PRONOUNCED RIVALRIES: ATTITUDES AND SPEECH PRODUCTION[1]

Katie Drager: *Department of Linguistics, University of Hawai'i at Mānoa, 569 Moore Hall, 1890 East-West Road, Honolulu, HI 96822, USA <katiedrager@gmail.com>*

Jennifer Hay: *School of Languages, Cultures and Linguistics, University of Canterbury, Private Bag 4800, Christchurch 8140, NZ <jen.hay@canterbury.ac.nz>*

Abby Walker: *Department of Linguistics, The Ohio State University 200 Oxley Hall, 1712 Neil Avenue, Columbus, OH, 43210, USA <walker.1069@osu.edu>*

Abstract

Speakers vary their speech depending on an addressee (Giles 1973; Bell 1984, 2001), and their attitudes toward the addressee play some role in the direction and degree of the shift (Giles, Coupland, and Coupland 1991). However, a number of questions remain: how do attitudes affect phonetic shifts? And are different sounds affected differently? This paper reports results from a production experiment testing the degree to which speakers from New Zealand shift their speech when exposed to 'good' and 'bad' facts about Australia. The results suggest that exposure to the different facts shifted the participants' vowel realisations. However, sports fans behaved differently across the conditions than non-sports fans, a result which is interpreted as reflecting different levels of engagement in the sporting rivalry between Australia and New Zealand. The results are discussed in terms of how sounds and social information are stored in the mind and later accessed during speech production.

1. Introduction

Individuals' realisations of phonetic variables can be influenced by a number of different factors. These factors include the variants produced by an interlocutor and the variants that tend to be produced by people with similar social characteristics as an interlocutor (Giles 1973; Giles and Powesland 1975; Bell 1984, 2001). Both convergence, when a speaker adopts variants used by an addressee, and divergence, when a speaker adopts variants that are dissimilar to those used by an addressee, can occur during and across interactions (Bourhis and Giles 1977). Whether a speaker likes, relates to, and wishes to minimise social distance from the addressee seems to be a key influence in determining whether a speaker will converge or diverge (Giles, Coupland, and Coupland 1991); if a speaker positively identifies with an interlocutor, they are more likely to converge on the interlocutor's speech and, conversely, if a speaker does not like or relate to an interlocutor, they are more likely to diverge. In this paper, we investigate the role of speaker attitudes on phonetic convergence and divergence and examine how attitudes might affect the realisation of different sounds in different ways. Additionally, we examine whether pre-existing biases toward a group due to a sporting rivalry influences shifts in vowel realisations. The results are discussed within the context of a model of speech production in which phonetic detail is stored in the mind.

1.1 Review of work on phonetic convergence and divergence

Giles' and colleagues' seminal work on speaker convergence and divergence (Giles 1973; Giles and Powesland 1975) demonstrates how speakers shift depending on who they are interacting with. Importantly, it is not only the actual speech of the interlocutor that influences production, but also an individual's expectations of how the interlocutor and people socially similar to the interlocutor talk (Coupland, Coupland, Giles, and Henwood 1988). Additionally, in what Snyder (1981) refers to as *behavioural confirmation*, individuals tend to behave how their interlocutor expects them to behave (Snyder 1981: 193). Listeners readily make assumptions about the speech of an individual based on speaker characteristics, even when those characteristics are not presented to the listener until after they heard the speech (Thackerar and Giles 1981). Thus, convergence and divergence during an individual's production is heavily influenced by the individual's stereotypes and expectations during speech perception.

Socially-motivated shifts in speech are not found only when interacting

with an interlocutor, but can also be found with overhearers and people referred to during an interaction (Bell 1984; Hay, Jannedy, and Mendoza-Denton 1999). Bell (2001) argues that '...style is oriented to people rather than to mechanisms or functions... it is interactive – and active' (Bell 2001: 141–142). Such style-shifting effects are often interpreted as agentive identity construction by the speaker (Bell 1984; Schilling-Estes 2002), where speakers adopt variants associated with a persona or a group's style rather than use them to signify membership in a group. This is in line with a view of identity construction where an individual's 'dress, grooming, walk, talk, and all other forms of perceivable behaviour pass before the view of others and can therefore be manipulated to foster presentation of self' (Eastman and Stein 1993: 187).

Discussing phonetic convergence and divergence in terms of a speaker's active manipulation of phonetic variants presumes some level of agency on the part of the speaker. However, there has been recent debate about the extent to which speaker agency is required (Trudgill 2008; Babel 2010). Labov (2001) argued that diffusion of linguistic change is 'mechanical and inevitable' and that 'attitudes play a minor role' (Labov 2001: 20). Building on this claim, Trudgill (2008) suggests that speech accommodation is 'a deeply automatic process' (Trudgill 2008: 252), suggesting that speaker identity may be a product of convergence and divergence rather than the force behind it. Trudgill's argument may find some support from work in psychology. Cognitively, style-shifting appears related to the more general tendency to mimic (or diverge from) the nonverbal behaviour of a confederate. For example, participants mimic gestures such as face-rubbing during interactions, but they are less likely to mimic such gestures when interacting with an out-group confederate (Yabar, Johnston, Miles, and Peace 2006). In response to Trudgill's argument, Coupland (2008) points out that even relatively automatic interactional stances are designed around social outcomes.

Greenwald and Banaji (1995) discuss two types of attitudes: explicit and implicit. Explicit attitudes are those which are readily reported by an individual; they can be gleaned from surveys and interviews. In contrast, implicit attitudes are those which an individual may wish to hide from a researcher. Alternatively, an individual may not be aware that they have a bias and, thus, cannot report it explicitly. An implicit attitude can stem from childhood, and while individuals may believe that they have overcome it, experiments such as the Implicit Association Task (IAT) may help to reveal the implicit bias (Greenwald and Banaji 1995; Babel 2009).

In this paper, we explore the relationship between speech accommodation and a speaker's attitudes. Specifically, we first examined the degree to which exposure to facts about a dialect region would affect accommodation to that dialect depending on whether the facts portrayed the region in a positive or negative light. The different facts that were used focused on different aspects of the region, such as highlights of the natural environment and issues surrounding human rights. Secondly, we tested the degree to which pre-existing biases stemming from engagement in international sport affected accommodation, and whether this interacted with the type of facts to which the speaker was exposed. The reasons for exploring sports-fandom as a predictor of phonetic convergence and divergence will be discussed in the Section 1.3. In Section 1.2, we discuss the production model used to interpret the results.

1.2 Mental representations of social and phonetic information

To understand the mechanisms behind speech accommodation and the reasons for a phonetic shift in one direction rather than another, it would be helpful to understand how sounds are stored in the mind, how the phonetic representations are linked to non-phonetic information, and how both phonetic and any related non-phonetic information are accessed during speech production. However, the nature of how sounds are represented in the mind and how they are accessed during speech production and perception is unclear and remains the topic of much debate (Lahiri and Reetz 2002; Labov 2006; Pierrehumbert 2006; Norris and McQueen 2008). While many models of speech production assume that there is activation of stored representations of either features, detailed phonetic memories, or abstract phonemic categories, theories differ as to whether this activation is categorical or whether different representations receive different amounts of activation. Additionally, some models allow for inhibition of the representations (e.g. Pierrehumbert 2001), so that phonetic realisations produced are biased away from variants represented by the inhibited memories. For the purposes of this paper, we will assume the following:

- Representations of phonetic information are detailed and multidimensional.
- Phonetic representations are indexed to relevant social information. Some of this social information may be complex and specific, such as an individual speaker who produces vowels similar to the form

represented. Despite this, stored social information is treated solely as categorical in this paper for simplicity.[2]

- Activation of a concept (or stored social information) can lead to activation of phonetic representations with which the concept (or social information) is associated.
- Representations of both social and phonetic information can receive differing amounts of activation.
- Even small amounts of activation affect the final production of a sound, biasing production toward or away from the variant represented.
- The degree of activation depends on the speaker's attitudes and social biases. Positive attitudes and biases toward a social group result in activation of phonetic representations indexed to the social group.

We assume that it is possible that speech convergence and divergence can occur as a result of one's active construction of identity as well as cognitive processes which are more automatic. Within the context of the results, we discuss the kinds of cognitive processes that might be responsible for phonetic accommodation, discussing how mental representations of linguistic and social information are stored, indexed, and accessed during speech production.

1.3 New Zealand, Australia, and the Trans-Tasman Rivalry

The production experiment reported in this paper stems from our work on speech perception, which investigates whether individuals shift in their perception of variables if primed with regional information, even when they are not aware that the regional primes have anything to do with the perception task (Hay, Nolan, and Drager 2006; Hay and Drager 2010). Because of this link between our earlier work and the current study, we briefly discuss previous results below.

Between Australian and New Zealand English, realisations of the vowels KIT, DRESS, and TRAP differ; KIT is raised in the speech of Australians and centralised in the speech of New Zealanders, and both DRESS and TRAP are more raised in New Zealand English than in Australian English (Watson, Harrington, and Evans 1998; Cox and Palethorpe 2008). A sketch of the different vowels in both dialects is shown in Figure 1. The terms KIT,

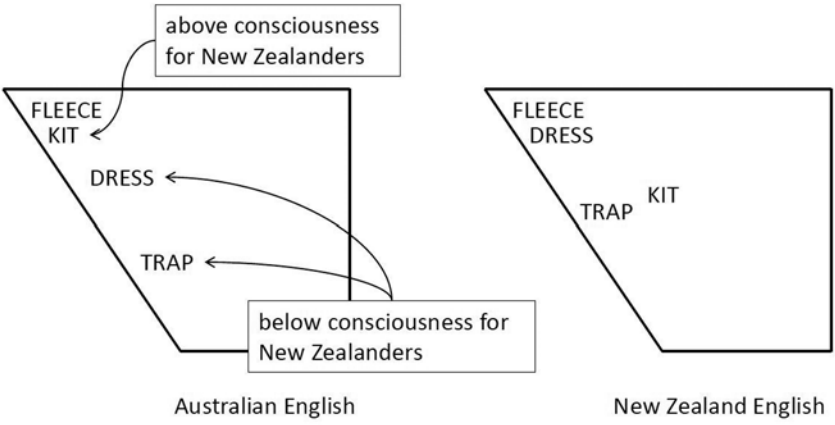

Figure 1: Sketch of front vowel spaces for Australian and New Zealand Englishes

DRESS, and TRAP are the lexical set labels (Wells 1982) for the vowels in each word.

In a perception task where participants matched natural tokens of KIT to steps from a synthesised continuum, Hay, Nolan, and Drager (2006) found that regional labels ('Australian' or 'New Zealander') on the top of the response sheet affected which token of the continuum was chosen as the best match. Hay and Drager (2010) repeated the experiment except that instead of regional labels, participants were exposed to either toy kangaroos and koalas (from Australia) or toy kiwis (from New Zealand). The results provide evidence that the presence of objects associated with a dialect region was enough to shift how sounds were perceived, even though the perceiver had no reason to associate the region with the speaker. However, in both Hay, Nolan, and Drager (2006) and Hay and Drager (2010) the regional primes were involved in an interaction with gender; while female participants shifted in the expected direction (they responded with raised, more Australian-like variants in the Australian conditions), males shifted in the opposite direction (they responded with centralised, more New Zealand-like variants in the Australian condition). Hay and Drager (2010) suggest that this difference in responses may be due to a sporting rivalry.

Sport serves as a strong marker of nationalism in New Zealand (Smith 2004: 184). The biggest sporting rivalry, known as the Trans-Tasman Rivalry, is with Australia. 'Whether it is Bledisloe Cup matches, one-day cricket,

netball, basketball or even tiddlywinks, the match-up between New Zealand and Australian teams is one that gets our blood boiling' (One Sport 2005). Males are believed to be especially invested in sport in New Zealand (Phillips 1996; Coney 1993), and rugby in particular is seen as a key component of male New Zealander identity (Crawford 1995). The gender imbalance in rugby is not limited to those playing the game; three quarters of the rugby fans polled by Garland, Macpherson, and Haughey (2004) were male. While netball may be tied to some degree to female identity in New Zealand, this is a fairly recent development (Nauright 1995). Historically, sporting rivalries in New Zealand has been tied with masculinity; Coney states that 'New Zealand has been called 'a man's country' and nowhere has this been more true than in sport. Sporting contest has been a male proving ground, sport a source of national identity and pride' (Coney 1993: 238). Being a fan of sport may reinforce a sense of rivalry with Australia and this may affect activation and inhibition of stored phonetic representations indexed as Australian. Thus, the 'gender' effect observed in earlier experiments may in fact be a 'sporting rivalry' effect.

This paper reports on results from a production experiment testing whether adjustments in speech production can be manipulated through exposure to 'good' or 'bad' facts about an absent target group. The experiment also tested whether speakers would be affected by the facts differently depending on whether or not they watched international sport. We hypothesised that 'good' facts about Australia would affect New Zealanders' vowel realisations differently than 'bad' facts about Australia, and that the direction of the shift would depend on speakers' pre-existing biases toward Australia stemming from the Trans-Tasman Rivalry. Different possible outcomes of the experiment are outlined below:

a. If the facts have an effect independent of sports-fandom, we expect New Zealanders to shift toward producing Australian-like variants after being exposed to 'good' facts and either not to shift or to shift away from producing Australian-like variants after being exposed to 'bad' facts.

b. If sports-fandom has an effect independent of condition, we expect sports fans to shift toward more New Zealand-like variants after exposure to the concept of Australia, regardless of whether the facts were 'good' or 'bad'.

c. If condition and sports-fandom interact, we expect non-fans to shift in the way outlined in (a). Due to their sense of rivalry, however, we expect fans to shift toward New Zealand-like variants when exposed to 'good' facts about Australia.

d. If neither sports-fandom nor fact-type affect production, we would expect no significant effects from the facts or whether the speaker watches sport, nor would we expect an interaction between the two.

The outcomes that would be consistent with Hay and Drager's (2010) interpretation of the 'gender' effect as a 'sporting rivalry' effect are those outlined in (b) and (c). The outcome in (b) is consistent in a straightforward way; fans (like the males in our earlier studies) shift more toward New Zealand-like variants when exposed to the concept of Australia, and non-fans (like the females in our earlier studies) shift more toward Australian-like variants when exposed to the concept of Australia. However, it is impossible to know how participants in earlier studies interpreted the Australian primes: did they view the presence of the word *Australia* on the response sheet or the kangaroo in the room as a form of support of Australia on the part of the experimenter? It is certainly possible. When exposed to the concept of Australia, non-fans may shift toward Australian variants unless provided with a reason not to (e.g. 'bad' information about Australia) whereas fans (who feel negatively toward Australia already) may shift toward Australian variants unless exposed to something that would make them react defensively (e.g. 'good' facts about Australia or an experimenter who is believed to sympathise with Australia). The design of the current experiment provides a way to test the relationship between phonetic realisation, sports-fandom, and exposure to different information about Australia.

2. Methodology

The production tasks described here were conducted as part of a larger experiment that included two perception tasks. The perception tasks were identical, but one occurred prior to the production tasks and one occurred after the production portion of the experiment was completed. This paper only discusses the production results. Results from the perception tasks are reported elsewhere (Hay, Walker, and Drager under review).

The production task was made up of a wordlist and three different fact-

lists, one for each experimental condition. All participants read the wordlist, given in (1), which focussed on vowels known to differ between New Zealand and Australian English (Cox and Palethorpe 2008). The wordlist also included h-initial monophthongs to be used during vowel normalisation.

1. Wordlist:
   1) hid had hard hoard who'd hood head heard heed hud hod
   2) hit hid hint fish
   3) bat bad back bag ban
   4) bet bed beck beg Ben
   5) bark barn path laugh dance

Differences between New Zealand and Australian English realisations of the vowels in lines 2-4 of the wordlist, KIT, TRAP, and DRESS, are shown earlier in Figure 1. KIT has centralised in New Zealand and has raised (and remained front) in Australia. Thus, we predicted a shift in F2 for this vowel in our task and a possible shift in F1. In New Zealand, TRAP and DRESS are raised compared with realisations of these vowels in Australian English. Therefore, if there is a shift observed for these vowels in our experiment, we would most expect a shift in F1. However, the difference between realisations of DRESS and TRAP is below the level of consciousness for most New Zealanders (Maclagan, Gordon, and Lewis 1999), so we predicted that, if there was a shift at all, it would be smaller than the shift for KIT.

After reading the wordlist, participants were asked to read one of the fact-lists, which differed depending on the condition they were in. All participants then re-read the wordlist, so that their realisations before exposure to the facts could be compared with their realisations after reading the facts. To ensure that the facts were freshly processed prior to the repeat of the perception task, participants were asked to repeat the same fact-list they had read previously. They were not given any explanation for their repetition of tasks. For consistency, words in the wordlist were presented in the same order, shown in (1), for all participants and across both readings by each participant. Following the production and perception tasks, participants completed a questionnaire, which will be discussed shortly.

For easy reference, the order of the tasks is given below:

a) Perception task
b) Word-list reading

c) 'Facts' Reading
d) Word-list reading repeat
e) 'Facts' Reading repeat
f) Perception task repeat
g) Questionnaire

Participants were divided into three groups: a control group and two test groups. The only difference between the groups' stimuli was the list of facts which they read. All three groups were exposed to the same facts about orchids and zebras, shown in (2). Only the two test groups read facts about Australia. One of the fact-lists on Australia contained 'good' facts, the other contained 'bad' facts, and both contained the same neutral fact (*Until 2002, the smallest official town in Australia was Betoota, with a single inhabitant. When he moved, William Creek officially became the smallest town, with a population of twelve*).[3] The lists of facts about Australia are shown in (3) and (4).

2. 'Non-Australia' facts
   a) No two zebras have stripes that are exactly alike.
   b) Male zebras are called stallions.
   c) A mare labours lying on her side, while the stallion stands watch.
   d) Newborn foals are able to stand within 15 minutes of being born.
   e) The seeds produced by orchids are the smallest among all the flowering plants. They are so small that it would take thirty thousand to weigh as much as one grain of wheat.
   f) Orchids are found in nearly every climatic condition except deserts.
   g) The name 'orchid' comes from a Greek word meaning 'testicle'.

3. 'Good' facts
   a) In 2005, Australia was awarded the title of 'The World's Friendliest Nation' by the Anholt Nation Brands Index.
   b) The Great Barrier Reef in Australia can be seen from outer space and has been labelled one of the seven natural wonders of the world.
   c) The Australian government's donation of $1 billion dollars to the Tsunami relief effort was the biggest made by any country, including those with considerably bigger populations.

4. 'Bad' facts
   a) As of 2005, Australia was the world's largest emitter per capita of greenhouse gases, and has still not signed the Kyoto Protocol.
   b) The 10 most venomous snakes in the world live in Australia, and there are around 3,000 snake bites reported annually.
   c) Between 1900 and 1969 at least 100,000 Aborigine[4] children were removed from their parents by the Australian government. The official report showed that many were forcibly taken and that some parents were even told that their children had died when this was not the case.

Participants were not given any rationale for the fact-lists; they were treated simply as a production task.

Due to experimenter error, the second reading of the wordlist was not recorded for one participant in the control group. The control therefore has nine participants in the analysis of the wordlists. The two test conditions have fifteen participants each. All participants were native speakers of New Zealand English.

For each participant, a socioeconomic index (SEI) was calculated based on a combination of the scores assigned to their parents' occupations. For participants who were no longer students, the SEI was based on the score assigned to their reported occupation. Scores were based on the New Zealand Socioeconomic Indices for Occupational Status set forth by Statistics New Zealand (Davis, Jenkin, and Coope 2003).

Participants were met by the same female experimenter from New Zealand, and they were recorded in a quiet room using a head-mounted microphone. Recordings were made directly onto a Toshiba laptop with Sonic Foundry SoundForge 6.0, linked to the microphone through a USB Pre 1.5 interface. Recordings were made at a 44K sampling rate and were down-sampled to 22K prior to analysis. Using Praat, first and second formant values were taken from the midpoint of the steady state of the vowel.

In order to minimise the effect of vocal tract length on the formants' values, all analysed vowels were subjected to Lobanov normalisation (Lobanov 1971), using the formula in (5).

5. Lobanov normalisation:

$$F_{n[V]}{}^{N} = (F_{n[V]} - MEAN_n)/S_n$$

$Fn[V]^N$ is the normalised value for a given formant (n) of a particular vowel (V). MEANn is the mean value for that formant for the speaker, and Sn is the standard deviation for that formant for the speaker (see Adank, Smits, and van Hout 2004 and Langstrof 2006 for discussions of the advantages of this technique relative to other normalisation methods). The mean and standard deviation for each speaker were calculated from the first reading of line 1 in the wordlist. If the first reading included a mispronunciation, then the second reading was used. There were some speakers who misread the words *hud*, *hod* or *hoard* on both readings. These words were omitted from the calculation for all speakers so that the mean and standard deviation were calculated over a comparable set of vowels across all subjects. Lobanov normalisation values do not resemble Hertz values but are instead anchored around zero. By way of illustration, Figure 2 shows the correlation between F1 values in Hertz and the normalised values of F1 for the first readings of the KIT, DRESS and TRAP vowels from the wordlist. The two clusterings of data represent male

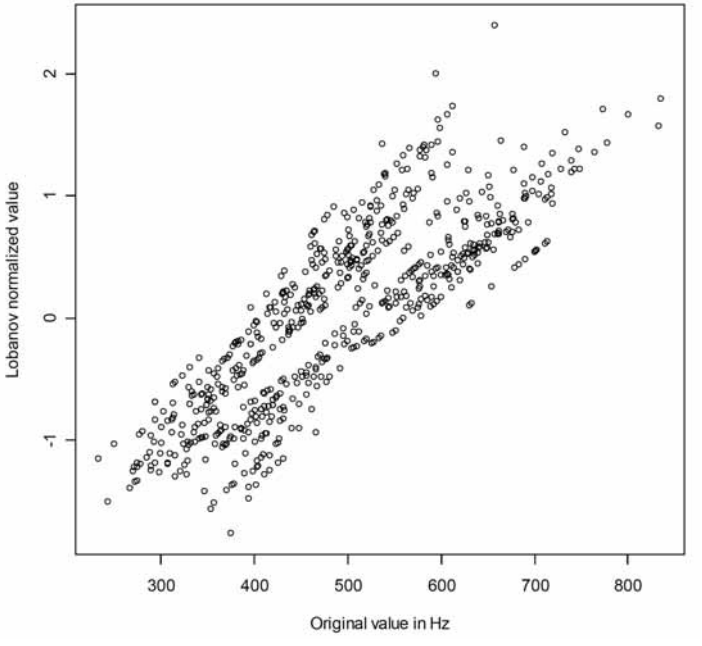

Figure 2: Relationship between non-normalised and normalised F1 values for the KIT, DRESS and TRAP vowels from the Wordlist

and female speakers. The difference between males and females is highly significant on the Hertz x-axis (Wilcoxon $p<0.0001$) but not significantly different on the normalised y-axis. This is an indication that the normalisation was successful, allowing a direct and meaningful comparison of speech from people with different vocal tract lengths. Using normalised values allows us to check whether there are any differences across 'good', 'bad', and 'control' conditions for vowel realisations during the first reading of the wordlist.

After reading the second set of facts, participants repeated the perception task and then filled out a post-experimental questionnaire designed to determine their level of exposure to Australia (for an Integration Index) and their attitude towards Australia (for an Attitude Index). For the Integration Index, questions covered time spent in Australia, relationships and contact with Australians, and Australian television shows watched (as well as how much TV was watched in general). Participants were also asked whether they followed international sport. Their response to this question ('yes' or 'no') was included in the calculation of their Australian Integration Index, but it was also used as an independent predictor of phonetic convergence.

Participants were given half or single marks depending on their responses, though double marks were awarded when a participant had recently spent a large amount of time in Australia (they were in Australia for over a year in the last five years) or if they had immediate family members who were Australians. Australian Integration Index (AII) scores ranged from 0 to 6.5. Along with other traits self-reported by the participants, the median and standard deviation of AII across the conditions is shown in Table 1.

Table 1: The distribution of participants across condition, according to reported gender and age, and calculations of Socioeconomic Index (SEI), Australian Integration Index (AII), and Australian Attitude Index (AAI)

	GOOD	BAD	CONTROL
No. of Participants	15	15	10
No. of females	9	8	5
No. from South Island	9	11	8
Age – median (sd)	19 (3.7)	20 (7.5)	19.5 (3.3)
SEI – median (sd)	119 (21.3)	109 (31.1)	88.5 (21.1)
AII – median (sd)	2 (1.2)	2 (1.7)	4.5 (1.8)
AAI – median (sd)	3.2 (4.8)	-0.3 (5.1)	-1.7 (5.4)

The questionnaire on attitude consisted of ten questions that covered issues of solidarity, politics, and sporting relations between New Zealand and Australia. Participants were shown statements and were asked to respond to each statement based on a four point scale: strongly disagree, disagree, agree or strongly agree; neutrality was not an option. Positive scores of 1 or 2 were given when the response was pro-Australia and negative scores were given when the response was anti-Australia. Australian Attitude Index (AAI) scores could potentially range from -20 to 20. Actual scores ranged from -12 to 11. The mean scores and standard deviations are shown in Table 1. Answers to the AAI questions will be discussed in more detail in the following section.

3. Questionnaire Results

The participants' responses to questions on the post-experimental questionnaire are used in the analysis of the production data. Therefore, we discuss the responses briefly below.

Regarding sports-fandom, we focused on responses to one question in particular: whether or not the participant watched international sport. For simplicity, we treat the two responses to this question as a binary divide between two groups of participants. We refer to those who reported that they watch international sport as 'sports fans' and those who do not as 'non-sports fans'.

We recognise that sports-fandom is more nuanced than it is treated here; some fans may be more invested in sport than others, they may vary in terms of which sports they are interested in, and sports fans in New Zealand may engage in the Trans-Tasman Rivalry to varying degrees. However, we believe that the assignment of fandom based on whether or not participants watched international sport is sufficient for our purposes given participants' responses to other questions on the questionnaire. Especially relevant are the questions used to calculate the Australian Attitude Index: the questions which asked participants to rate how strongly they agreed or disagreed with a statement. To investigate how fans and non-fans across the conditions differed in their responses to these questions, numerical values were assigned to each of the responses: strongly disagree = -2, disagree = -1, agree = 1, strongly agree = 2. These values were then used to calculate the average response for fans and non-fans in each condition, for each question. The average and median response value for each question is shown in Table 2; values smaller than

Table 2: Average responses to the Attitude Index statements, where -2 = strongly disagree, -1 = disagree, 1 = agree, and 2 = strongly agree. The median response is provided in parentheses.

	FANS			NON-FANS		
	GOOD	BAD	CONTROL	GOOD	BAD	CONTROL
1. In most sports, if New Zealand is not playing, then I tend to support Australia.	0.5 (1)	–0.5 (–1)	–0.17 (0)	0 (1)	–0.3 (–1)	–1.5 (–1.5)
2. In most sports, the team I most want New Zealand to beat is Australia.	1.5 (1.5)	1.3 (1.5)	0.2 (1.5)	0.3 (1)	0.6 (1)	0 (0)
3. Australia has a good human rights record.	0.8 (1)	–0.1 (–1)	–0.3 (0)	–0.6 (–1)	–1.6 (–2)	0 (0)
4. Australia is a place I'd like to go for a holiday.	1.5 (1.5)	1.1 (2)	0.8 (1)	1.4 (1)	0.4 (1)	1.3 (1)
5. Australians and New Zealanders agree on the important issues.	0.8 (1)	0.1 (0)	0.3 (1)	0.5 (1)	–0.9 (–1)	0 (0)
6. Australians and New Zealanders are very similar.	1 (1)	1.3 (1.5)	0.2 (1)	0.8 (1)	0.7 (1)	0 (0)
7. I find it annoying when people get New Zealanders and Australians confused.	–0.5 (–0.5)	0.4 (1)	0.7 (1)	0 (1)	0.4 (1)	0.8 (1)
8. I would enjoy living in Australia.	0.5 (1)	0.5 (1)	0.3 (1)	0.9 (1)	0.6 (1)	–0.3 (0)
9. Most stereotypes about Australians are false.	–0.3 (0)	0.1 (0)	–0.3 (–1)	0.3 (1)	0.4 (1)	0 (0)
10. New Zealanders and Australians have very similar accents.	1 (1.5)	0 (0)	–0.5 (–1)	–0.4 (–1)	0.4 (1)	–1.3 (–1)

zero indicate a tendency to disagree, and those over zero indicate a tendency to agree.

As shown in Table 2, participants categorised as 'fans' were more likely to indicate that they agree or strongly agree with the statement *In most sports, the team I most want New Zealand to beat is Australia* than participants who were categorised as 'non-fans'. Only two participants in the study indicated

that they strongly disagreed with this statement, and both of these (one in the 'good' condition and one in the control) were categorised as non-fans. Of the ten participants who disagreed at all with this statement, only two were categorised as 'fans' (one in the 'bad' condition and one in the control). In contrast, nine of the fourteen participants who strongly agreed with this statement were 'fans'. This distinction suggests that the 'fans' and 'non-fans' in our study differ in terms of the degree to which they are involved in the sporting rivalry with Australia; given their different responses to this question, these two groups are likely to have quite different pre-existing biases toward Australia and, as such, may behave differently in terms of their phonetic realisations when exposed to 'good' and 'bad' facts about Australia.

Comparing average responses to other questions provides evidence that exposure to the facts had some influence on explicit attitudes. Note the difference between the average responses across the 'good' and 'bad' conditions to the positive statements in (1) *In most sports, if New Zealand is not playing, then I tend to support Australia*, (3) *Australia has a good human rights record*, (4) *Australia is a place I'd like to go for a holiday*[5], (5) *Australians and New Zealanders agree on the important issues*, and (8) *I would enjoy living in Australia*. Participants exposed to the 'good' facts about Australia were more likely to agree with these positive statements than participants exposed to the 'bad' facts. Similarly, the negative statement about Australia or the participants' relationship with Australians in (7) *I find it annoying when people get New Zealanders and Australians confused* appears to have shifted; participants exposed to the 'bad' facts were more likely to agree with this statement. Two statements, (9) *Most stereotypes about Australians are false* and (10) *New Zealanders and Australians have very similar accents*, could not be categorised as positive or negative. While it is possible that subjects across the conditions happen to have differing explicit attitudes before taking part in the experiment, we believe that participants shifted their perceptions of these traits as a result of exposure to the different facts about Australia. We interpret the differences across conditions as evidence that exposure to the facts had some effect on participants' explicit attitudes, though the shift occurred differently for different topics (e.g. politics vs. sport).

The difference in responses to these positive and negative statements about Australia suggests that the participants' interpretation of the facts as 'good' or 'bad' was similar to our own. However, we remain open to the possibility that participants could react defensively to statements that present Australia in a positive light. As a result of feeling defensive, they could shift

away from producing Australian-like variants even if they provide more positive responses on the survey. In other words, participants may display shifts dependent on their (untested) implicit attitudes rather than the attitudes reported explicitly in response to the questionnaire.

4. Production Results

Before presenting results from the statistical models, we look first at the raw data. There was no shift observed for F1 of KIT, nor were there any shifts observed for TRAP or DRESS in either the F1 or F2 dimension. For this reason, only results regarding F2 of KIT will be discussed. Shown in Figure 3 are box plots of the normalised F2 values for KIT.

As shown in Figure 3, there were some differences across conditions when looking only at the first reading; both the 'bad' and the 'good' conditions have lower F2 values (i.e. more centralised and more New Zealand-like variants) than the control. This suggests that participants in the three conditions had differences in their realisations of KIT that were independent from potential effects of the experimental manipulation. This initial difference between the groups is tested statistically in Section 4.1.

Also shown in Figure 3 are differences in F2 values produced during the two different readings within each condition. When comparing F2 values between the first and second reading within each condition, there appears to be a shift between readings, but it is different for different conditions; the control showed no shift between the two readings, but both test conditions

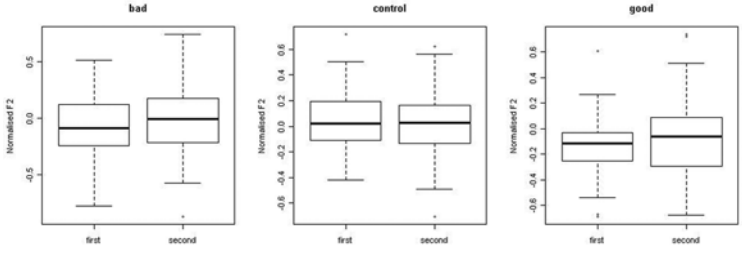

Figure 3: Normalised F2 values for first and second reading of KIT from the wordlist, across conditions. Higher values of F2 reflect more Australian-like pronunciations

shifted to more Australian-like variants following the facts. The shift was slightly greater for the 'bad' condition than the 'good' condition. This suggests that exposure to the concept of Australia shifts New Zealanders' realisations of KIT toward variants produced by Australians, regardless of which type of facts about Australia they were exposed to. This result is tested statistically in Section 4.2.[6]

4.1 Comparison across conditions of first reading

In order to test statistically the difference in KIT realisations across conditions prior to exposure to the 'good' or 'bad' facts, we fit a linear mixed effects model to the data, comparing realisations of KIT across the three conditions in the first reading of the wordlist. The normalised F2 value for KIT was treated as the dependent variable. A mixed effects model allows for the inclusion of multiple fixed effects (independent factors that can be generalised). When testing the degree of a factor's effect, it holds the other factors constant. This means that the reported effect is 'above and beyond' the effects of other factors in the model. In addition to fixed effects, mixed effects models allow the inclusion of random effects (independent factors that cannot be generalised), such as individual participants. Including the subject as a random effect in a model reduces the risk that a single individual will bias results. Table 3 shows the fixed effects from the model, with random effects for items and participants. The control condition is the default in the model. Thus, the intercept's estimate in Table 3 (0.05574) is the estimated normalised F2 value for speakers in the control condition. To determine the estimated value for the other conditions, the estimate for a non-default condition (e.g. Condition=bad) is added to the intercept's estimate. For example, the estimated normalised F2 value for speakers in the bad condition is 0.05574 + -0.1214 = -0.06566.

Table 3: Fixed effects for model of normalised F2 of KIT from first wordlist reading

	ESTIMATE	STD.ERROR	T.VALUE	PVALS
(Intercept)	0.05574	0.08567	0.6506	0.51608
Condition=bad	-0.1214	0.07282	-1.6672	0.0971
Condition=good	-0.18726	0.07282	-2.5717	0.01088

There is a significant initial difference between the 'good' and the control conditions, with participants in the 'good' condition having more New Zealand-like realisations (p=0.01). This difference is surprising because it is evident before the participants were exposed to the facts. It is possible that this result is due to chance; participants in the 'good' condition may generally produce variants of KIT that are more centralised than those produced by participants in the control. However, based on the social information that they provided, there is no reason to assume that this is the case. Realisations of these vowels are usually closely correlated with a speaker's age, gender, and socioeconomic status. As shown earlier in Table 1, participants in our experiment were closely matched across the 'good' and 'bad' conditions based on their responses to questions on the background information sheet. Furthermore, we found similar and stronger initial differences between conditions in the results of the perception task (Hay, Walker, and Drager under review). In that paper, we propose that the experimenter subconsciously adjusted her own realisations depending on the condition that she was administering and that this affected participants' behaviour, resulting in a pre-prime perception bias. If this were the case, it would have important methodological implications for experimental work on both production and perception. However, as we did not record the experimenter's interactions with the participants, this cannot be tested without further experimentation.

4.2 Comparison of shift between readings

A second mixed effects model with both subject and item as random effects was fit to the data, this time modelling the shift in F2 between the two different readings of the wordlist. The shift was calculated as the difference between the normalised value in the first reading and the normalised value in the second reading. Thus, a negative value indicates a larger F2 in the second reading of a word in comparison to the first reading. The fixed effects of the model are shown in Table 4. Higher values reflect a shift to more New Zealand-like variants.

The F2 of the participant's initial production of the word is a significant predictor of the shift. The higher the F2 value in the first reading of the wordlist, the greater the centralisation is likely to be (p<0.0001). This is not surprising and is due to a ceiling effect: if the initial realisation is already extremely centralised, it has less acoustic space in which to become even more centralised. This is not to say that centralised tokens could not shift at all, but that the shift would not be as extreme. In contrast, initial realisations that are

not centralised have a greater amount of acoustic space in which they could centralise under the right circumstances. There is also a much smaller and weaker effect of F1.[7] Participants with lower F1 values (higher KIT vowels) were more likely to shift their vowel back (p=0.05). Taken together, the two formant results indicate that participants who started with less central vowels were more likely to centralise (through backing) than participants who started with more central vowels.

Table 4: Fixed effects for model of shift in normalised KIT F2 across wordlist readings

	ESTIMATE	STD.ERROR	T.VALUE	PVALS
(Intercept)	-0.0762	0.0462	-1.65	0.1007
normalised F1 of first reading	0.0638	0.0304	2.10	0.0372
normalised F2 of first reading	0.2772	0.0610	4.55	<0.0001
non-sport	0.0936	0.0544	1.72	0.0873
condition = control	0.1195	0.0565	2.12	0.0356
condition = good	0.1373	0.0647	2.12	0.0351
non-sport: condition = control	-0.1753	0.0913	-1.92	0.0564
non-sport: condition = good	-0.1823	0.0823	-2.22	0.0102

There is also a significant effect of condition, and it interacts with whether the participant has reported that they follow international sport. The model's predictions for this interaction are shown in Figure 4.

For sports fans, the 'bad' facts cause a significantly greater shift toward Australian variants (relative to the control, and to the 'good' facts), whereas for non-fans, the 'good' facts cause a greater shift toward Australian variants relative to the 'bad' facts. Note that the status of the control appears strange for the non-fans, but this should be interpreted with caution. Because categorisation based on sports-fandom was post-hoc – and because we had only nine participants in the control condition – there were only four non-fans in the control condition. Hence, for the non-fans, the difference between the 'good' and the 'bad' is significant, but the difference between the 'control' group and the other two groups is not. For sports fans, 'control' and 'good' differ significantly from 'bad' but not from each other. For groups exposed to facts about Australia, there is a significant difference between shifts in

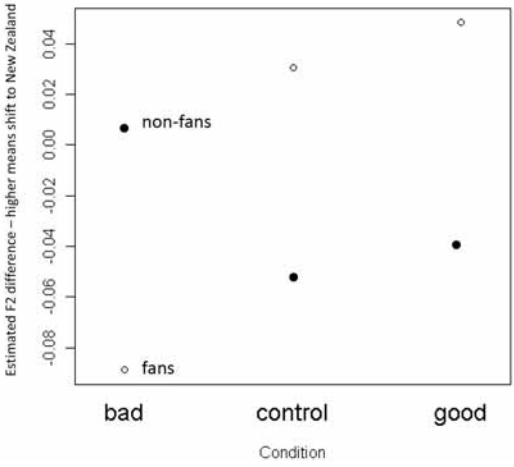

Figure 4: Model's prediction of effect of interaction between condition and sports-fandom. The open circles represent the estimated value for participants who follow international sports. The filled circles represent the estimated values for participants who do not.

the two readings of the wordlist depending on whether the participants were exposed to the 'good' or 'bad' facts, and the direction of the shift depends on whether the participant indicated that they follow international sport. This differs from the results of our perception experiments, which demonstrate an effect of gender, where males are more likely than females to diverge in their perception from Australian variants (Hay, Nolan, and Drager 2006; Hay and Drager 2010). However, when participant gender is included in the production model in lieu of sports-fandom, males shift in the same direction as fans and females in the same direction as non-fans (p=.07). Because gender is a weaker predictor of shift than is sports-fandom, there is statistical motivation to include sports-fandom as a predictor instead of gender. This finding provides reinforcement to Hay and Drager's (2010) speculation that the interactions they observed with gender may boil down to a sporting rivalry.

There is, however, a potential confound in the data which needs to be addressed: fans in the 'good' condition were more likely to agree with the statement that Australians and New Zealanders have similar accents, while non-fans in the 'good' condition were more likely to disagree. This tendency is evident in the average values presented earlier in Table 2. If included in the model instead of the interaction between sports-fandom and condition,

perception of accent similarity is also a significant predictor of shift in F2 of KIT. It is possible that the result that we attribute to sports-fandom is in actuality related to the participants' belief regarding the degree of similarity between New Zealand and Australian accents. However, it seems unlikely that, by chance, we have sampled individuals with perceived accent similarity that lines up with sports-fandom and experimental condition so exactly. Responses to a question on perceived accent similarity are likely to be more malleable (i.e. affected by exposure to facts) than responses to a question about whether the participant watches international sport. It is possible that beliefs regarding accent similarity were differently influenced by the facts, in a way that was mediated by sports-fandom. Our data do not allow us to fully untangle this, but it is an intriguing question for future research.

In sum, the results provide evidence of an initial difference between the different conditions before the experimental manipulation took place. This may be due to coincidence or could be a result of experimenter bias. Additionally, we observed a shift across the two readings of the wordlist, and the shift is not an artefact of the differences across conditions observed for the first reading. The initial productions are themselves incorporated in the statistical model of the shift, which effectively removes their influence from the effect of condition. Furthermore, the shift between readings appears to be affected by sports-fandom, but the initial starting differences are not.

5. Discussion

Between the two readings of the wordlist, sports fans shifted their production of KIT to more Australian-like variants in the 'bad' condition relative to the 'good' condition, whereas participants who were not fans of international sport displayed the opposite pattern. The shift in realisations was observed despite the fact that the speakers did not interact with anyone from Australia; exposure to the concept of another dialect region seems to have been enough to cause a shift.

Exposure to the good and bad facts appears to have affected sports fans and non-fans differently. Non-fans who read 'good' facts about Australia produced variants that were more raised (more 'Australian-like'). We believe that their attitudes (and, as a result, their phonetic realisations) shifted in the expected direction after reading the facts because they did not already have strong attitudes linked to a sporting rivalry. The sports fans, on the other hand,

already had a strong sense of rivalry with Australia: all fans in the 'good' fact condition and all but one fan in the 'bad' condition reported that the sport team they most wanted New Zealand to beat was Australia. After reading the 'good' facts, the fans adopted more centralised New Zealand-like variants of KIT in the wordlist.

We assume that, as a group, sports fans have a different baseline attitude toward Australia than non-fans; sports fans' baseline attitude toward Australia is likely to be more competitive and possibly more negative, whereas the non-fans are starting from a more neutral baseline attitude. When the fans are primed with good facts about Australia, they react defensively, activating a strong Kiwi identity and, as a result, more Kiwi vowels. When we prime them with bad facts about Australia, this elicits a shift toward Australia via mention. That is – for the sports fans – the bad facts simply prime 'Australia'.

The non-fans start from a different baseline position. Their starting point is more neutral, so exposure to bad facts about Australia introduces (or increases) negativity toward Australia. This increased negativity results in a shift toward NZ exemplars, relative to the 'good' and 'control' conditions. Finally, when non-fans are primed with good facts, this produces some positive priming of Australia, resulting in a shift toward Australia. Of course, whether both of these shifts are responsible for the pattern of the non-fans in our data is difficult to ascertain, given the unstable status of the 'control' for the non-fans. The control is not significantly different from either the good or the bad facts, but the good and the bad facts are significantly different from each other. From this we can infer that at least one of the two above priming effects is occurring, and quite possibly both.

What we cannot know from this data is the exact mechanism through which dissociative effects occur. Inhibition is one possibility. In an account with inhibition, negative orientation to a certain group involves active inhibition of phonetic representations that are associated with that group. Phonetic representations that are not inhibited are then activated during production, shifting the variant produced. Another possibility, however, is that negative orientation causes an increased desire to project an identity that is different from the group from which one wishes to dissociate. That is, negative orientation toward Australia may cause a display of Kiwi pride, resulting in a greater amount of activation of representations that, in our case, signify a centralised variant. This, too, would cause a shift in production, without any inhibition having taken place.

6. Conclusion

The main finding from this study is that production of speech, like perception, appears to shift automatically in relation to a dialect at the mere mention of that dialect; dialect convergence and divergence does not require that the dialect be that of an interlocutor. This supports previous work on referee design (Bell 1984; Hay, Jannedy, and Mendoza-Denton 1999), and it raises questions regarding the degree to which a speaker's malleable attitudes toward a group interact with social biases and different vowels. Our results demonstrate the complexity of the manner and direction of phonetic shifts as well as the complexity of the shifts' relationship with a speaker's predisposition, such as feelings of rivalry stemming from sports-fandom. Thus, we suspect that this experiment marks the beginning of a long (and complex) research program.

Notes

1 We would like to thank the people who participated in this study. We are also grateful for helpful comments from Paul Warren, Andy Gibson, James Grama, Katherine Irwin, Ashley Maynard, Aaron Nolan, Loriena Yancura, the University of Canterbury Sociolinguistics Discussion Group, and two anonymous reviewers. Of course, all errors remain our own.

2 Our data necessitate the use of gradient phonetic variables but not more nuanced social information. A gradient treatment of social information in models of speech production and perception can be found elsewhere (Drager, 2009, in press; Munson 2010).

3 The classification of the facts as 'good' or 'bad' was done solely by the authors. As suggested by a reviewer, it is possible that some of the facts may have been interpreted differently by the participants.

4 Within an Australian context this word is negatively loaded, with 'Aboriginal' strongly preferred. However, the word is not marked in a New Zealand context, and this usage would not have struck our participants as offensive or loaded.

5 The median values do not provide evidence of a trend in this direction and, in fact, demonstrate a trend in the opposite direction for fans.

6 Also evident in Figure 3 is greater variability of F2 in the 'good' condition during the second reading of the wordlist. This variability can be understood within the context of the interaction between condition and sports-fandom in the statistical model.

7 Both F1 and F2 are included as control variables in the model of the shift.

References

Adank, Patti, Roel Smits, and Roeland van Hout. 2004. 'A comparison of vowel normalization procedures for language variation research.' *Journal of the Acoustical Society of America* 116: 3099–3107.

Babel, Molly. 2009. 'Phonetic and social selectivity in speech accommodation.' Unpublished PhD dissertation. Berkeley, U.S.: University of California, Berkeley.

Babel, Molly. 2010. 'Dialect convergence and divergence in New Zealand English.' *Language in Society* 39(4): 437–456.

Bell, Allan. 1984. 'Language style as audience design.' *Language in Society* 13(2): 145–204.

Bell, Allan. 2001. 'Back in style: reworking audience design.' In Penelope Eckert and John R. Rickford (eds) *Style and Sociolinguistic Variation*. Cambridge: Cambridge University Press. 139–169.

Bourhis, Richard and Howard Giles. 1977. 'The language of intergroup distinctiveness.' In Howard Giles (ed) *Language, Ethnicity and Intergroup Relations*. London: Academic Press. 119–135.

Coney, Sandra. 1993. *Standing in the sunshine: A history of New Zealand women since they won the vote*. Auckland: Viking.

Coupland, Nikolas. 2008. 'The delicate constitution of identity in face-to-face accommodation: A response to Trudgill.' *Language in Society* 37: 267–270.

Coupland, Nikolas, Justine Coupland, Howard Giles, and Karen Henwood. 1988. 'Accommodating the elderly: Invoking and extending a theory.' *Language in Society* 17: 1–41.

Cox, Felicity and Sallyanne Palethorpe. 2008. 'Reversal of short front vowel raising in Australian English.' Proceedings of Interspeech 2008. Brisbane. 342–345

Crawford, Scott A. G. M. 1995. 'Rugby and the forging of national identity.' *Sport, Power and Society in New Zealand: Historical and contemporary perspectives*. Sydney: ASSH Studies in Sport History 11. 5–20.

Davis, Peter, Gabrielle Jenkin, and Pat Coope. 2003. NZSEI-96: *An update and revision of the New Zealand Socioeconomic Index of Occupational Status*. Wellington: Statistics New Zealand.

Drager, Katie. 2009. 'A sociophonetic ethnography of Selwyn Girls' High.' Unpublished PhD dissertation. Christchurch, N.Z.: University of Canterbury.

Drager, Katie. in press. 'Speaker age and vowel perception.' To appear in *Language and Speech*.

Eastman, Carol M. and Roberta F. Stein. 1993. 'Language display: authenticating claims to social identity.' *Journal of Multilingual and Multicultural Development* 14(3): 187–202.

Garland, Ron, Terry Macpherson, and Kay Haughey. 2004. 'Rugby fan attraction factors.' *Marketing Bulletin* 15(3): 1–12.

Giles, Howard. 1973. 'Accent Mobility: A model and some data.' *Anthropological Linguistics* 15: 87–105.

Giles, Howard, Nikolas Coupland, and Justine Coupland. 1991. 'Accommodation Theory: Communication, context, and consequence.' In Howard Giles, Justine Coupland, and Nikolas Coupland (eds) *Contexts of Accommodation: Developments in Applied Sociolinguistics*. Cambridge: Cambridge University Press. 1–68.

Giles, Howard and Peter F. Powesland. 1975. *Speech Style and Social Evaluation*. London: Academic Press.

Greenwald, Anthony G. and Mahzarin R. Banaji. 1995. 'Implicit social cognition: Attitudes, self-esteem, and stereotypes.' *Psychological Review* 102: 4–27.

Hay Jennifer and Katie Drager. 2010. 'Stuffed toys and speech perception.' *Linguistics* 48: 865–892.

Hay, Jennifer, Stefanie Jannedy, and Norma Mendoza-Denton. 1999. 'Oprah and /ay/: lexical frequency, referee design and style.' Proceedings of the 14th International Congress of Phonetic Sciences, San Francisco.

Hay, Jennifer, Aaron Nolan, and Katie Drager. 2006. 'From fush to feesh: Exemplar priming in speech perception.' *The Linguistic Review* 23: 351–79.

Hay, Jennifer, Abby Walker, and Katie Drager. under review. 'Divergence in speech perception.'

Labov, William. 2001. *Principles of Linguistic Change: Social factors*. Oxford: Blackwell.

Labov, William. 2006. 'A sociolinguistic perspective on sociophonetic research.' *Journal of Phonetics* 34: 500–515.

Lahiri, Aditi and Henning Reetz. 2002. 'Underspecified recognition.' In Carlos Gussenhoven and Natasha Warner (eds) *Laboratory Phonology* 7. Berlin: Mouton. 637–676.

Langstrof, Christian. 2006. 'Vowel change in New Zealand English: Patterns and implications.' Unpublished PhD dissertation. Christchurch, N.Z.: University of Canterbury.

Lobanov, Boris M. 1971. 'Classification of Russian vowels spoken by different listeners.' *Journal of the Acoustical Society of America* 49: 606–08.

Maclagan, Margaret A., Elizabeth Gordon, and Gillian Lewis. 1999. 'Women and sound change: conservative and innovative behaviour by the same speakers'. *Language Variation and Change* 11: 19–41.

Munson, Benjamin. 2010. 'Levels of phonological abstraction and knowledge of socially motivated speech-sound variation: A review, a proposal, and a commentary on the papers by Clopper, Pierrehumbert, and Tamati, Drager, Foulkes, Mack, and Smith, Hall, and Munson'. *Laboratory Phonology* 1: 157–77.

Nauright, John. 1995. 'Netball, media representation of women and crisis of male hegemony in New Zealand'. *Sport, Power and Society in New Zealand: Historical and contemporary perspectives*. Sydney: ASSH Studies in Sport History 11: 47–65.

Norris, Dennis and James M. McQueen 2008. 'Shortlist B: a Bayesian model of continuous speech recognition.' *Psychological Review* 115(2): 257–395.

One Sport. 2005. 'Top ten sporting rivalries'. http://tvnz.co.nz/content/600020/2422056/article.html

Phillips, Jock. 1996. 'The hard man: Rugby and the formation of male identity in New Zealand.' In John Nauright and Timothy J L Chandler (eds) *Making men: Rugby and masculine identity*. London: Routledge. 70–90.

Pierrehumbert, Janet. 2001. 'Exemplar dynamics: Word frequency, lenition and contrast.' In Joan Bybee and Paul Hopper (eds) *Frequency effects and emergent grammar*. Amsterdam: John Benjamins. 137–158.

Pierrehumbert, Janet. 2006. 'The next toolkit.' *Journal of Phonetics* 34: 516–530.

Schilling-Estes, Natalie. 2002. 'Investigating Stylistic Variation.' In Jack. K. Chambers, Peter Trudgill, and Natalie Schilling-Estes (eds) *The Handbook of Language Variation and Change*. Oxford: Blackwell Publishing. 376–401.

Smith, Adrian. 2004. 'Black against gold: New Zealand-Australia sporting rivalry in the modern era.' In Dilwyn Porter and Adrian Smith (eds) *Sport and National Identity in the Post-War World*. London/New York: Routledge. 168–193.

Snyder, Mark. 1981. 'On the self-perpetuating nature of social stereotypes.' In David L. Hamilton (ed) *Cognitive Processes in Stereotyping and Intergroup Behavior*. Hillsdale, New Jersey: Lawrence Erlbaum.

Thackerar, Jitendra N. and Howard Giles. 1981. 'They are – so they spoke: noncontent speech stereotypes.' *Language and Communication* 1(2/3): 255–261.

Trudgill, Peter. 2008. 'Colonial dialect contact in the history of European languages: on the irrelevance of identity to new-dialect formation.' *Language in Society* 37: 241–280.

Watson, Catherine, Jonathan Harrington, and Zoe Evans. 1998. 'An acoustic comparison between New Zealand, and Australian English vowels.' *Australian Journal of Linguistics* 18(2): 185–207.

Wells, John C., 1982. *Accents of English*. Cambridge: Cambridge University Press.

Yabar, Yanelia, Lucy Johnston, Lynden Miles, and Victoria Peace. 2006. 'Implicit behavioural mimicry: investigating the impact of group membership.' *Journal of Nonverbal Behavior* 30(3): 97–113.