

Well, well, well: variation in DRESS vowel realisations before lateral /l/ in Australian English

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ABSTRACT

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The ongoing el-æ merger in Australian English has been informally recognised by Australians especially those who have experience of contact with Victorians. **Objective:** This study aims to investigate the correlation of speakers' sex and origin with /ɛɪ/ production and how speech styles influence their production. **Method:** Two male speakers of Australian English from Victoria and South Australia were recorded while reading texts, doing interviews, and having casual conversations. The recordings were then transcribed and analysed by using various softwares to describe their /eɪ/ productions. **Findings:** Both male subjects are able to produce considerable variations in their /eɪ/ productions. The production of the Victorian male speaker confirmed the findings of previous studies while the SA male speaker showed variations of /eɪ/ similar to back vowels. Speech styles do not significantly affect the variations of /eɪ/ production. **Conclusion:** The ongoing merger of el-æ in Australian English might be spreading from Victoria through diffusion to its neighbouring states. However, more studies should be conducted in order to confirm this suspicion. Other suggestions include customised reading passages and better semi-structured interviews

1. INTRODUCTION

A procedure known as 'merger' is where a phonemic contrast is collapsed because of sound change (Hay, Warren, & Drager, 2006). Thus, two phonemes which were already distinct in a language variety are being acknowledged as a single phoneme. This occurrence is normal and has been widely observed by sociolinguists. One of the instances of a merger is the merger of NEAR (/iə/) and SQUARE (/eə/) in New Zealand English (Gordon & Maclagan, 2001; Hay et al., 2006). Gordon and Maclagan (2001) did a thorough investigation of Christchurch school students whose age were 14 to 15 since 1983. Their investigation proposed that most students produced clear distinction of NEAR (/iə/) and SQUARE (/eə/) vowels in the recording made in 1983 albeit a few varieties were available and there was no clear tendency of converging toward either vowels. In contrast, they found a practically complete merger toward NEAR (/iə/) in 1998. One thing that Gordon and Maclagan didn't consider is the manner by which the students' creation might be different in reading and casual discussion settings. On the off chance that they had tests from students' creation in casual discussions, they may have the chance to recognize the merger sooner. Hay et al (2006) examined the results of this merger in the context of how people will perceive speech. They gathered 71 subjects from University of Canterbury to do perception related tasks by listening to recordings performed by 2 male and 2 female speakers of New Zealand English. The subjects were approached to produce NEAR (/iə/) and SQUARE (/eə/) vowels toward the end of

Well, well, well: variation in DRESS vowel realisations before lateral /l/ in Australian English

the session. The outcomes indicated mixed responses from the subjects which were affected by factors such as various arrangements of background knowledge that the subjects have, and qualities related with the speakers, for example, gender, age, socio-economic status, and education level. In conclusion, social background of the speakers influenced the subjects' impression of their speech production more than the speech itself.

Another case of merger is observed in Australian English. Loakes, Hajek, and Fletcher (2017) investigated an on-going merger of DRESS and TRAP vowels before lateral /l/ as a provincial complement marker of individuals from Melbourne, Victoria. They introduced an informational collection taken from 3 female speakers from greater Melbourne region. Their vowels production from /hVd/ condition (ex: had, hid, head) is contrasted with their vowels production from the words 'hell' /hel/ and 'Hal' /hæl/. The outcome indicated that /el/ -/æ/ merger was observed in 2 out of 3 speakers. Nevertheless, there were no clarification regarding why the most youthful speaker (age 25) was capable of producing distinct vowels. Additionally, aside from the members' sex and age, there are no social data with respect to the members (ex: education, socio-economic status). The results of this paper is not in line with what Cox and Palethorpe (2004) found. Cox and Palethorpe (2004) found that individuals who live in the outskirt between New South Wales (NSW) and Victoria produce distinctive vowels in /hVd/ and /hVl/ conditions. Their subjects who are from Wangaratta, Victoria produced /el/ -/æ/ interchangeably while different subjects from NSW didn't. The various outcomes may be brought about by factors such as origin, education, age, and sex. Cox and Palethorpe (2004) controlled their subjects' origin, education, age, and sex while the subjects in Loakes et al. (2017) were picked "because they represent the variability observable in the community" (p. 41) which is an unclear depiction. Nevertheless, Cox and Palethorpe (2004) didn't suspect that the occurrence of /el/ -/æ/ might be observable in casual discussion setting since they requested that their subjects read from a word list. In addition, the two studies referenced above utilized female speakers only as their subjects which is an expected hole in summing up their discoveries. As indicated by Labov (1972), scientists need to contemplate that individuals may talk distinctively when they are not being watched (ex: casual discussions). Henceforth, I speculate various settings may yield various outcomes.

In regards of the past studies, the production of /el/ ought to be dispersed and overlapped between /e/ and /æ/. Consequently, observing the production of DRESS vowel specifically may give us bits of knowledge of what is really going on in this on-going merger. In the light of the gap in research on the /el/-/æ/ merger, I propose an investigation to respond to the following inquiries:

1. What is the impact of speaker's sex and origin in the /el/ production?
2. Do speech styles influence the variety of /el/ production?

These questions are becoming more and more salient due to the insufficient information given in the previous research discussed above. Consequently, it is imperative to address those questions in order to further forward the research on /eI/-/æI/ merger in Australian English. The result of this study is likely to be a solid stepping stone to the progress of the investigation of /eI/-/æI/ merger in Australian English.

2. METHODOLOGY

In the paper, two recordings of one Victoria male speaker by the pseudonym of Ferb and one South Australia male speaker by the pseudonym of Ham will be used. Both speakers are similar in age and level of education. Prior to moving to Canberra for education, they both spent much of their time growing up in their respective hometowns. Ham, however, speaks a second language and he has lived in China for 3 months while Ferb is a monolingual in Australian English. The recordings were done in a secluded space to eliminate noise. ZOOM H5 recorder and head mounted microphone were utilised in all of the recording process. Three kinds of recording were done by all of the participants. First, three passages which are the North Wind and the Sun, the Grandfather, and the Rainbow passage were read by the participants and recorded. Second, the participants were asked to do a recorded interview for 20 to 30 minutes. Finally, the participants documented themselves having 20 to 30 minutes discussion with their friends or family members. The aim of providing various styles of recording is to elicit speech output from the participants in reading, formal, and casual context. The recordings will subsequently be anonymised using Audacity (AudacityTeam, 2017) and ELAN (Lausberg & Sloetjes, 2009) was used to transcribe the recordings. ELAN orthographic transcription must then be forwarded to PRAAT (Boersma & Weenink, 2018). In this paper, all measurement of the formants of vowels will be done in PRAAT.

The next step is to calculate the average value of the different vowels that each speaker generates. The first and second formant of Australian English vowels in Cox and Palethorpe's (1977) illustration will be counted four times in each recording for a total of 12 tokens per vowel (see Di Paolo, Yaeger-Dror, & Wassink, 2011 for reference number of tokens). As per Di Paolo et al. (2011), the conditions from which the measurements of vowels are taken should be in a neutral phonetic consonant setting. If such environment is not provided in the data, however, some convenient samples will be selected instead and some notes followed. In short, two vowel plots (one for each speaker) will be presented in the study containing the mean value of each vowel.

Afterwards, Lobanov (1971) normalisation method will be applied to all of the vowel plots. This approach is chosen because variations in formant values caused by physiological factors can be factored out. Additionally, when all the vowels from the speakers' inventory are included, it works optimally. Finally, according to Adank, Smits and Van Hout (2004), the Lobanov normalisation method performed the best of all techniques tested in a discriminatory analysis of normalised Dutch vowels which is a close relative of the English language. 'Well' occurrences

Well, well, well: variation in DRESS vowel realisations before lateral // in Australian English

were then coded and the vowel formant values in the word 'well' were calculated. In addition, 'well' vowel measurements will be plotted against mean values of the vowel plot of each speaker to evaluate any variations that occur.

In short, the main research methodology employed in this study is phonetic acoustic analysis combined with descriptive qualitative. After the result was gained, further description of data as well as critical discussion were conducted. The methodology was heavily inspired by the previous study regarding (Cox & Palethorpe, 2004; Loakes et al., 2017). However, added procedures were applied to address the gaps mentioned in the research questions.

3. RESULTS

Ferb's and Ham's vowels have different concentration points in their vowel plots when the plots are normalised (figure 1 and figure 2). Compared to Ham's, Ferb's vowels are concentrated more to the front. On the other hand, Ham tends to produce vowels to the back of his tongue. If we have a look at figure 1 and 2, we can see Ferb's and Ham's variability in producing vowels.

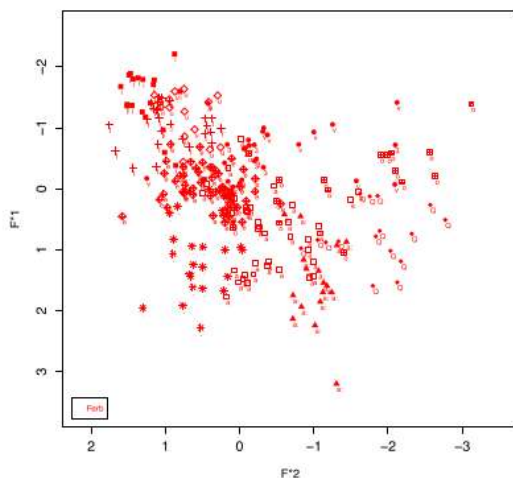


Figure 1. Ferb vowel plot

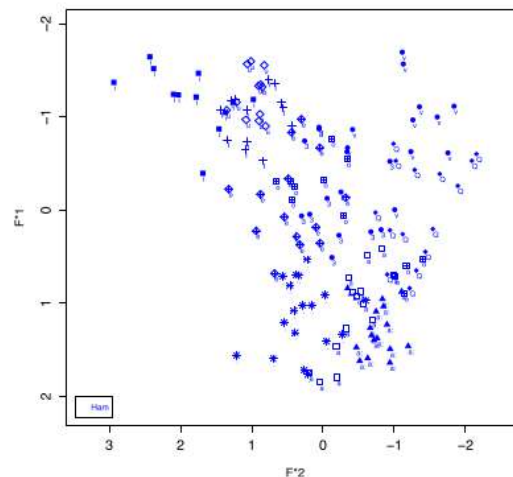


Figure 2. Ham vowel plot

Ferb and Ham have managed to produce distinct /e/ and /æ/ in most environments throughout the recordings. We can see it from their /e/ and /æ/ measures (see table 1). Ferb's /e/ and /æ/ output

is more stable than Ham's is. ²⁵ can see from table 1 that Ham has more variations in his / her / its performance (represented by the standard f1 and f2 deviation values). In fact , the value of Ferb's f1 in /e/ is lower than that of Ham which means that Ferb's /e/ is very high relative to Ham's. All the vowel measurements were performed at 50 percent of the length of the vowels since this paper is only interested in monophthong (see Di Paolo et al. , 2011 for reference of the vowel measurement).

Table 1. Ferb and Ham /e/ and /æ/measurements

Speaker	Vowel	Mean F1	Mean F2	n	SD F1	SD F2
Ferb	æ	649	1749	12	64	50
Ferb	e	492	1708	12	30	67
Ham	æ	760	1661	12	60	67
Ham	e	529	1716	12	91	125

Yet, their /e/ before lateral/l/ productions have a lot of variations. In ¹⁶ table 2, we can see how the supposedly /e/ in /wVl/ varied in values of f1 and f2. The Ferb's /e/ f1 values range from 515 Hz to 746 Hz while the f2 values range from 905 Hz to 2046 Hz. In contrast, Ham's /e/ f1 values have a range of 476 Hz to 831 Hz while the f2 values are between 824 Hz and 1526 Hz. The highest occurrence of 'well' is found within their self-recordings while only one token is found from the reading passage.

Table 2. DRESS Vowel realisations in /wVl/ environment

Speaker	Word	Style	F1	F2
Ferb	well	reading	603	1303
Ferb	well	interview	515	1000
Ferb	well	interview	683	1745
Ferb	well	interview	563	2046
Ferb	well	self-recording	746	1956
Ferb	well	self-recording	742	1778
Ferb	well	self-recording	518	995

Well, well, well: variation in DRESS vowel realisations before lateral /l/ in Australian English

Ferb	well	self-recording	440	905
Ham	well	reading	712	1526
Ham	well	interview	782	1442
Ham	well	interview	706	1159
Ham	well	interview	476	824
Ham	well	interview	802	1128
Ham	well	self-recording	831	1215
Ham	well	self-recording	492	1097
Ham	well	self-recording	678	1196
Ham	well	self-recording	631	1252
Ham	well	self-recording	722	1330

The results of this study is more or less in line with what Cox and Palethorpe (2004) as well as Loakes et al. (2017) found in their study. Ferb, who is from Melbourne greater area, has a tendency to produce a variety of /eI/ with similar quality of /æI/ as illustrated in Figure 1. What was different is that Ferb also produced /eI/ with the quality of back vowels during self-recording as illustrated in Table 2. This result was not found in those two previous studies. Moreover, the /eI/ production with the quality of back vowels is dominant in Ham's data. According to these specific results, further discussion will be provided in the next section.

4. DISCUSSION

It's clear that Ferb and Ham have different space arrangement for their vowels. When we go back to table 1, we 'd assume that, due to the standard deviation values of his f1 and f2, Ham would most likely have more differences in his DRESS vowel realisations. However, we can observe in/wVI/ environment that Ferb has more variations in the realisation of his DRESS vowel, particularly in the range of his f2 (see figure 3). Figure 3 indicates Ferb develops four DRESS vowels with qualities of f1 and f2 close to front vowels. That finding is in line with what was found in the analysis of Cox and Palethorpe (2004) and Loakes et al. (2017). Their Victorians subjects produced similar vowels as in figure 3 to what Ferb displays. What the previous study did not reveal, however, is the fact that Ferb also produces three DRESS vowels with similar qualities of f1 and f2 to back vowels and 1 DRESS vowel with similar qualities of f1 and f2 to central vowels. The latter findings are surprising since, so far, no research has found that /eI/ realisations can produce vowels with back vowel formant qualities.

Well, well, well: variation in DRESS vowel realisations before lateral /l/ in Australian English

When we compare DRESS vowel realisations of Ferb and Ham in /wVI/ setting, we can see that their realisations are different in concentration. The realisations of Ferb are spread widely, while Ham's realisations are more concentrated to the centre of his vowel space. Those patterns relate, in a way, to their normalised vowel plots. Compared to Ferb's vowels, Ham's vowels tend to be more concentrated toward the back. However, in the case of Ham, there are no DRESS vowel realisations in /wVI/ setting that are even similar to the target quality of his usual production of DRESS vowel. In this regard, we could suspect that Ham's second language could play a role in his choice of vowel in /wVI/ environment.

The realisations of DRESS vowel in /wVI/ environment do not seem to be affected by speech style in this study. But for both Ferb and Ham, there's only one token of 'well' in reading context. On the one hand, this particular problem does not seem to influence the assessment of Ham's DRESS vowel realizations in /wVI/ setting since none of his realizations in other environments have similar f1 and f2 consistency to his DRESS vowel. Ferb's 'ok' token in reading, on the other hand, is the only realization of DRESS vowel in /wVI/ setting that has comparable consistency to its central vowels. Ferb's 'well' token in reading, on the other hand, is the only realization of DRESS vowel in /wVI/ setting that has comparable consistency to its central vowels. Therefore, to decide the role of speech style in DRESS vowel realisations in /wVI/ setting, more 'well' tokens in reading activity would be a great addition.

It is unusual to be able to observe some variations of DRESS vowel realisations in Ham's results, although it is not an uncommon occurrence as well. Labov (2007) proposed that languages could change through transmission and diffusion. Language change through transmission occurred in the same speech culture across different generations. The younger generations adopted what the older generations produced, and further advanced the characteristics that distinguished them from what the older generations produced. By comparison, language change by diffusion is the result of the cultures of speech being in contact. The change is progressing slower in this respect and is less structured than transmission.

Clark and Watson (2016) researched the language shift argument of Labov by studying different realisations of lenited /t/ in Liverpool and its surrounding cities, Skelmersdale and St. Helens. Their study results backed Labov's claim to language change through transmission and diffusion. The Liverpool variant of /t/ are /t_h θ_h/ and these variants are largely retained by the town of Skelmersdale. Clark and Watson suspected that it happened because of massive migration of people from Liverpool to Skelmersdale in the 1960s and ongoing contact between two speech communities (p. 59). Most of the younger generations of Skelmersdale demonstrated the use of /t_h θ_h/ in their daily speech rather than their peers in St. Helens. In St. Helens, the use of /t_h θ_h/ variants are slowly being replaced by /ʔ/. /ʔ/ has been observed longer in Manchester rather than

Liverpool (Baranowski & Turton, 2015). Thus, Clark and Watson (2016) suspected that this feature is more likely to spread via diffusion from Manchester rather than Liverpool (p. 59).

No claim can be made in the case of Ham and Ferb with only the two people's data. Change by diffusion, however, is more likely to occur rather than transmission. Earlier studies (e.g. Cox & Palethorpe, 2004; Loakes et al., 2017) observed predominantly Victorian-speaker variations in prelateral DRESS vowels. In this case, whether it were to happen through transmission or there were mass migrations from Victoria to South Australia, the particular language shift would have to originate from South Australia. Instead, the more likely scenario is that, given their close proximity, language contacts between Victoria and South Australia are constantly occurring and this feature is being transferred during language contact. The complicated partnership between Victoria, South Australia, and New South Wales may be another explanation for this phenomenon. Victoria and NSW have a long history of unpleasant association, according to Davison, Hirst, and Macintyre (2001). The two states were continually fighting over which state would host Australia's capital city before the Australian government agreed to create Australian Capital Territory (ACT) and named Canberra as Australia's capital city to end the dispute. Through this context, citizens of NSW and Victoria do not maintain each other's speech identity marker (e.g., el-æɫ merger) to draw a strong line of identity distinction. On the other hand, between the state of Victoria and South Australia, no major relationship issues are identified. The supportive attitude towards the speech of Victoria speakers in residents of South Australia may be a key to al-æɫ merger through regional diffusion.

5. CONCLUSION

This study discusses the probability of differences in the Australian English prelateral DRESS vowel. While this research does not explicitly compare DRESS vowel and TRAP vowel prelaterals, the realizations of DRESS vowel prelaterals in this research might provide further insight into the ongoing merger of el and æɫ in Australian English. Variations in DRESS vowel realisations in /wVI/ context can be found from male subjects that were not previously examined. In addition, variations in DRESS vowel realizations in /wVI/ environment are surprisingly noticeable from SA's male subject. Although this finding is surprising, this study attempted to clarify how this phenomenon could have occurred in limited detail. Additionally, both subjects produced realisations of the prelateral DRESS vowel with the formant qualities of back vowels. This result indicates that more things are happening in this ongoing merger than simply merging el-æɫ. Finally, there would seem to be no important association between the frequency of prelateral DRESS vowel differences associated with speech styles. However, there are some other things to consider. First, there are not enough tokens in the data to fully support this claim, particularly in reading background recordings. Second, more tokens will be required to perform a statistical test

Well, well, well: variation in DRESS vowel realisations before lateral // in Australian English

to determine whether the speech style affects prelateral DRESS vowel variations in Australian English

There are some suggestions for potential studies in Australian English about the ongoing el-æ merger. First, tracing how far the phenomenon has spread from its original source would be useful. The fact that SA speaker is demonstrating variations of prelateral DRESS vowel may mean that el-æ merger is not limited to people from the Victoria state. Second, it would also be useful to further explore the connection between speech style and el-æ merger. A personalized reading passage (e.g. a reading passage about 'celery' and 'salary') needs to be made to get the required amount of el or æ tokens. In addition, a better semi-structured interview and self-recording (e.g. talk about 'well,' 'celery,' or 'salary') needs to be done. Furthermore, more tokens can be created by increasing the number of people in future studies. Ultimately, a detailed review is also suggested on why there are certain prelateral DRESS vowel realisations with the formant qualities of back vowels.

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My name is Ounu Zakiy Sukaton and I am currently teaching at Ma Chung university, Malang. I teach linguistics courses in Ma Chung such as Sociolinguistics, Phonetics and Phonology, Psycholinguistics, and other linguistics related courses. My research interest lies in the intersection of language variations and forensic linguistics especially voice comparison. My strength is phonetics-based analysis with computer-assisted tools.

4

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Well, well, well: variation in DRESS vowel realisations before lateral /l/ in Australian English

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Well, well, well: variation in DRESS vowel realisations before lateral /l/ in Australian English

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