change in the indexical value of the PRICE vowel. If this explanation is accepted, this regional difference may be a relatively recent phenomenon.

The other variable for which the most evidence of regional variation was found is the KIT vowel, which is more centralised in Durban than in Cape Town for male speakers, in particular. This difference in centralisation is present for almost all environments of the KIT vowel which were investigated. This regional difference has been reported in earlier research, although the gender difference (where most of the significant differences are for male speakers only) has not been mentioned in earlier research and may be comparatively recent. Therefore the two vowels which demonstrate the greatest evidence of regional variation possibly represent two different kinds of regional variation, namely, (possibly) new regional variation (in the case of PRICE glide-weakening) and older regionalisms, for which gender differences may be a relatively recent development (in the case of the KIT vowel). It is possible that both of these variables may therefore continue to index regional associations. The other variables included in the investigation (for example, the PRICE vowel onset and the NURSE vowel) do not display overwhelming evidence of regional variation, although there is some evidence of patterning for these variables which is similar to the expected patterning, based on the findings of earlier research. It is therefore possible, that certain older regionalisms may have decreased in

prominence as regional markers, whereas others, such as glide-weakening for the PRICE vowel and KIT centralisation (for males, in particular) may have increased in prominence as regional markers.

REFERENCES:

BAILEY, RICHARD. (1984). Notes on South African English. *South African Journal of Linguistics* 2(3): pp.1-45.

BEKKER, IAN. 2009. *The vowels of South African English*, unpublished PhD thesis. North West University. [available from http://dspace.nwu.ac.za/].

BOERSMA, P. AND WEENINK, D. 2010, 'Praat: Doing phonetics by computer [Computer Program]. Version 5.1.25, retrieved February 14, 2010 from http://www.praat.org.

CHAMBERS, J. 2003. *Sociolinguistic theory: linguistic variation and its social significance, second edn*. Oxford: Blackwell.

DA SILVA, A. 2007. *South African English: a sociolinguistic investigation of an emerging variety*, PhD thesis. Witwatersrand: University of Witwatersrand.

DI PAOLO, MARIANNA, YAEGER-DROR, MALCAH AND BECKFORD WASSINK, ALICIA. 2011. *Sociophonetics: a student's guide*, ed. by [M. Di Paolo and M. Yaeger-Dror]. London, New York: Routledge.

LABOV, W. 1972. *Sociolinguistic patterns*. Philadelphia: University of Pennsylvania Press.

LABOV, W. 1975. *What is a linguistic fact?* Lisse: The Peter de Ridder Press.

LADEFOGED, PETER. 2006. *A course in phonetics*, 5th ed, International Student Edition. Boston, MA: Thomson Wadsworth.

LANHAM, L. 1967. *The pronunciation of South African English: a phonetic-phonemic introduction*. Cape Town: A.A. Balkema.

LANHAM, L. AND MACDONALD, C. 1979. *The standard in South African English and its social history.* Heidelberg: Julius Groos Verlag.

LANHAM, L. AND PRINSLOO, K.P. 1978. *Language and communication studies in South Africa: current issues and directions in research and inquiry*, ed. by [L. Lanham and K.P. Prinsloo]. Cape Town: Oxford University Press.

LANHAM, L. AND TRAILL, A. 1962. South African English Pronunciation. *English studies in Africa* 5(2): pp.171-208. Johannesburg: Witwatersrand University Press.

LASS, R. 1990. A'standard' South African vowel system. *Studies in the pronunciation of English, a commemorative volume in honour of A.C. Gimson*, ed. by [S. Ramsaran], 272-285. London and New York: Routledge.

LASS, R. 2002. South African English. *Language in South Africa*, ed. by [R. Mesthrie], 104-126. Cambridge: Cambridge University Press.

LASS, R. AND WRIGHT, S. 1985. The South African chain shift: order out of chaos? *Papers from the 4th international conference on English historical linguistics*, ed. by [R. Eaton, O. Fischer, W. Koopman and F. Van der Leek], 137-161. Amsterdam: John Benjamins.

MESTHRIE, R. 2010. Socio-phonetics and social change: Deracialisation of the GOOSE vowel in South African English. *Journal of sociolinguistics*, 14(1), 3-33.

SCHNEIDER, E. 2007. *Postcolonial Englishes: varieties around the world*. Cambridge: Cambridge University Press.

SHAPIRO, S. S. AND WILK, M. B. (1965). An analysis of variance test for normality (complete samples). *Biometrika*, 52(3 and 4), 591-611.

STATA (StataCorp, MP Parallel Edition, 4905 Lakeway Drive, College Station, Texas 77845 USA). [Computer Program].

STEVENS, KENNETH N. 1998. *Acoustic phonetics*. Cambridge Massachusetts: The MIT Press.

THOMAS, ERIK R. AND KENDALL, THOMAS. 2007. NORM: The vowel normalization and plotting suite. Online resource at http://ncslaap.lib.ncsu.edu/tools/norm/. Accessed on 10 March 2011.

WEBB, VICTOR. 1983. On a South African English vowel system. *Stellenbosch Papers in Linguistics* 10, 134-164.

WELLS, JOHN. 1982. *Accents of English*, Vol. 1-3. Cambridge: Cambridge University Press.

APPENDIX

Graduate School in Humanities
University of Cape Town

Faculty of Humanities
Room 3.04 Graduate School in Humanities Building
Private Bag X3 Rondebosch 7701
Tel: +27 (0) 21 650 2691 Fax: +27 (0) 21 650 5751
E-mail charmaine.vankradenburgh@uct.ac.za

02 March 2011

Mr B Wileman
3 Mutual Way
Bergvliet
7945

Dear Mr Wileman

I confirm having received your notice of intention to submit your Masters dissertation for examination as detailed below:

Please let me have 4 **copies** and a **CD Rom** in PDF format of your dissertation. If you have more than one supervisor, you will need to submit 5 **copies** - one copy should be unbound to facilitate any necessary alterations. The remaining copies should be bound in temporary binding such as ring binding. *Please note where applicable: The Faculty Office will not be forwarding a copy of your dissertation to any bursar you may have.*

Candidate: **B Wileman**
Student No: **WLMBRU001**
Degree : **MA - Linguistics**
Title: **Variation in South African English: A social-phonetic comparison of young white speakers in Cape Town and Durban**
Supervisor: **Prof Rajend Mesthrie**

In terms of the Faculty rule FM6.3, the dissertation:

a) must be satisfactory in arrangement and expression and must be typewritten or printed;
b) must be prefaced by an abstract prepared according the guidelines approved by Senate;
c) must show thorough practical and/or academic knowledge of the approved subject and methods of research, and evidence of independent critical power in handling and interpretation of material already known or newly discovered;
d) may embody such original work of others as may be pertinent;
e) must contain correct and proper acknowledgements of all sources;
f) may include the candidate's own published material on the same subject, if prior permission of Senate has been obtained;
g) must include in the title page a signed declaration that the work has not previously been submitted in part or whole for the award of any degree;
h) that it is the candidate's own work and that any substantial contributions to and quotations in the dissertation have been cited and referenced.

In terms of Faculty Rule 6.4, the dissertation may not exceed 25,000 words (50% dissertation); 40,000 words (75% dissertation) or 50,000 words (100% dissertation).

Your research will have been completed under the guidance of a supervisor. Please ask your supervisor to confirm that the dissertation has been submitted with his/her approval and that he/she has seen the final version of the submitted dissertation. Candidates submitting without the approval of their supervisor's do so at their own risk.

If you have submitted your dissertation for examination at a time other than the Faculty submission dates of 1 April or 1 September, there may be considerable delay before you receive your result.

Should you not be able to meet the deadlines for submission as set out in Rule FM7.3 of the Handbook, you are obliged to inform the Faculty Office immediately. While every effort will be made to process your dissertation for examination as soon as possible, the Faculty does not however undertake to reach a decision on the award of the degree by any specific date.

Yours sincerely

SUPERVISOR'S APPROVAL OF SUBMISSION OF DISSERTATION FOR EXAMINATION

I confirm that I have seen/have not seen the final version of _____(candidate's name)
dissertation and that it is submitted for examination with/without my approval.

_____ _____
Supervisor's Signature Date

GRADUATE SCHOOL IN HUMANITIES

City	Speaker	Gender	Age	No. of years resident in city
DBN	N	Female	18	18 years
DBN	O	Female	23	23 years
DBN	P	Female	26	21 years
DBN	Q	Female	18	18 years
DBN	R	Female	20	20 years
DBN	U	Female	19	16 years
DBN	J	Male	19	16 years
DBN	K	Male	23	23 years
DBN	L	Male	23	22 years
DBN	M	Male	21	20 years
DBN	S	Male	20	16 years
DBN	T	Male	20	19 years
CPT	A	Female	27	24 years
CPT	B	Female	22	21 years
CPT	C	Female	20	20 years
CPT	D	Female	18	18 years
CPT	E	Female	20	7 years
CPT	X	Female	28	25 years
CPT	F	Male	24	22 years
CPT	G	Male	19	19 years
CPT	H	Male	19	19 years
CPT	I	Male	18	18 years
CPT	V	Male	22	22 years
CPT	W	Male	22	15 years

Spalte3	Column9	Column10	Column11	Column12	Column13

Column14	Column15	Column16	Column17	Column18

Certification of Corrections

I, the undersigned, supervisor hereby certify that

has completed the corrections to his/her Masters dissertation to my satisfaction and as required by the Masters Dissertation Examinations Committee.

SUPERVISOR	SIGNATURE	DATE

Professor J Muller	SIGNATURE	DATE

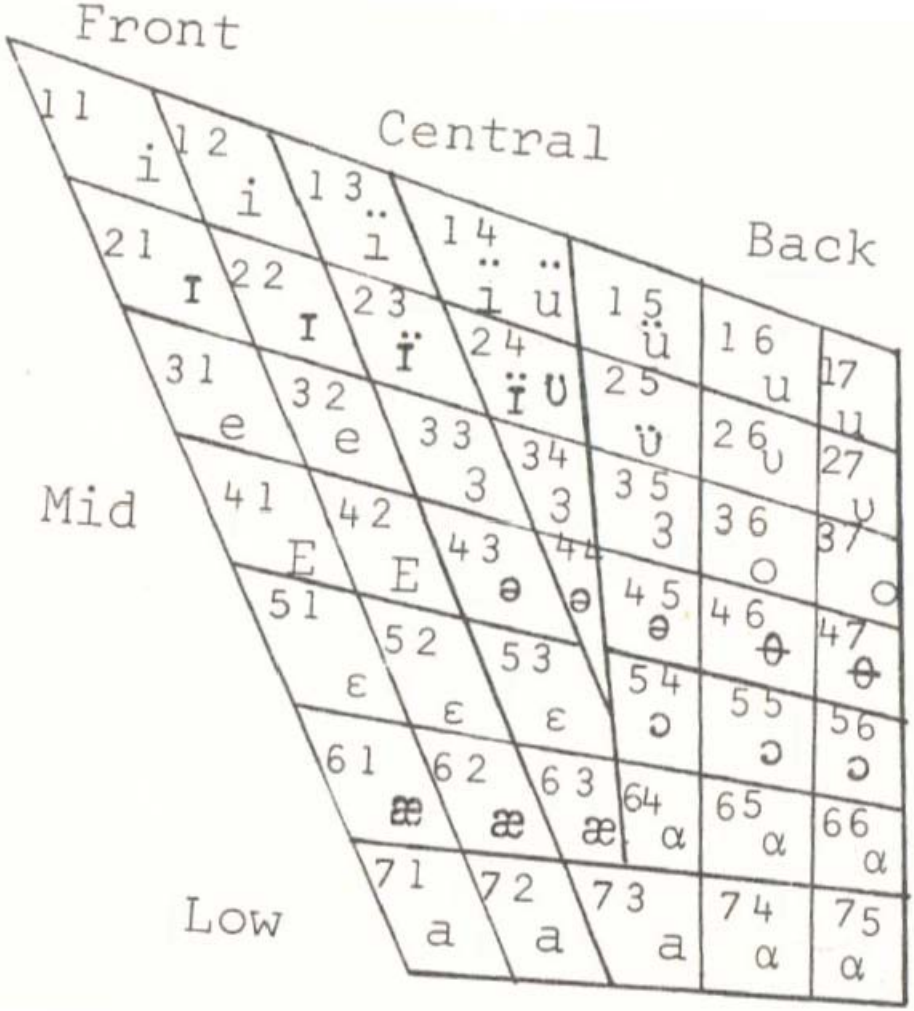

Front
Central
Back
High
Mid
Low
11 i
12 i
13 ɨ
14 ɨ ʉ
15 ü
16 u
17 u
21 ɪ
22 ɪ
23 ɪ̈
24 ɪ̈ ʊ
25 ʊ̈
26 ʊ
27 ʊ
31 e
32 e
33 ɜ
34 ɜ
35 ɜ
36 o
37 o
41 E
42 E
43 ɵ
44 ɵ
45 ɵ
46 ɵ
47 ɵ
51 ɛ
52 ɛ
53 ɛ
54 ɔ
55 ɔ
56 ɔ
61 æ
62 æ
63 æ
64 ɑ
65 ɑ
66 ɑ
71 a
72 a
73 a
74 ɑ
75 ɑ

Diagram 1

WORD LIST I:

KIT

SIT

BEAT

BIT

DRESS

CAT

TRAP

NURSE

BUTTER

FOOT

GOOSE

POT

MONEY

PARK

FAIR

LOT

PRICE

BAKE

CUT

BATH

GOAT

THOUGHT

FLEECE

BROKE

HALL

FISH

MOUTH

CHOICE

PORK

GREEN

FIRE

POOR

BRAAI

WORD LIST II:

BATH

CLOTH

NURSE

POT

FLEECE

FACE

PALM

THOUGHT

BEAT

KIT

DRESS

TRAP

BET

LOT

BAT

STRUT

FOOT

BUT

GOAT

GOOSE

KITE

MOUTH

PRICE

SOUTH

NEAR

SQUARE

NORTH

FORCE

BRAAI

WORD LIST III:

KIT

DRESS

LOT

STRUT

FOOT

BATH

NORTH

FORCE

CLOTH

NURSE

FLEECE

FACE

PALM

THOUGHT

GOAT

CURE

GOOSE

PRICE

CHOICE

MOUTH

NEAR

SQUARE

START

WORD LIST IV:

KIT	FORCE
BIT	CURE
DRESS	DANCE
TRAP	
LOT	
STRUT	
FOOT	
BATH	
CLOTH	
NURSE	
FLEECE	
FACE	
PALM	
THOUGHT	
GOAT	
GOOSE	
PRICE	
CHOICE	
MOUTH	
NEAR	
SQUARE	
START	
NORTH	