

**Identity, accent aim, and motivation in second language users:
New Scottish Gaelic speakers' use of phonetic variation**

¹Claire Nance, ²Wilson McLeod, ³Bernadette O'Rourke and ²Stuart Dunmore

¹Lancaster University, ²University of Edinburgh, ³Heriot-Watt University

Abstract

This paper examines the use of phonetic variation in word-final rhotics among nineteen adult *new speakers* of Scottish Gaelic, i.e. speakers who did not acquire the language through intergenerational transmission. Our speakers learned Gaelic as adults and are now highly advanced users of the language. We consider variation in their rhotic productions compared to the productions of six older traditional speakers. Previous approaches to variation in second language users have either focussed on how variable production will eventually result in native-like 'target' forms (Type 1 study), or have investigated the extent to which second language users reproduce patterns of variation similar to 'native speakers' (Type 2 study). We additionally draw on sociocultural approaches to Second Language Acquisition and apply notions of accent aim, identity construction and learning motivation in order to fully explore the data. In doing so, we advocate a 'Type 3' approach to variation in second language users.

Keywords: New speakers, second language users, rhotics, Scottish Gaelic, Type 3 variation, accent aim

Running title: Identity, accent aim, and motivation in L2 users

Geàrr-chunntas

Bheir am pàipear seo sùil air caochlaideachd fhògharach an cois fhuaimnean le ruis (/r/) dheireannach am measg naoi deug luchd-labhairt ùra na Gàidhlig, i.e. luchd-labhairt nach do thog a' Ghàidhlig tro thar-chur eadar-ghinealach. Dh'ionnsaich an luchd-labhairt seo a' Ghàidhlig nan inbhich, agus tha iad uile a' cleachdadh na Gàidhlig aig ìre àrd san latha an-diugh. Sa phàipear seo bheir sinn sùil air caochlaideachd nan ruisean aig an luchd-labhairt seo ann an coimeas ris a' chleachdadh a tha aig sia luchd-labhairt dualchasach na Gàidhlig a tha nas sine. Gu ruige seo tha rannsachadh air caochlaideachd am measg luchd-labhairt dàrna cànan air fòcas a chur air mar a dh'fhàsas caochlaideachd chànanach nas fhaisge air cleachdaidhean dualchasach na cànan 'targaid' (sgrùdadh Seòrsa 1), no air an ìre gus an cleachdar pàtran dualchasach caochlaidh le luchd-labhairt den t-seòrsa ud (sgrùdadh Seòrsa 2). A thuilleadh air sin cleachdaidh sinn bun-bheachdan sòisio-chultarach ann an Togail Dàrna Cànan san sgrùdadh againn, a' cleachdadh amasan dualchainnt, cruthachadh fèin-aithne agus adhbharan ionnsachaidh airson rannsachadh iomlan a dhèanamh air an dàta. Na lùib, molaidh sinn sgrùdadh 'Seòrsa 3' airson rannsachadh air caochlaideachd chànanach am measg luchd-labhairt na dàrna cànan.

1 Introduction

A wide and growing body of literature in SLA takes a variationist perspective on second language learners. Initially, variationist SLA studies considered variable production by learners in contexts where native level speakers would not vary. For example, Tarone (1985) investigates the use of morphosyntactic variables in contexts where they are considered obligatory in (most) native varieties of English such as third person singular *-s* on present tense verbs, noun plural *-s*, and use of the article. The assumption behind such studies is that although L2 speakers display variable productions, with sufficient learning experience they would use the ‘native-like’ form 100% of the time and reflect ‘correct’ usage (e.g. Tarone 1985; Bayley and Preston 1996). Such studies are what Mougeon et al. (2004) refer to as a *Type 1* study of variation (see also Adamson and Regan 1991).

A more recent approach is a *Type 2* study of variation, which investigates variables which are known to vary among native users of the language. That is to say, the acquisition of native speaker-like patterns of variable usage. Much of this research is conducted in a context of L2 acquisition of French in a variety of settings (e.g. Sankoff, Thibault, Nagy, Blondeau, Fonollosa and Gagnon 1997; Mougeon et al. 2004; Regan and Ní Chasiade 2010). Notable exceptions to the French dominance of this field include studies of Polish migrants to the UK and Ireland (Drummond 2011; 2012; Schleef, Meyerhoff and Clark 2011; Nestor, Ní Chasaide and Regan 2012), and Durham’s (2014) study of English as a Lingua Franca in Switzerland.

Such studies employ variationist methodologies to compare second language users to native speakers and examine a variety of social and linguistic factors across the two

groups. For example, Mougeon et al. (2004) investigate the French of immersion school students in Canada compared to native speakers. They investigated a variety of features which were known to vary in L1 French usage such as schwa deletion, /l/ deletion, lexical variation and use of the periphrastic future. Their results suggested that immersion students use vernacular variants sparingly or not at all, for example *rester* for 'to live'. Similarly, immersion students used variants considered to be 'mildly marked', such as /l/ deletion, at substantially lower rates than L1 French speakers. In other words, their results suggest that immersion students do not use variable features at the same rates as L1 speakers. In their conclusion, Mougeon et al. (2004:427-8) state that the sociolinguistic competence of immersion students is 'considerably below' native speakers, and that 'exposure is not intense enough to promote native-like frequency' of variant usage. The underlying assumption here is that the gold-standard model of production, either in terms of one ideal form (Type 1 studies), or in terms of frequency of variant usage (Type 2 studies), is the native speaker, and the implication is that learners are ultimately aiming to sound like native speakers.

This model of the ideal production being the native speaker is reflective of early approaches to motivation in SLA. Previously, it was thought that learners would want to integrate into native speaker communities, and acquire all aspects of the community's language and culture (integrationist model, e.g. Gardner and Lambert 1972; Masgoret and Gardner 2003). More recent motivation research has expanded the integrationist model somewhat (e.g. Dörnyei and Ushioda 2009). Dörnyei and colleagues now suggest that the 'ideal self' (the person we want to be) and the 'ought-to self' (the person society and family expect us to be) are more important motivators.

The integrationist model is not excluded from this recent theoretical development: for some speakers the ‘ideal self’ may be as a native speaker (Marx 2002; Piller 2002), whether of a ‘standard’ or ‘non-standard’ variety (Goldstein 1987). For others, however, the ideal self might be as a bicultural bilingual individual, who has combined aspects of both cultures and languages (Cook 1999). Similarly, research into English teaching also indicates that it is inappropriate for many international English learners to aim to sound like English native speakers, but a more appropriate target variety reflects an international, multilingual identity (e.g. Jenkins 2000; 2007). Indeed, such frameworks contest the idea of ‘native speaker’ models entirely (Davies 2003).

In this paper we aim to build on the Type 1 and Type 2 approaches to variationist SLA studies, and incorporate the insights from motivational research suggesting that the ‘native speaker’ model may not always be the target and that advanced second language users may wish to construct an identity that reflects the diversity of their background. This is not to say that all L2 users reject native speaker targets, but we aim to demonstrate that they may be aiming for a variety of targets, and that sociolinguistic work considering identity construction as an L2 user can shed light on these aims and motivations. Such a perspective is widely applied in sociocultural SLA work (e.g. Norton 2000; for a recent reviews see Miller and Kubota 2013), and some variationist work has also already suggested such factors might be relevant. For example, Rindal (2010) explicitly considers the accent that her Norwegian learners of English are aiming towards. She finds that some participants aim to sound like British English speakers, while some aim to sound like American English speakers. Interestingly, some also aimed to sound Norwegian, or ‘neutral’ (Rindal and Piercy

2013). Similarly, Nagy, Blondeau and Auger (2003: 99) states that some speakers may not acquire native-like variation patterns in Canadian French as they wish to express an L1 English identity, and Wolfram, Carter and Moriello (2004) show that some L1 Spanish individuals in North Carolina adopt local dialect forms in English when they adopt local cultural values. Drummond (2012) suggests that the use of a Polish-influenced variant of *-ing* may be due to his speakers signalling an allegiance with L1 speakers of Polish, and Nestor et al. (2012) found substantial interspeaker variation in their study of Polish speakers of Irish English and suggest this is due to them using discourse *like* for social-stylistic work. This approach, which incorporates an insight into the aims and identity construction of the L2 user, we refer to as a *Type 3* study of variation in L2 users.

In the remainder of this paper we investigate word final rhotic variation among in two communities of adult Scottish Gaelic speakers: adult L2 users in Edinburgh and Glasgow and older speakers from a traditional Gaelic-speaking heartland area, the Isle of Lewis. In the next section, we introduce the context of adult Gaelic speakers in Lowland Scotland, and the variables under investigation. Section 3 outlines the participants and our methods. In Sections 4-5 we conduct three analyses: first, we examine the extent to which Gaelic L2 users recreate the phonemic distinctions found in traditional Gaelic (Section 4.1), in a similar manner to what has previously been referred to as a *Type 1* study of variation (e.g. Tarone 1985). Second, in Section 4.2, we examine whether new patterns of variable usage may be emerging in L2 communities, similar to what has previously referred to as a *Type 2* study of variation (e.g. Mougeon, Rehner and Nadasdi 2004). Third, we explore how identity construction and accent aim as an L2 user may affect production (Section 5). Some

previous work has taken this approach (e.g. Rindal 2010), but we expand the concept drawing on recent theories of motivation from Second Language Acquisition (e.g. Dörnyei and Ushioda 2009) to demonstrate why and how, in terms of production, some highly proficient L2 users may wish to diverge from native speaker models. We refer to this approach as a Type 3 study of variation. We bring together our results in the Conclusions (Section 6).

2 Context and features

2.1 Adult new speakers of Gaelic in Glasgow and Edinburgh

Here, we investigate the context of adult new speakers of Gaelic. New speakers of minority languages are those who did not acquire the language through traditional intergenerational transmission in the home, but instead acquired it through immersion education, adult education or other formal or informal means (O'Rourke and Pujolar 2013). An expanding body of literature has considered the ideological construction of new speakers across a variety of European contexts, but less studied are the linguistic forms employed by new speakers (see O'Rourke, Pujolar and Ramallo 2015 and other studies cited within for examples of previous work conducted within a new speaker framework). The criteria used here to differentiate new speakers and typical second language users are mainly social and political. For example, there tends to be no monolingual 'homeland' where the minority language is spoken as a politically and socially dominant language, so for new speakers, minority language bilingualism will always represent the community norm. Secondly, in many cases new speakers may represent an important proportion of the total speakers of the language. Manx and Cornish provide an extreme example of this pattern, where the only speakers are new speakers (Ó hIfearnáin 2015). New speakers, then, are seen as a vital asset in the

future of the language they have learned. Thirdly, new speakers often occupy greater positions of authority in the language's social hierarchy than many second language users would do. For example, the participants in this study came from professions such as immersion school teaching, translation, language officers and other positions requiring extensive expertise in Gaelic. As such, new speakers are often in positions requiring them to present an authoritative view on what Gaelic should be, unlike many contexts of second language users (see also O'Rourke and Ramallo 2011; O'Rourke and Pujolar 2013).

This study focuses on new Gaelic speakers in Glasgow and Edinburgh, Scotland's urban central belt. Glasgow is the largest city in Scotland, and Edinburgh is the capital city. Gaelic-speaking migrants have been drawn to these urban lowland areas for centuries looking for work, but more recently new speakers have started learning Gaelic in significant numbers in these cities as they are the location of many Gaelic revitalisation measures and thus Gaelic-essential employment and learning opportunities (Withers 1998; McLeod 2006; Nance 2015). The most recent census in 2011 suggested that around 30% of Gaelic-speakers live in lowland central Scotland. Exactly how many of these are new speakers is unknown, since the census data does not allow specific exploration of this question, and no other sociolinguistic surveys are available.

Our participants are new Gaelic speakers in Glasgow and Edinburgh who participate, along with 'traditional' speakers, in wider Gaelic-speaking networks in the two cities which may be classified as 'communities'. Previous linguistic studies of variation in new communities have considered the establishment of long-term multi-generational

communities where new varieties have developed (e.g. Kerswill and Williams 2000; Gordon, Campbell, Hay, Maclagan, Sudbury and Trudgill 2004; Cheshire, Kerswill, Fox and Torgersen 2011). In the Lowland Gaelic context however, what we currently observe is a community of practice (e.g. Wenger 1998), where many speakers use Gaelic in their work and attend a range of social and cultural events in the expectation that Gaelic will be used and other Gaelic speakers will be present.

The practice-based nature of the Lowland Gaelic community is explored by Theo in the extract below. Theo is from Glasgow originally and learned Gaelic as an adult through a mixture of courses and some time at the Gaelic college on Skye. He now works in a position requiring authoritative use of Gaelic. Theo says that whether or not there is a community depends on what you mean by ‘community’, suggesting that the communities of practice in Glasgow and Edinburgh are not the same as traditional Gaelic-speaking villages of times gone by. At the end, Theo says he dislikes the word ‘community’ entirely, which we assume is because of its typically exclusionary, essentialist use in relation to ‘traditional’ rural Gaelic communities. This demonstrates that in Gaelic development circles, there is some questioning and debate over what a community should constitute, presumably due to the non-traditional nature of many Gaelic-speaking contexts today (see also Munro, Taylor and Armstrong 2011).

Extract 1

Tha clubaichean oidhche ann is rudan mar sin, you know?	<i>There's evening clubs and things like that, you know?</i>
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<i>Ceòl is Craic</i> is <i>Am Bothan</i> is rudan mar sin, so tha coimhearsnachd ann, gu h-	<i>Ceòl is Craic [Glasgow Gaelic music night] and Am Bothan [Edinburgh</i>
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àraid ann an Dùn Èideann.	<i>traditional music venue] and stuff like that, so there is a community, especially in Edinburgh.</i>
Ann an Glaschu tha daoine ann a chì mi gu tric.	<i>In Glasgow there's people I see often.</i>
Cùisean na Gàidhlig agus so tha mi faireachdainn gu bheil coimhearsnachd ann.	<i>For Gaelic stuff and so I think there is a community there.</i>
Aig an aon àm, tha mi faireachdainn nach eil coimhearsnachd ann, eil fhios agad?	<i>At the same time, I think that there isn't a community, you know?</i>
So, tha e a' crochadh air na tha thu a' ciallachadh le 'coimhearsnachd'.	<i>So, it depends on what you mean by 'community'.</i>
Is beag orm am facal 'coimhearsnachd'.	<i>I hate the word 'community'.</i>

2.2 Word final rhotics in Scottish Gaelic

In this investigation into adult new speakers of Gaelic, we aim to compare production of word-final rhotics between new and traditional speakers. Word-final rhotics were chosen for analysis for the following reasons: Gaelic has a complex rhotic system, with reports suggesting that there are three phonemic rhotics in the language, compared to English's single rhotic. Secondly, variation in word-final rhotic production is an important feature which distinguishes varieties of English so we expected some interesting potential variation among participants, most of whose first language was English.

Dialects of Gaelic are described as traditionally having three phonemic rhotics, a relic from a four-way system in Old Irish. These are: a velarised trill /r^v/, an alveolar tap /ɾ/, and a palatalised tap or dental fricative /rʲ/ or /ð/ (Borgstrøm 1940, 1941; Oftedal 1956; Ladefoged, Ladefoged, Turk and Skilton 1998; Ternes 2006). Of these sources Borgstrøm, Oftedal and Ternes are dialect surveys; Borgstrøm refers to a variety of locations across Gaelic-speaking Scotland, Oftedal surveyed Lewis, and Ternes surveyed Ross-shire on the mainland. Ladefoged et al. (1998) is an acoustic study based on data from Lewis. The realisation of the palatalised rhotic is reported to vary widely, but is usually produced as a dental fricative in Lewis (Borgstrøm 1940). Which rhotic belongs to which phonemic category is shown in orthography, and we used orthographic criteria in our analysis to determine which category rhotics belonged to. In word final position, palatalised rhotics are preceded by an orthographic *-i* or *-e* e.g. *air* ‘on’ /ɛrʲ/; velarised rhotics are shown by a double *-rr* e.g. *tòrr* ‘lots’ /tʰɔ:r^v/; and alveolar rhotics are those preceded by an orthographic *-a*, *-o* or *-u* e.g. *ùr* ‘new’ /u:r/.

While the sources cited above suggest that there are three rhotic phonemes in all dialects, there is some anecdotal suggestion that the velarised and alveolar rhotics have merged, but this has yet to be empirically tested. In our analyses discussed below, we found that the velarised rhotic occurs infrequently compared to the other two rhotics, which may have led to the merger or perception of a merger taking place. Also, the distinction between rhotic phonemes has a low functional load and is not essential for communication. As regards the contrast between palatalised and alveolar rhotics, there is a small number of minimal pairs such as *làr* /l̥ʲa:r/ ‘floor’ and *làir* /l̥ʲa:r/ ‘mare’, and the contrast is important in distinguishing the nominative and

genitive cases, for example, *màthair* /ma:həɹi/ ‘mother’ (nominative), but *taigh na màthar* /ma:həɹ/ ‘the mother’s house’ (genitive). There are multiple cues to the genitive nature of the phrase *taigh na màthar*: first, word order, second the genitive definite article *na*, and third the rhotic is (phonemically) alveolar rather than the nominative (phonemically) palatalised. So if a speaker does not contrast alveolar and palatalised rhotics, the sentence would still be understandably genitive. A second potential strategy for realising the genitive would be in an analytic fashion such as *an taigh aig a’ mhàthair*, literally ‘the house at the mother’. This is increasingly common in spoken Gaelic, at least among new speakers. All in all, the phonemic contrast between these rhotics can be lost with little or no communicative inconvenience.

3 Methods

3.1 Participants

The speakers in our study are broadly representative of the adult new speaker communities in Glasgow and Edinburgh. We present data from nineteen adult new speakers, who are compared to six older traditional speakers from the Isle of Lewis, a Gaelic heartland area off the north-west coast of Scotland. The new speakers learned Gaelic, mainly as adults, through a variety of methods including university courses, night school, other community courses, on the job learning, or some time living in Gaelic heartland areas. None had Gaelic-speaking childhoods, though two decided to begin speaking Gaelic to their relatives as adults. About half of the sample had spent a year or more doing an intensive immersion Gaelic course at Sabhal Mòr Ostaig, the Gaelic college on Skye. All were highly proficient and frequent Gaelic users; indeed some reported using more Gaelic than English in their daily lives. The speakers were from a variety of backgrounds including lowland Scotland, highland Scotland,

England, Germany, Australia, Ireland, and the USA. Most of our speakers used Gaelic in their work. A table summarising the approximate age, gender and background of the participants is in Table 1.¹

Our older traditional speakers were born and brought up on the Isle of Lewis, the largest and most north-westerly island in the Outer Hebrides. We chose Lewis speakers as a comparison as Lewis is the location of the densest concentration of Gaelic speakers with around 60% of the island's inhabitants having some knowledge of Gaelic. The Lewis dialect is frequently heard in Gaelic-language media due to the large numbers of Lewis speakers available and the location of several media facilities in the largest Outer Hebridean town, Stornoway, which is on Lewis. Lewis Gaelic speakers make up around a quarter of Gaelic primary teachers so are prominent in educational contexts (survey by Lamb 2011). Adult Gaelic speakers are generally aware of dialect variation and will be able to cite well-known specific features such as the vowel in the word for milk *bainne*, which is produced [pɔŋjə] in Lewis, [pɛŋjə] in Barra, and [paŋjə] in most other dialects. However, there is no 'standard' model of pronunciation for Gaelic either formally or informally, which leaves speakers able to select their own target variety to a large extent and makes this context ideal for our Type 3 investigation of motivations and identity construction through phonetic variation.

TABLE 1 ABOUT HERE

3.2 Data and Analysis

The new speaker data for this study are taken from semi-structured interviews conducted by the second, third and fourth authors in 2013-14 and were part of a project which investigated the linguistic practices and ideologies of Gaelic new speakers (see McLeod, O'Rourke and Dunmore 2014; McLeod and O'Rourke 2015). The new speaker participants were recruited from these authors' personal networks and were recorded in a mutually convenient quiet location using an Olympus digital voice recorder (VN8700PC) with a built-in microphone. The 40-90 minute interviews covered topics such as the participant's background, Gaelic learning trajectory and attitudes towards Gaelic development. The data from the older traditional speakers are taken from sociolinguistic interviews conducted by the first author in 2011. These sociolinguistic interviews were collected as part of a wider project and were recorded onto laptop computer in the participant's home using a Beyerdynamic Opus 55 headset microphone, a RollsLive mixer and a USB audio interface (see Nance 2013, 2014, 2015 for further details).

The data were transcribed and then for the quantitative analysis described in Section 4, tokens of word-final rhotics extracted in ELAN (Sloetjes and Wittenburg 2008). The tokens selected were all preceded by a vowel and followed by a consonant or pause. We excluded tokens followed by a rhotic, lateral or /f/. Following rhotics and laterals were excluded due to these segments' extensive coarticulatory influence (Kelly and Local 1989). Following /f/ was excluded as the initial labelling suggested that all rhotics preceding this sound were coalesced into a retroflex approximant. All suitable tokens were extracted from each speaker, and five tokens were removed as being non-expected productions (two laterals, two alveolar plosives, and one velar fricative). We used the orthographic criteria described in Section 2.2 to determine

which phonemic category each rhotic could be expected to belong to. The final token counts are shown in Table 2 (1721 token in total, average 69 per speaker). From the token counts in Table 2, it is clear that the velarised rhotic did not occur frequently, especially among the new speakers, one of whom (Natalie) did not produce a single token.

TABLE 2 ABOUT HERE

Each token was coded for preceding and following phonological environment, word class, number of syllables in the word, and position in the phrase (initial, medial, final). Detailed auditory labelling of each rhotic was subsequently carried out in Praat using the spectrogram as additional information to the auditory categorisation (Boersma and Weenik 2014). Such was the variation in the dataset that this initial coding produced twenty-four separate variants, and these variants were collapsed into five categories for clarity of analysis. How the categories were collapsed is detailed in the Appendix.

4 Analysis: Rhotics in new and traditional speakers

4.1 Phonemic distinctions

In this section, we aim to examine the extent to which new and traditional speakers reproduce the phonemic rhotic system traditionally described for Gaelic in Section 2.2. The results of the auditory coding described above are shown in Figure 1 as proportions of each rhotic in each speaker. The raw token counts are shown in Table 3. In terms of the phonemically palatalised rhotic, it appears that the traditional speakers overwhelmingly used productions coded as palatalised rhotics/fricatives.

This is the production expected in all traditional dialects according to the previous literature described in Section 2.2. Productions among the new speakers are more varied with some speakers such as Theo, Roy and Bethany producing almost no palatalised rhotics/fricatives. As this realisation appears to be the default realisation of this phoneme among traditional speakers, we used it as the baseline for establishing whether speakers made a phonemic distinction between rhotic categories in the analysis presented in this section. Several new speakers, such as Theo, produced a large number of tokens with no audible rhotic, or tokens which were only weakly rhotic. This finding is analysed further in Section 4.2. In terms of the alveolar rhotic phoneme, the traditional speakers produced mainly tapped rhotics, and some non-palatalised fricative rhotics. Similar results were found among the new speakers, with some non-rhoticity as well. Across the dataset, the only speaker who produced a substantial number of tokens coded as ‘strongly rhotic vowels’ was Polly, whose data is further discussed in Section 5.

FIGURE 1 ABOUT HERE

TABLE 3 ABOUT HERE

As discussed above, there were very few tokens per speaker of the velarised rhotic. This shortage of velarised rhotic data meant that ascertaining whether a three-way distinction was present among all speakers statistically was not possible. We therefore only compared palatalised and alveolar rhotics statistically. There are many ways in which the distinction between rhotic categories could be modelled, but for this initial variationist treatment of rhotic productions in Gaelic, we chose to compare the expected traditional production of the palatalised rhotic (as a palatalised fricative or

palatalised rhotic) with other variants (mainly taps and non-palatalised fricative rhotics). In order to do so, a binary variable was created to test that likelihood that a rhotic was realised as a palatalised fricative rhotic compared to other productions, and tested via mixed effects logistic regression modelling (see Baayen 2008, Johnson 2009, Tagliamonte 2012 for discussions of this method).

The model included speaker and word as random intercepts. The fixed effects (i.e. ‘factors’) were preceding context (using treatment contrasts with preceding schwa as the baseline), following context (using treatment contrasts with following pause as the baseline), word class (using treatment contrasts with nouns as the baseline), and number of syllables in the word. Also modelled as fixed effects were the following social predictors: (1) gender, (2) whether or not the speaker grew up in greater Glasgow, and (3) whether or not the speaker had spent an intensive year at Sabhal Mòr Ostaig, the Gaelic college, and (4) an interaction between speaker group (new or traditional) and rhotic realisation. This last factor tests for whether traditional speakers made more or less of a distinction than new speakers (see Baayen 2008:185 and Tagliamonte 2012:150 for discussion on interactions in statistical modelling). General-to-specific modelling was conducted where non-significant predictors were removed from the model until an optimum model was achieved as advocated in Baayen (2008:205). The final model is shown in Table 4.

TABLE 4 ABOUT HERE

Across the whole dataset, there is a significant difference between palatalised and alveolar rhotics, with more palatal realisations in the palatalised rhotic category.

However, the traditional speakers make a significantly greater distinction than the new speakers overall as shown by the significant interaction between speaker group and phonemic rhotic. If a speaker is originally from greater Glasgow, they are significantly less likely to make the distinction. Other linguistic factors which significantly predict the likelihood of a palatalised realisation are: preceding front vowels, following velar consonant, labiodental fricative, coronal plosive, nasal, or palatalised fricative or affricate.

The regression model described above suggests that overall, traditional speakers make a greater distinction between alveolar and palatalised rhotics compared to new speakers. However, looking at the data in Figure 1, it is clear that there is substantial individual variation, especially among the new speakers. In order to test whether individuals distinguish palatalised and alveolar rhotics, we conducted a Fisher's Exact Test on the data from each speaker. This test was used as it performs well on small datasets so is suitable for testing the subset of each speaker's data (Field, Miles and Field 2012:816). The results are shown in Table 5. The table shows that all the traditional speakers make the distinction as expected from the regression modelling above. Six new speakers do not distinguish their rhotic categories (Katie, Bethany, Antonia, Theo, Matt and Roy). In particular, Theo and Roy produced none of the expected variants in the palatalised rhotic category, so their test returned a value of 1, i.e. absolutely no difference. As shown in the regression modelling, those of Glaswegian origin were significantly less likely to produce the contrast, and out of these speakers four out of seven were from Glasgow so this might explain their results. Our results are further discussed in Section 4.3.

TABLE 5 ABOUT HERE

4.2 Variation among new speakers

This section explores potential patterns of variation among new speakers and the extent to which variants may be used differently by new and traditional speakers. As such, this analysis is similar to the Type 2 studies cited above. The results of the auditory labelling for individual speakers as described above are shown in Figure 1. From this figure, while the traditional speakers appear relatively consistent as a group, this is not the case among the new speakers and it is difficult to claim any interspeaker consistency. One aspect in which the new speakers appear to differ from the older speakers is in their use of weakly rhotic, or non-rhotic tokens. While there was some non- or weak rhoticity among the old speakers, several new speakers make substantial use of this variant.

In order to test this observation, a binary variable was created as fully rhotic or weakly rhotic/non-rhotic and tested via mixed effects logistic regression. The model included speaker and word as random intercepts. The fixed effects were following context (treatment contrasts with following pause as the baseline), word class (treatment contrasts with nouns as the baseline), number of syllables in the word. Preceding context could not be modelled here due to an unbalanced distribution of variants. The social factors modelled were: gender, whether or not the speaker was from greater Glasgow, and whether or not the speaker had spent an intensive year at Sabhal Mòr Ostaig (the Gaelic college), and interactions between Glasgow and gender, speaker group (new or traditional) and gender, and SMO year and Glasgow.

Again, general-to-specific modelling was carried out and the final model is shown in Table 6.

TABLE 6 ABOUT HERE

Traditional speakers were more rhotic than new speakers overall, but a significant interaction between Glasgow origin and gender suggests that Glasgow males are largely responsible for this effect, being significantly less rhotic than other speakers in the dataset. Those speakers who had spent a year at Sabhal Mòr Ostaig interestingly produced more rhotics than those who had not. There was no significant interaction with Glasgow origin, suggesting that even if they spend a year at the Gaelic college, Glaswegian males are still less rhotic than other speakers. In terms of linguistic factors which influence non-rhoticity, compared to the baseline of following pause, following nasals, coronals, velars, and labials all significantly decreased the likelihood that a token would be produced as rhotic. Tokens which were conjunctions were also less likely to be rhotic.

4.3 Discussion: Rhotics in new and traditional speakers

The data presented above suggest that while traditional speakers produce a phonemic distinction between rhotic categories, some new speakers do not, especially those from Glasgow. Also, male speakers from Glasgow were more likely to produce weakly- or non-rhotic tokens. A straightforward interpretation of these data would be that some speakers were ‘less competent’ than others so did not produce all phonemes, especially as their respective L1s all have only one rhotic phoneme. Such an interpretation might also argue that speakers from Glasgow demonstrate

substantial influence from their L1 English, which previous research has shown to be undergoing derhoticisation (Lawson, Stuart-Smith and Scobbie 2008; Stuart-Smith, Lawson and Scobbie 2014). However, we believe that this interpretation does not fully explain our results for several reasons: firstly, many of these speakers worked in Gaelic-essential employment where proficiency in Gaelic was a natural part of their job. In particular, Theo, who made no distinction between rhotic phonemes at all, worked in a position requiring intense use of Gaelic in an authoritative role so we see no rationale for labelling him as ‘less competent’.

Secondly, the hypothesis that lack of competence and L1 influence can explain our results does not hold consistently across speakers. For example, two speakers in this dataset had German as an L1: Natalie and Jack. German /r/ in coda position is realised as a rhotic vowel, or vocalic offset (e.g. Hall 1993). This is not reflected in the Gaelic data from Natalie and Jack: neither produces a large number of weakly- or non-rhotic tokens (15% of tokens and 5% of tokens respectively, compared to Theo’s 65% of tokens), nor do they produce high rates of strongly rhotic vowels (neither produced any tokens of this variant). Also, Cameron speaks a non-rhotic variety of English English as his L1, but only produces 8% of his Gaelic tokens as non- or weakly-rhotic. While the Glaswegian male speakers in the dataset were statistically less rhotic than the other speakers, they did not behave consistently as a group showing varying amounts of weak-/non-rhoticity and varying amounts of palatalisation. This suggests that even if L1 origin might lead a speaker to trend towards a specific production, there is room for variation within this.

As an alternative to a straightforward ‘lack of competence’ or ‘L1 interference’ explanation, we suggest that speakers are able to use variation for socio-stylistic purposes at least to some extent. This may explain the result discussed above, that a non-rhotic L1 such as Cameron’s variety of English, or weakly rhotic L1 such as German does not appear to significantly impact production, whereas derhoticising Glasgow English L1 does seem to have some impact on production for some speakers e.g. Theo. In the introduction to our research context we explored the emergence of Lowland Gaelic communities of practice. Speakers such as Theo are heavily engaged in such communities and participate widely in their maintenance and development. While it is difficult to talk of a specific ‘Glasgow dialect’ outside of the limited context of these communities of practice (see also Nance 2015), it is potentially the case that the existence of such communities is allowing speakers to consider an accent that is clearly associated with Lowland Scotland as a legitimate way to speak Gaelic, i.e. Glasgow-influenced productions. Speakers from outwith Scotland such as Germany or England have no such community support or legitimisation of a variety influenced by their L1s. It may be the case then, that Natalie, Jack, and Cameron have learned to suppress the influence of their L1s while acquiring Gaelic, while speakers such as Theo see no need to do so in the modern context of Gaelic in Lowland Scotland.

4.4 Summary: Rhotics in new and traditional speakers

To summarise the results of Section 4: these data have not identified one consistent pattern of variation which is associated with new speaker productions. Instead, we found a large number of differing patterns were used by different participants.

Although some speakers, such as Theo, demonstrate influence from their L1, we

suggest that this resource (speaking Gaelic with an accent influenced by your L1) is not socially desirable for all speakers: Jack, Natalie, and Cameron do not show such a tendency. All in all, our data suggest that ‘failure’ to approximate native speaker targets may not explain all of the variation present in the new speaker production data. In the following section, we conduct a qualitative analysis of accent aim narratives in a subset of speakers to further explore motivations and identity construction as Gaelic speakers among our participants.

5 Analysis: Accent aim and identity construction as a new speaker

In this section we further explore the suggestion that L1 origin and a ‘failure’ to meet native speaker targets may not explain all of the variation in this dataset. As an alternative, we discuss the links between self-declared accent aims (Rindal 2010), and the use of phonetic variation. In doing so we employ what we are referring to as a Type 3 approach to the study of L2 variation. The inspiration for this analysis is from Dörnyei and Ushioda’s (2009) work suggesting that language learning motivation is partly made up of our image of the ‘ideal self’ and ‘ought-to self’, which may be highly divergent from the native-speaker model. We here present qualitative analysis of accent aim narratives from Ben, David and Polly, who had very clear conceptions of their Gaelic-speaking ideal self. This is compared to quantitative analysis of their use of rhotic variants. Unlike Rindal (2010), we did not ask our speakers specifically what kind of accent they were aiming for, but instead allowed the issue to arise naturally in conversation about the role of new and traditional speakers in Gaelic communities. As such we do not have the explicit accent aim for every speaker. This may be reflective of the reality of the situation: it is probable that not every L2 user will have explicitly considered the issue of accent aim. Ben, David and Polly,

however, were among those who expressed a precise account of accent aim and we have selected them to exemplify the range of opinions, aims and motivations in the new speaker community, while recognising that not all speakers will hold explicit views on this topic.

As such, this section aims to build on the typical kind of Type 2 study discussed in the Introduction. We aim to go into more detail about why certain kinds of variation are used, and aim to demonstrate that for some speakers at least new kinds of variation may be emerging as a result of identity construction. In other words, for some speakers their production patterns are not necessarily as a result of ‘failure’ to reproduce ‘native-like’ patterns of variation.

Bearing all of this in mind, however, previous research into motivation and accent aim has suggested that some speakers may indeed aim to replicate native speaker models (Marx 2002; Piller 2002; Rindal 2010). There were some individuals in our dataset who seemed to also follow this trend. For example, in this extract we present data from Ben, who grew up in lowland Scotland and whose mother was from the Outer Hebrides. As a child, he never spoke Gaelic and his mother never spoke Gaelic to him, but his interest in the language grew as a university student and he started taking lessons. He now speaks only Gaelic to his mother and regards her pronunciation as the ideal model, as shown in the extract below. Ben describes how his mother was very certain that her Gaelic was the one he should be learning and she coached his pronunciation extensively. While Ben suggests this was a frustrating process, he continued learning in this manner until his pronunciation was *ceart* ‘right’ .:

Extract 2

Gu h-àraid a thaobh fuaimneachadh, tha	<i>Especially in relation pronunciation, I</i>
mi a' smaoinneachadh,	<i>think,</i>
an toiseach, bha i mionaideach mu	<i>at first, she was precise about that</i>
dheidhinn sin	
agus, 's iomadh turas a chaidh sinn a-	<i>and lots of times we fell out with each</i>
mach air chèile, leis an fhìrinn innse.	<i>other, to be honest.</i>
Eil fhios agad?	<i>You know?</i>
Bhiodh i a' toirt orm, eil fhios agad,	<i>She would make me, you know, say the</i>
canail an aon fhacal, eil fhios agad,	<i>same word, you know,</i>
uair is uair gus am biodh e ceart.	<i>again and again until it was right.</i>

Ben describes how he fell out with his mother over pronunciation, so it may at first appear as though his mother's vision of Ben's pronunciation (his 'ought-to self') was his main motivating factor. However, through this extract Ben also demonstrates extensive commitment to his ideal self as a user of Gaelic similar to his mother: Ben grew up in lowland Scotland in an English-speaking household, but gained an interest in Gaelic later in life and decided to learn the language. At one point in his learning trajectory, well into adult life, he made the decision to change the language which he spoke to his mother. This decision was reached without prompting from his mother and suggests very strong commitment to an ideal Gaelic-speaking self. Secondly, although his mother does have a clear view of what 'correct' pronunciation should entail, Ben continued to follow her advice until he achieved the 'right' form, rather than rejecting her models. This behaviour suggests that although the process may

have been frustrating, ultimately Ben agreed with his mother's view, and was able to draw on the resource of a close relative who is a traditional Gaelic-speaker. Ben seems to have largely successful in his aim of approximating traditional Gaelic; he was the new speaker with the highest proportion of palatalised variants in the palatalised rhotic category, and overall his use of variation is similar to the older traditional speakers in this study. In other words, Ben's 'ideal self' is the traditional Gaelic of his mother, and the 'ought-to self' (his mother's vision of his Gaelic) also aligns with traditional models.

Other speakers also had an ideal self approximating traditional Gaelic but took different or less obvious approaches as to defining what this might consist of. For example, David chose a variety which was spoken in south-west Scotland (his exact choice is obscured for anonymity), but is now only spoken by a handful of people. He chose this variety due to a family connection to this part of the world and an explicit desire to promote lesser-known varieties of Gaelic. In this extract, he argues that people who have learnt Gaelic to fluency should not rest on their laurels, but instead should learn a specific dialect:

Extract 3

Is mar sin, seach a bhith a' smaoineachadh,	<i>And so, instead of thinking</i>
“O, tha mi air mo cheann-uidhe a ruigheachd a-nise, tha mi fileanta ann an Gàidhlig sin agad e - obair dhèanta.”	<i>“Oh, I've reached my destination now, I'm fluent in Gaelic and that's it - job done.”</i>
Chan eil, chan abrainn gu bheil...	<i>It's not, I wouldn't say that it is [job</i>

done]...

Nise gu bheil thu fileanta, seall air na	<i>Now that you're fluent, have a look at the</i>
dualchainntean, seall air a' bheartas a b'	<i>dialects, look at the richness that used to</i>
àbhaist a bhith ann.	<i>be there.</i>

David is unusual in learning this very specific, and highly obsolescent dialect, which he acquired from one of the last remaining traditional speakers and archival recordings. However, what his data indicate is that some speakers do have very specific accent aims and highly divergent models for pronunciation. Another factor, which is apparent in the data from David, is the sense of responsibility which appears to motivate some new Gaelic users (Carty 2015:295). As such, David's vision of what Gaelic new speakers have a moral obligation to undertake, i.e. his 'ought-to self', may motivate his accent aim. In terms of production, David is of Glaswegian origin, and demonstrates some of the derhoticisation typical of his native English, but is also different from Theo, for example, who is from a very similar background. This suggests that although some of David's origins are evident in his production, this is not the whole story and his specific accent aim also plays a role.

The final extract in this section is from Polly, who specifically does not aim to speak a traditional island dialect. Polly came to Scotland from the USA as a study abroad student and took Gaelic as an optional course. Eventually, she decided to continue her Gaelic studies and now works in a Gaelic-essential job. Here, she describes how she doesn't want to sound like she's from an island she's never been to such as Lewis or North Uist. These are two of the four main islands in the Outer Hebrides, the areas where Gaelic is most widely spoken. We assume that she is picking these two islands

merely as examples of well-known Gaelic-speaking areas, whose dialects are regularly heard in the media and teaching, and where she could possibly forge a dialect affiliation.

Extract 4

B' urrainn dhomh a bhith air blas	<i>I could have learned a Lewis accent</i>
Leòdhasach ionnsachadh 's dòcha.	<i>maybe.</i>
Ach cha robh mi...	<i>But I haven't been...</i>
'S e rud a bha mi faireachdainn, uill cha	<i>The thing I felt was, well, I've never been</i>
robh mi ann an Leòdhas riamh, carson a	<i>to Lewis, why would I have a Lewis</i>
bhiodh blas Leòdhasach orm?	<i>accent?</i>
Bhiodh sin gu math annasach.	<i>That would be really strange.</i>
Carson a bhiodh blas Uibhist a Tuath	<i>Why would I have a North Uist accent?</i>
orm?	
Cha robh mi ann riamh.	<i>I've never been there.</i>

Looking at Polly's data (see Figure 1), the USA influence on her productions is clear. She uses auditory extremely rhotic vowels for the vast majority of her tokens. It seems likely that her ideology of not sounding like somewhere she's never been plays a role in these productions. In particular, she later states in the interview that she attempts to use a Uist accent when teaching Gaelic to adults. This suggests she believes she can switch to a traditional variety of Gaelic, with which she is familiar and considers appropriate for teaching, but her preferred variety for informal settings is more reflective of her new speaker origins. In other words, Polly's ideal Gaelic-speaking self is as a new speaker, but she can switch to a traditional 'ought-to self' in

contexts where it is required. In terms of her production data, she differs from Rhianna, who has a similar Gaelic learning trajectory and also works in Gaelic-essential employment, but Rhianna's ideal self seemed more oriented towards a traditional speaker model.

To summarise the results of this section, here we have qualitatively analysed three narratives of accent aim and motivation among our new speakers. Ben and David aimed for two different kinds of traditional speaker model, reflecting different dialects and, in David's case, not one which is typically taught or widely spoken. Polly demonstrated a slightly different aim and instead suggested that for her adopting a native speaker accent would be inauthentic. Instead she proposes an ideal self which more new-speaker oriented. We also examined the production patterns of these three speakers which by and large aligned with their accent aims. These data suggest that while many speakers may emulate the models of pronunciation provided by traditional Gaelic speakers, this is not the case for everyone and some speakers may wish to use variation to reflect their new speaker status. We refer to this investigation combining identity construction and the analysis of variation in production as a Type 3 approach to variation in L2 users.

6 Conclusions

Our study firstly aimed to examine the extent to which new speakers reproduce the rhotic system of traditional Gaelic. We found that some speakers did distinguish between palatalised and alveolar rhotics, but that this is not linked to L1 origin, learning background, or competence in any straightforward manner. Secondly, we explored the extent to which patterns of variable usage specific to the new speaker

community may be emerging. Although we found some tendencies which may be linked to a speaker's origin, such as low rates of rhoticity among speakers from Glasgow, again this did not explain the whole dataset and it appears that diversity of forms is currently what distinguishes new and traditional Gaelic. Our final analysis in Section 5 aimed to look at the motivations and accent aims of a subset of speakers who expressed explicit views on the topic. Here we found links between production and the speaker's vision of their ideal Gaelic-speaking self, drawing on theoretical concepts from motivation research (e.g. Dörnyei and Ushioda 2009).

Our study aims to build on previous work into variation in L2 users: previous studies either aimed to demonstrate how variable forms would eventually result in 100% use of 'target' productions, such as Tarone's (1985) study of Type 1 variation, or aimed to show how rates of use of a particular variant differed between native speakers and L2 users, such as Mougeon et al.'s (2004) Type 2 study. We wished to further investigate patterns of variation so have incorporated the concepts of self perception as an L2 user (e.g. Dörnyei and Ushioda 2009), and accent aim (e.g. Rindal 2010) in what we are referring to as a 'Type 3' approach to variation. In particular, we wished to investigate the idea that previous Type 1 and Type 2 research has assumed that L2 users will wish to emulate the native speaker as a target, since work in World Englishes and sociocultural SLA has challenged this notion and suggested that a native speaker model may be inappropriate in many contexts (Cook 1999; Jenkins 2000, 2007).

Leading on from works such as Rindal (2010) we have shown that investigating how the L2 user wishes to construct their identity may have an influence on their

production patterns. It is important to note that not all of our speakers expressed specific accent aims, and that among those who did some did wish to sound like native speaker targets. However, other speakers such as Polly preferred an ideal self that was more oriented towards a new speaker model and considered a native speaker target as inauthentic. This finding demonstrates the merits of exploring identity construction and motivation in L2 users when examining their patterns of variation as L2 users may be aiming for a variety of production models and exploiting these for socio-stylistic purposes. Our study is not the first variationist account to claim that identity construction as an L2 user may be important (see for example Wolfram et al. 2004; Rindal 2010, Drummond 2012; Nestor et al. 2012; Durham 2014), but we hope to demonstrate that it may not always be appropriate to conceptualise L2 users' productions as an incomplete approximation of native speaker patterns, and we aim to provide a framework (Type 3 approach) through which further research can be conducted in this area.

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Notes

¹The reader may at times wish to know more detailed background information on the individuals discussed in this study. However, due to the extremely small and close-knit nature of this community we have been careful to ensure participant anonymity and have thus not included any potentially identifying detail.

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Appendix

This table shows the ways in which the initial twenty-four variants were collapsed into five categories. Preceding this, five tokens from three categories were excluded completely: 2 tokens that were laterals, two tokens which were alveolar plosives, one token which was a velar fricative. The difference between the tokens coded as ‘weakly rhotic’ and ‘strongly rhotic vowel’ was as follows: the weakly rhotic tokens were non-rhotic until the latter portion of the vowel. Sometimes they appeared diphthongal due to changing quality over the course of the vowel. The strongly rhotic tokens contained audible rhoticity right through the vowel and were not perceptibly diphthongal.

Appendix table: Which variants were collapsed into the final five coding categories.

Category	Label	Variants included
1	Palatalised fricative/palatalised rhotic	θ ð s z ʃ ʒ ʒ̥ ʒ̥ʲ ʀʲ
2	Non-palatalised fricative rhotic	ɹ̥ ɹ̥
3	Approximant/Trill/Tap (no palatalisation)	ɹ ɹ̥ ɹ̥ ɹ̥ ɹ̥
4	Strongly rhotic vowel	ɹ̥
5	Weakly rhotic or non-rhotic	æ̥ æ̥̥ ɐ̥ h

Table 1: Summary of participants. ‘Additional languages’ lists languages known in addition to Gaelic and English. ‘EL’ refers to a European language other than German or Irish. ‘AL’ refers to an Asian language. ‘SMO’ stands for Sabhal Mòr Ostaig, the Gaelic college on Skye.

Pseudonym	Age	Gender	Additional languages	First language(s)	Gaelic learning trajectory	Occupation
Rhianna	20-39	f	German	USA English	University, on the job	Uses Gaelic
Katie	30-39	f	EL	Highland English	Community courses, SMO year	Uses Gaelic
Bethany	40-49	f		Glasgow English	Distance learning, Community courses, children	Non-Gaelic related
Ruby	30-39	f		Glasgow English	Community courses, SMO year	Uses Gaelic
Polly	20-29	f		USA English	University, SMO year	Uses Gaelic
Natalie	40-49	f	German, EL	German	Distance learning, SMO year	Uses Gaelic
Rosie	30-39	f	Irish	Australian English	Irish, SMO courses, on the job	Uses Gaelic
Jess	40-49	f	2 ELs	Lowland Scottish English	Community courses	Uses Gaelic
Antonia	50-59	f	Irish, EL	Irish English	Irish, time in Gaelic area	Non-Gaelic related
Jack	40-49	m	German, AL, EL	German and another language	University, community courses	Uses Gaelic
Fraser	40-49	m	EL	Glasgow English	University, SMO year	Uses Gaelic
Theo	30-39	m	Irish, 2 ELs	Glasgow English	Community courses, SMO year	Uses Gaelic
Ben	50-59	m		Lowland Scottish English	University, time in Gaelic area, SMO year, family	Non-Gaelic related

Max	40-49	m	EL	Glasgow English	SMO year, time in Gaelic area, family	Non-Gaelic related
Cameron	50-59	m	AL	English English (non-rhotic variety)	Community courses	Non-Gaelic related
David	30-39	m	German	Glasgow English	Community courses, on the job	Uses Gaelic
Matt	20-29	m	AL	Lowland Scottish English	University	Student
Roy	30-39	m	2 ELs	Glasgow English	University, community courses	Student
Joe	40-49	m		Glasgow English	Community courses	Non-Gaelic related
Gina	60-69	f		Lewis Gaelic	Family	Shop worker
Lucy	60-69	f		Lewis Gaelic	Family	Retired
Amy	70-79	f		Lewis Gaelic	Family	Semi-retired crofter
Sam	60-69	m		Lewis Gaelic	Family	Semi-retired postman
Phil	70-79	m		Lewis Gaelic	Family	Retired
Russell	60-69	m		Lewis Gaelic	Family	Semi-retired crofter

Table 2: Summary of token counts per rhotic phoneme for new and traditional speakers. In each case the range of the numbers of tokens per rhotic per speaker group is shown as well as the raw numbers.

	New speakers		Traditional speakers	
	Range of tokens per speaker	Total n	Range of tokens per speaker	Total n
Palatalised rhotic	21 – 62	765	11 – 41	124
Velarised rhotic	0 – 26	176	2 – 20	60
Alveolar rhotic	14 – 46	528	8 – 18	68
Totals		1469		252

Table 3: Raw numbers of each variant for each rhotic phoneme in each speaker. Speakers are ordered in terms of proportional use of the palatalised rhotic or palatalised fricative variant within the palatalised rhotic phonemic category (lowest to highest). This is the same order as in Figure 1. The new speakers are at the top of the table and the six traditional speakers at the bottom separated by a horizontal line.

Speaker	Palatalised rhotic					Alveolar rhotic					Velarised rhotic				
	Palatalised	Fricative	Approximant/	Strongly	Weakly	Palatalised	Fricative	Approximant/	Strongly	Weakly	Palatalised	Fricative	Approximant/	Strongly	Weakly
	rhotic/	rhotic	Tap/ Trill	rhotic	or non-	rhotic/	rhotic	Tap/ Trill	rhotic	or non-	rhotic/	rhotic	Tap/ Trill	rhotic	or non-
	Palatalised			vowel	rhotic	Palatalised			vowel	rhotic	Palatalised			vowel	rhotic
	fricative				fricative					fricative	fricative				
Theo	1	2	14	0	30	0	4	16	0	26	0	0	3	0	18
Roy	1	11	13	0	16	0	7	7	0	11	0	0	1	0	2
Bethany	4	0	13	1	1	1	0	9	1	3	0	0	1	0	0
David	14	21	16	0	10	1	17	12	0	5	0	0	0	0	2
Joe	6	5	5	0	7	0	4	19	0	10	0	3	4	0	5
Matt	9	3	6	0	9	1	5	5	0	4	0	0	1	0	3
Polly	26	1	2	14	4	1	1	0	36	1	0	0	0	24	2
Rhianna	23	2	2	0	4	2	6	20	0	7	0	2	15	0	4
Katie	24	3	12	0	1	12	1	12	0	0	1	0	1	0	0

Rosie	26	7	14	0	4	3	6	6	1	6	0	5	2	0	8
Fraser	32	9	7	0	3	4	7	2	0	1	0	3	2	0	0
Jess	30	12	8	0	1	7	13	12	0	5	0	4	5	0	8
Antonia	12	1	5	0	2	6	2	7	0	5	0	0	7	0	5
Cameron	18	6	4	0	1	3	17	2	0	2	0	1	0	0	1
Jack	31	4	2	0	2	7	17	10	0	2	0	2	1	0	0
Max	28	1	7	0	5	5	3	11	0	19	0	2	4	0	6
Ruby	46	0	5	3	0	11	2	8	1	1	2	1	9	0	1
Natalie	21	1	13	0	4	4	0	9	0	2	0	0	0	0	0
Ben	51	1	0	0	0	5	8	17	0	1	1	0	3	0	1
Phil	35	0	4	0	1	0	1	4	0	0	0	2	6	0	1
Amy	17	1	1	0	0	1	2	4	0	1	0	2	3	0	5
Lucy	13	0	1	0	0	0	5	7	0	0	1	1	1	0	0
Gina	18	0	1	0	0	0	7	17	0	0	0	2	10	0	1
Russell	20	0	0	0	0	1	8	9	0	0	1	5	12	0	2
Sam	11	0	0	0	0	0	3	5	0	0	0	1	2	0	2

Table 4: Final regression model comparing palatalised and alveolar rhotic productions. The dependent variable is the likelihood that a rhotic was produced as a palatalised rhotic or palatalised fricative. Numbers are rounded to two decimal places.

	β	z	p
Intercept	-2.10	-4.24	< .001
Rhotic phonemically palatalised	1.94	7.43	< .001
Traditional speaker	-2.39	-2.42	.02
Palatalised rhotic * Traditional speaker	4.76	4.90	< .001
Speaker from Glasgow	-1.62	-2.87	.004
Preceding front vowel	0.98	2.74	.006
Following velar consonant	-1.09	-4.25	< .001
Following /f/ or /v/	-1.45	-3.05	.002
Following /t ^h / or /t/	-1.44	-2.44	0.01
Following nasal	-1.19	-4.10	< 0.001
Following alveolar or postalveolar fricative	-1.03	-2.62	0.009

Table 5: Results of the Fisher's Exact tests carried out on individual speakers. New speakers are at the top of the table, traditional speakers at the bottom. The test indicates whether speakers produced a phonemic distinction between palatalised and alveolar rhotics, defined as more of the expected productions (palatalised rhotics/palatalised fricatives) in phonemically palatalised contexts.

Female			Male		
Speaker	Difference?	p value	Speaker	Difference?	p value
Rhianna	yes	< .001	Jack	yes	< .001
Katie	no	.61	Fraser	yes	.04
Bethany	no	.63	Theo	no	1
Ruby	yes	.03	Ben	yes	< .001
Polly	yes	< .001	Max	yes	< .001
Natalie	yes	< .001	Cameron	yes	< .001
Rosie	yes	< .001	David	yes	.008
Jess	yes	< .001	Matt	no	.07
Antonia	no	.06	Roy	no	1
			Joe	yes	.003
Gina	yes	< .001	Sam	yes	< .001
Lucy	yes	< .001	Phil	yes	< .001
Amy	yes	< .001	Russell	yes	< .001

Table 6: Final regression model examining rhoticity in the dataset. The dependent variable is the likelihood that a token was produced as r-ful. Numbers are rounded to two decimal places.

	β	z	p
Intercept	2.68	6.10	< .001
Traditional speaker	1.46	2.44	.01
From Glasgow	0.85	1.03	.30
Male speaker	0.30	0.57	.57
From Glasgow * Male speaker	-2.62	-2.65	.008
Year at Sabhal Mòr Ostaig (Gaelic college)	0.92	2.05	.04
Following nasal	-1.46	-5.73	< .001
Following coronal	-1.62	-6.24	< .001
Following velar	-0.71	-2.96	.003
Following labial	-1.09	-3.68	< .001
Conjunction	-0.91	-2.37	.02

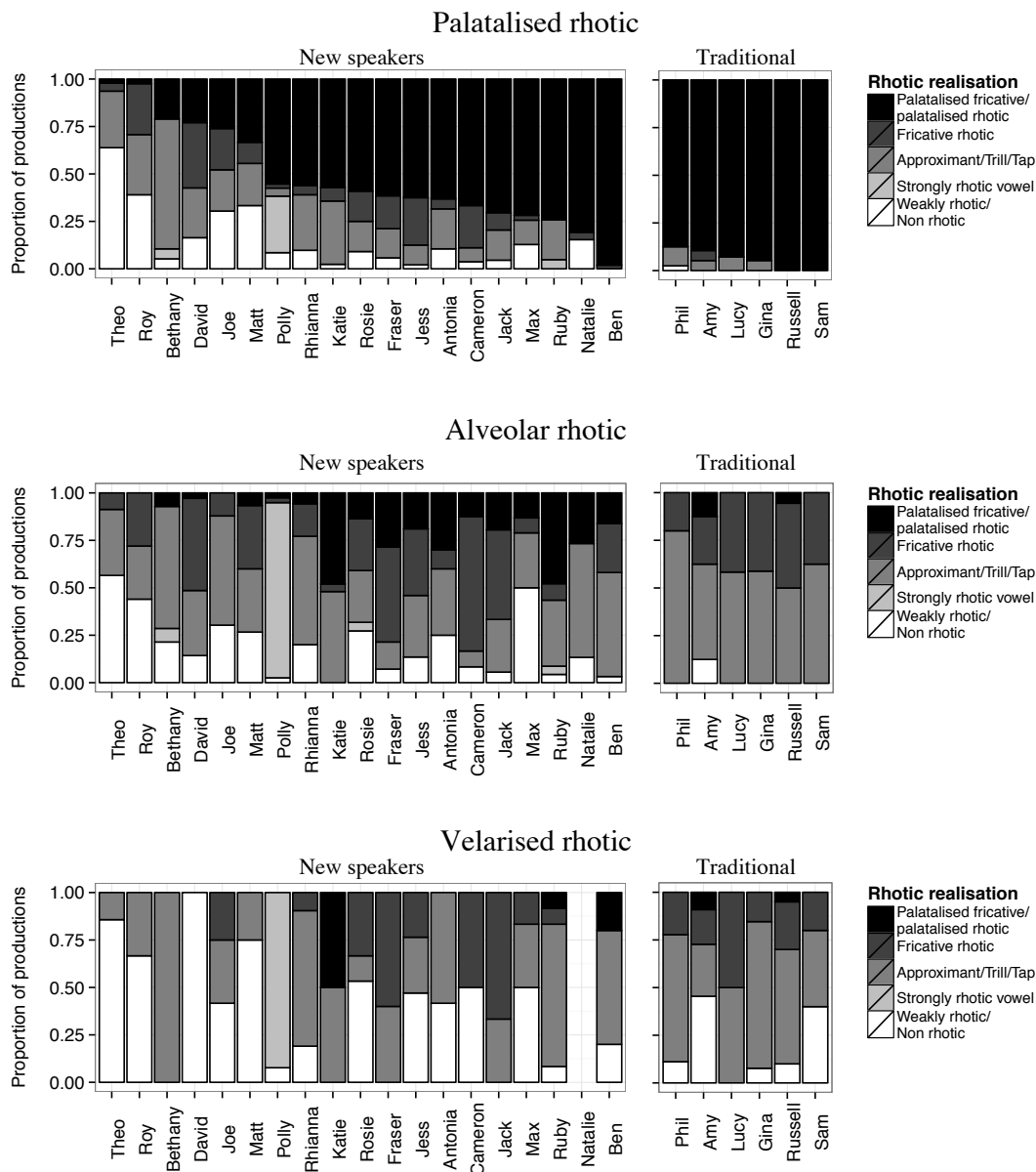


Figure 1: Proportion of all variants used by the individual speakers for each rhotic phoneme. Within each rhotic phoneme, new speakers are shown on the left and the six traditional speakers are shown separately on the right. The speakers are ordered in terms of least to most (proportional) use of the palatalised fricative/rhotic variant in the palatalised category. This is the production expected according to traditional dialect descriptions. The raw numbers of each variant produced by each speaker are shown in Table 3.