

# 1           **Sound change or community change? The speech community in sound** 2           **change studies: A case study of Scottish Gaelic**

## 4   **1       Abstract**

6 This paper considers the typical focus of analysis in a sound change study across  
7 generations: the speech community. I argue that changes in social practices across  
8 generations may mean that comparisons across generations can be problematic, and these  
9 issues are particularly pertinent in small and endangered language communities. Using data  
10 from Scottish Gaelic (Celtic, ISO = gla), a minority endangered language of Scotland, I  
11 exemplify the challenges posed by the speech community construct via an examination of  
12 lateral production in subsequent generations of speakers. Gaelic traditionally contrasts  
13 three phonemic laterals, but analysis shows that this might be changing. There are two  
14 possible directions for sound change in the Gaelic lateral system: results show that younger  
15 speakers produce some palatalised laterals as palatal glides without laterality. Meanwhile,  
16 the remaining laterals are less acoustically distinct among younger generations suggesting  
17 the possibility of future merger. While there are differences among the groups of speakers, I  
18 argue it is potentially problematic to consider this to be a form of sound change due to  
19 differences in social practices among generations surrounding Gaelic usage and  
20 socialisation. Ultimately, I advocate for a socially-informed approach to sound change study  
21 to sympathetically take into account local social structure.

## 23   **2       Introduction**

### 25   **2.1     Speech community and sound change**

27 In studies of sound change, subsequent generations from a particular community are  
28 usually compared to infer change in the system, be that through the apparent-time model,  
29 or in a real-time design. For example, in Labov's seminal (1966) work, subsequent  
30 generations of Lower East Side New Yorkers are compared to infer change in apparent time.  
31 Similarly, more recent studies such as Hay et al. (2015) use this method for their comparison  
32 of archival and contemporary recordings of New Zealand English. In a real-time design,  
33 members of the same community are compared at different life stages (panel study e.g.  
34 Haddican et al. 2013). Or, similar members of the same community are studied at different  
35 time points (trend study e.g. Cukor-Avila 2002). For example, in Sankoff & Blondeau (2007),  
36 32 speakers were recorded in both 1971 and in 1984 to compare /r/ production over time in  
37 Montreal in a real-time panel study. Also, the 32 speakers recorded in Montreal in 1971  
38 were compared to 32 different speakers recorded in 1984 in a trend study. All of these  
39 studies assume that the community in which speakers participate is a stable enough social  
40 entity for meaningful comparison of speech to take place. The construct upon which any  
41 apparent- or real-time study of sound change relies is the speech community as a unit of  
42 analysis for change. This may be a very large speech community e.g. New Zealand, or a  
43 smaller one such as York. In comparing speakers within a community, we can say whether  
44 and how the variety of that community has changed.

46 As the speech community is such a central construct, there has been much discussion about  
47 its nature and how membership might be defined (Patrick 2004, Rampton 2009, Coupland

1 2010). Patrick (2004) gives an extensive overview of the development and theoretical  
2 evolution of the speech community in linguistics. Broadly, in the Ethnography of Speaking  
3 approach to the field (Gumperz 1968, Hymes 1972), linguistic behaviour is seen as one of  
4 the many resources used in the creation of meaning. This approach prioritises long-term  
5 immersion with a small group of informants rather than generalising to larger populations  
6 and inferences about wider linguistic structure. The Ethnography of Speaking approach  
7 defines the speech community as a set of shared linguistic and social norms (Gumperz  
8 1982). Labovian sociolinguistics developed along a slightly separate line of enquiry focussing  
9 on larger samples and with greater emphasis on wider generalisation. Classically, Labov sees  
10 a speech community as some set of shared linguistic values within social or geographical  
11 space (1972:463). Coupland (2010:100) notes that no lasting consensual definition of the  
12 speech community has been reached, but within these two broad approaches to language  
13 and variation outlined above it can be seen that a definition should encompass both shared  
14 social and linguistic norms.

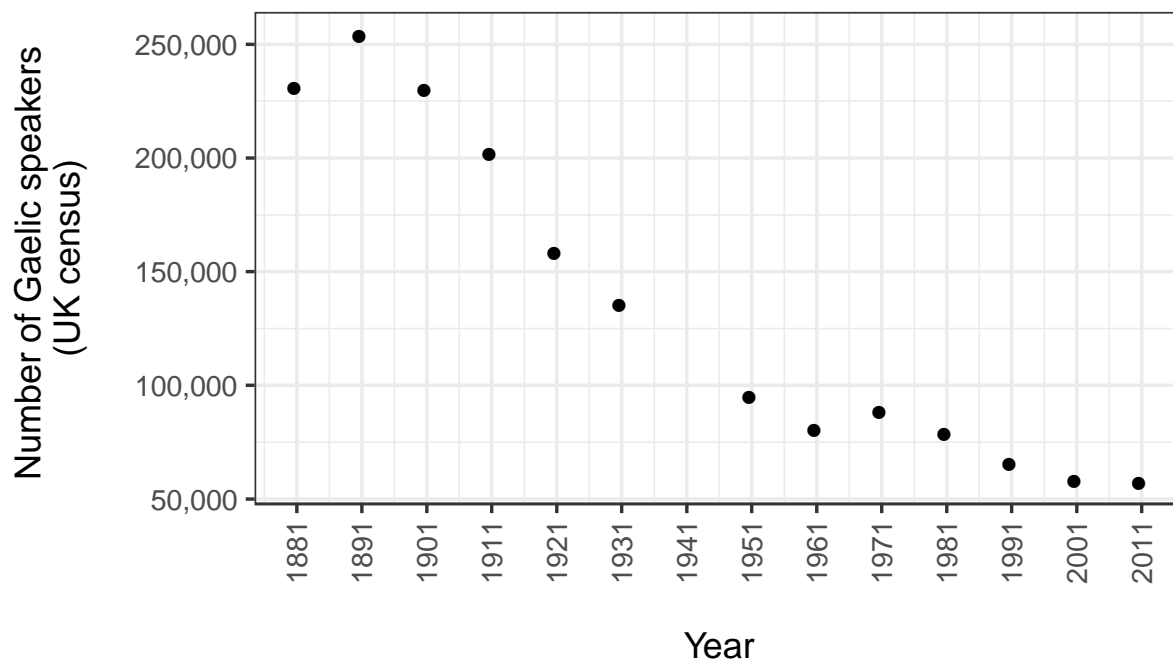
15  
16 Defining what these shared linguistic and social norms might constitute is clearly  
17 problematic and dependent on the level of abstraction intended (Rampton 2009). For  
18 example, in a study of sound change it can be assumed that some aspect of linguistic  
19 behaviour is undergoing change and might not be shared between generations. In order to  
20 assess the possibility of change within a particular community, it must be demonstrated that  
21 the community is to some extent fundamentally the same across generations. At the same  
22 time, it can hardly be expected that older community members and younger members, or  
23 members across time, will share all social practices, but *enough* must be shared in order to  
24 make comparison of linguistic behaviour meaningful. Thomason & Kaufman (1988:10)  
25 express the same concepts and suggest that 'normal transmission' from generation to  
26 generation will occur when the sociolinguistic context is 'relatively stable' i.e. when all  
27 speakers considered form a socially consistent speech community.

28  
29 This paper will explore where the boundary lies between *enough* shared social practice and  
30 *too little*. At what point is it appropriate to compare generations in a sound change study,  
31 and at what point is it no longer appropriate as speakers do not constitute the same speech  
32 community? This is a challenging question to solve. In this study, I aim to explore these  
33 issues with data relating to possible sound changes in the lateral system of Scottish Gaelic, a  
34 minority endangered language of Scotland. The data presented here are a small-scale  
35 analysis aiming to exemplify the issues raised above and provide some context to the  
36 discussion. This investigation in a small language throws the issues raised above into sharp  
37 focus but generalisations to larger languages are also relevant.

## 38 39 **2.2 Gaelic**

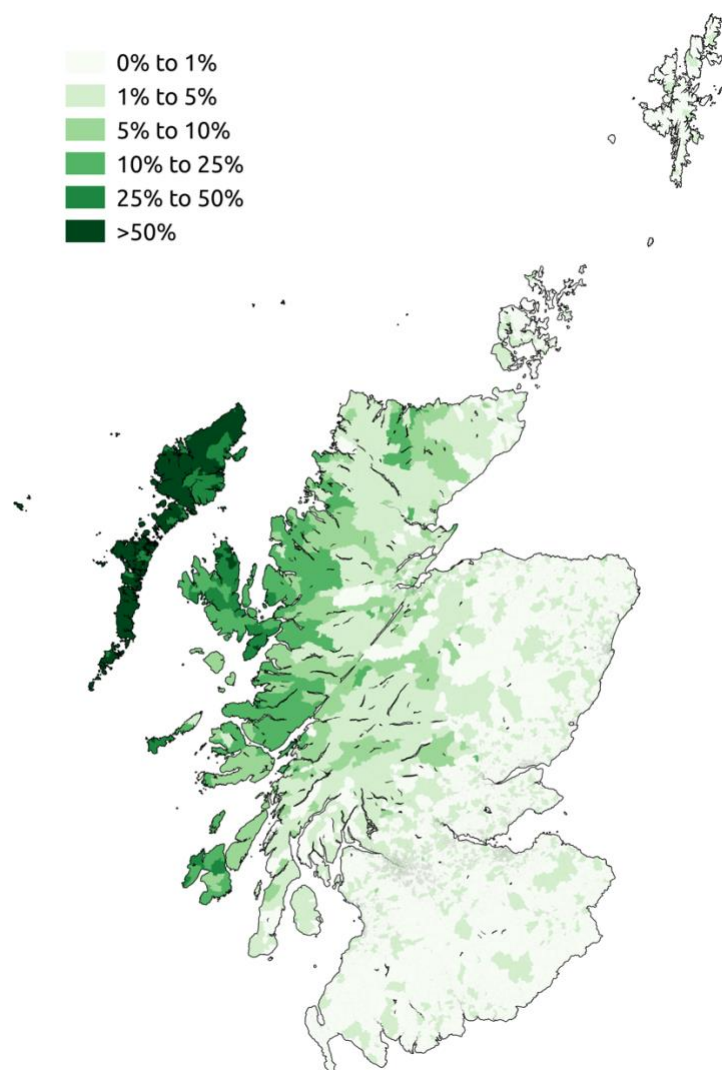
40  
41 Scottish Gaelic is usually known simply as 'Gaelic' [galik] by its speakers and will be referred  
42 to as such henceforward. There were approximately 58,000 Gaelic speakers in Scotland  
43 according to the most recent UK Census (Census 2011 report 1). Gaelic was widely spoken  
44 across Scotland in medieval times (MacKinnon 1974), but is now a minority language spoken  
45 by around 1% of the population. UNESCO classifies Gaelic as 'definitely endangered'  
46 (Moseley 2010), census figures show numbers of Gaelic speakers is in decline, and a dialect

1 of Gaelic was once the prototypical example of language obsolescence (Dorian 1981). The  
 2 number of Gaelic speakers in Scotland according to national censuses is shown in Figure 1.  
 3



4  
 5 *Figure 1: Number of Gaelic speakers in Scotland according to UK national censuses. Sources: MacAulay (1992:141), Census*  
 6 *2001 report, Census 2011 report 1.*

7  
 8 The densest concentration of Gaelic speakers is found in the chain of islands off Scotland's  
 9 north-west coast, the Outer Hebrides/Western Isles, although important populations also  
 10 live in lowland cities due to historical emigration (Withers 1998) and recent language  
 11 revitalisation policies (McLeod 2006). In the Outer Hebrides, approximately 60% of  
 12 inhabitants speak Gaelic (Census 2011 report 2). The location and density of Gaelic speakers  
 13 across Scotland is shown in Figure 2.



1  
2  
3 *Figure 2: Location and density of Gaelic speakers in Scotland according to the 2011 UK Census. Attribution: SkateTier*  
4 *(<https://commons.wikimedia.org/wiki/>). Licensed under <https://creativecommons.org/licenses/by-sa/3.0/legalcode>.*  
5

6 In the Western Isles, the experience of Gaelic speakers differs across generations. Typically,  
7 the oldest generation of speakers aged 65 and upwards grew up in Gaelic-dominant  
8 environments and learned English on entering compulsory education. Gaelic is the code of  
9 choice in conversations with friends and neighbours. While these older speakers learned  
10 Gaelic as a first language in the home, family language transmission has become  
11 increasingly rare across generations. A community survey in 2011 described  
12 intergenerational transmission of Gaelic in the Outer Hebrides as 'broken' (Munro et al.  
13 2011:11). Instead, there is now greater reliance on immersion schooling as a method of  
14 Gaelic acquisition (Will 2012, Nance 2020). Gaelic Medium Education (GME), an adapted  
15 form of immersion schooling, has been available to parents in Scotland since 1985 and  
16 allows children from any home language background to receive their education in Gaelic.  
17 GME is now the default method of primary education in the Outer Hebrides but parents can  
18 request that their child attend English-only schooling. Children in GME classes typically use  
19 Gaelic in classroom settings but prefer English as a peer group language in the playground  
20 and outwith the school setting (Nance 2013, Nance 2020).  
21

## 2.3 Research Questions

Here, I will exemplify the challenges posed by the speech community construct via an examination of possible sound changes in Gaelic's lateral system. Specifically, I consider whether different generations of Gaelic speakers produce the phonemic categories traditionally described for the language, and how acoustically distinct phonemic categories are from one another.

## 3 Methods

### 3.1 Laterals in Gaelic

Gaelic is described as having three phonemic laterals, a dental velarised lateral, a dental palatalised lateral and an alveolar lateral without secondary articulations: /ɬʲ ʲ l/ (Borgstrøm 1940, Oftedal 1956, Ladefoged et al. 1998, Nance 2014). I refer to these laterals as velarised, palatalised and alveolar respectively. The contrast can be exemplified in near-minimal triplets such as *càl* /kʰa:ɬʲ/ 'cabbage', *caill* /kʰaiʲ/ 'lose' and *càil* /kʰa:l/ 'something'. Gaelic has a wider system of contrastive palatalisation across the consonant system, and three-way contrasts between palatalised, velarised and plain phonemes in the sonorants (Nance and Ó Maolalaigh 2019, Nance and Kirkham 2020). The different lateral phonemes are common across Gaelic, although 'true' minimal pairs/triplets appear to be rare in the language (Shuken 1980, Ladefoged et al. 1998).

While contrasts in secondary palatalisation are relatively common across the world's languages (17% of languages in Bateman 2007), three-way palatalisation contrasts are much rarer and not found in English. Previous studies of sound change in minority, endangered language settings suggest that sounds which are typologically unusual and not shared in the societally-dominant language are most likely to undergo change (Jones 1998, Thomason 2001). These authors report a reduction in the number of phonemic contrasts in contexts of language endangerment as system-internal change but accelerated due to the sociolinguistic context. My analysis considers the possibility of change in the lateral system in two respects: firstly, whether palatalised laterals are being produced as palatal glides, an existing phoneme in Gaelic. Delateralisation in palatal articulations is widely reported in Romance e.g. Gómez & Molina Martos (2016), and was noticed previously in young speakers' palatalised Gaelic laterals but not systematically analysed (Nance 2014). Secondly, I consider whether laterals are becoming more acoustically similar as a possible pre-cursor to a reduction in the number of phonemic contrasts (Nance and Stuart-Smith 2013).

### 3.2 Speakers

This study focusses on an area with a high density of Gaelic speakers, the Isle of Lewis, which is most the northerly island in the Outer Hebrides. The study adopts an apparent-time design taking the geographical location of Lewis and the social practice of using Gaelic as the definition of the community under study. Data were collected from thirty-five speakers, with a focus in particular on younger age cohorts. The four age groups considered are detailed below:

- 1        1. Children: 18 children aged 7-11 attending primary GME (10f, 8m). The children had  
2        lived in Lewis for their whole lives. For full details see Nance (2020).
- 3
- 4        2. Adolescents: 11 adolescents aged 13-14 attending secondary GME (5f, 6m). The  
5        adolescents had lived in Lewis for their whole lives. For further details see Nance  
6        (2015).
- 7
- 8        3. Middle-aged: 3 speakers aged 35-50 (3f). These speakers were born and raised in  
9        Lewis but were currently working in Glasgow. In Scottish island communities it is  
10       very common to work on the mainland and then return to one's home island later in  
11       life. For further details see Nance (2013).
- 12
- 13       4. Older: 3 speakers aged 60-80 (3f). The older speakers were born and raised in Lewis,  
14       had worked on the mainland for varying periods of time and then returned to Lewis.  
15       For further details see Nance (2013).

16

17 Most of the children and adolescents came from homes where both parents spoke English  
18 to them, though some had Gaelic-speaking grandparents. A small number had one Gaelic-  
19 speaking parent (4/18 children, 3/11 adolescents), and a very small number had two Gaelic-  
20 speaking parents (2/18 children, 0/11 adolescents). All parents were very supportive of GME  
21 and even where English is spoken in the home parents often provide Gaelic resources or  
22 attend classes themselves. The home language background of these young people is  
23 therefore a mix of English and Gaelic. Previous studies found few differences between those  
24 with more Gaelic input at home and those with less Gaelic input at home, so this factor is  
25 not analysed further here with the aim of considering aggregate patterns. For full details see  
26 Nance (2014, 2020).

27

### 28 **3.3 Data and recordings**

29

30 The data were collected via a word list reading task. The children were recorded in a quiet  
31 place in their school using a Beyerdynamic Opus 55 headset microphone and USB Pre mixer  
32 connected to a laptop and digitised at 44,100Hz sampling rate. Words were presented on  
33 picture cards and were designed to be recognisable to children. The word list contained  
34 word-medial laterals and is shown in the Appendix. Each word was repeated twice in  
35 random order among distractor items. Data from the adolescents and adults were also  
36 recorded with the headset microphone, a Rolls Live mixer and laptop computer. Data were  
37 presented on the laptop screen with accompanying pictures and were repeated three times  
38 among distractors. The word list for these groups contained word-initial and word-medial  
39 laterals (see Appendix). The adolescents and middle-aged adults were recorded in their  
40 school or workplace respectively, and the older adults were recorded in their homes.

41

### 42 **3.4 Analysis**

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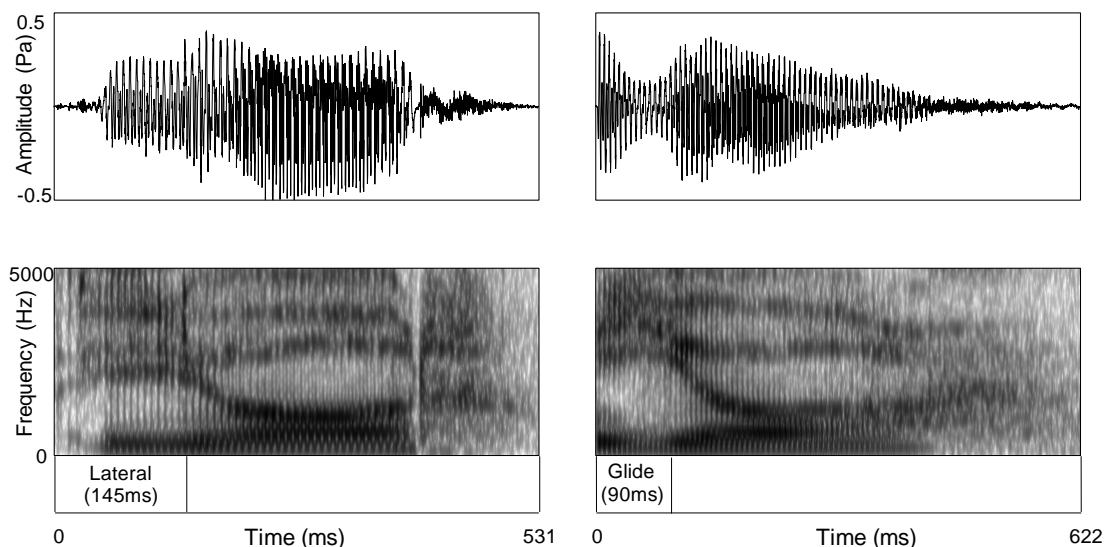
44 The total token counts included in the analysis are as follows:

- 45        1. Children: 216 (median = 11 per speaker, range = 8-12)
- 46        2. Adolescents: 388 (median = 33 per speaker, range = 24-36).
- 47        3. Middle-aged adults: 107 (median = 36 per speaker, range = 35-36)

1 4. Older adults: 105 (median = 35 per speaker, range = 34-36)

2

3 Three analyses were carried out on the data. First, an auditory analysis was carried out to  
 4 ascertain whether all tokens were produced as laterals. In the case of some phonemically  
 5 palatalised laterals, a substantial number were produced as palatal glides (Section 4.1). The  
 6 difference between a glide and lateral is illustrated in Figure 3 (though labelling for this  
 7 analysis was done auditorily only). This figure shows the production of the same word  
 8 *leabhar* 'book' /l̪ˠ.ə.ɾ/ by two male adolescent speakers. There is a very high F2 in the glide  
 9 as compared to the lateral: approximately 2800Hz (glide) vs 2200Hz (lateral).



10

11 *Figure 3: Spectrogram and waveform comparison of palatalised lateral vs. palatal glide at the start of the word 'leabhar'.*

12

13 The results of this auditory analysis show that children and adolescents produce some  
 14 glides, but adult speakers produced none at all. Due to the complete absence of palatal  
 15 glides among the adult speaker groups I do not analyse this through inferential statistics  
 16 further.

17

18 The second analysis considered the acoustic properties of tokens produced with laterality  
 19 (i.e. the glides were excluded from the acoustic analyses). The data were low-pass filtered  
 20 filtered to 11,025Hz and downsampled to 22,050Hz prior to analysis in Praat (Boersma &  
 21 Weenink 2019). Data were then labelled using Praat TextGrids for lateral steady state as  
 22 defined by a phase of the lateral where F2 was stable (Carter & Local 2007). Linear  
 23 Predictive Coding formant values were estimated using Emu (Winkelmann et al. 2017),  
 24 manually checked for accuracy, and hand-corrected where necessary using the Emu  
 25 functions.

26

27 Previous acoustic analysis has shown that the difference between the first two formants can  
 28 capture differences between the lateral phonemes (Shuken 1980, Ladefoged et al. 1998,  
 29 Nance 2014, Nance and Kirkham 2020). Specifically, the velarised lateral is characterised by  
 30 low F2 and high F1, the palatalised lateral has high F2 and low F1, and the alveolar lateral  
 31 has intermediate values. I therefore present values of F2-F1 which captures the  
 32 palatalisation or velarisation gesture (Section 4.2, Sproat & Fujimura 1993, Nance 2014,  
 33 Kirkham et al. 2019). Comparing the differences between formants will already include

1 some degree of normalisation for vocal tract length so the data were not normalised further  
2 for sociolinguistic differences (Simonet 2010, Kirkham et al. 2019, Nance 2014). Data are  
3 reported in Bark (Traunmüller 1990) to approximate the perceptual response of the ear (see  
4 Morris 2017, Nance 2020 for others who have taken this approach).

5  
6 The F2-F1 acoustic data from each group of speakers were modelled via Conditional  
7 Inference Trees (CTrees) (Breiman 2001, Tagliamonte & Baayen 2012, Levshina 2015). CTree  
8 analysis is a non-parametric technique which functions by first testing which independent  
9 variable is most closely associated with the dependent variable. If an association is made at  
10 a pre-defined significance level, the data are split, and the process repeated. For further  
11 explanation see Levshina (2015:291). Each group of speakers was modelled separately to  
12 allow for the possibility of different significant splits in the data. The analysis of the child  
13 data considered lateral phoneme and gender, and the data from the other speaker groups  
14 also considered word position. The middle-aged and older adults are all female so their  
15 analysis does not include gender.

16  
17 The final analysis considers the acoustic distinctiveness of the lateral phonemes. Acoustic  
18 data from the two predicted most extreme phonemes, the velarised and the palatalised  
19 laterals, were extracted for analysis. First the median F2-F1 for velarised laterals was  
20 calculated for each speaker. Then, I calculated the median F2-F1 for palatalised laterals for  
21 each speaker, and calculated the Euclidean distance between these two medians in order to  
22 quantify the acoustic space used (Section 4.3).

23  
24 The Euclidean Distances for each speaker group were regressed against speaker group in a  
25 standard linear model. The baseline speaker group was the older speakers and contrast  
26 coding was used. As there is only one value per speaker (Euclidean distance), mixed effects  
27 modelling with random intercepts was not used here.

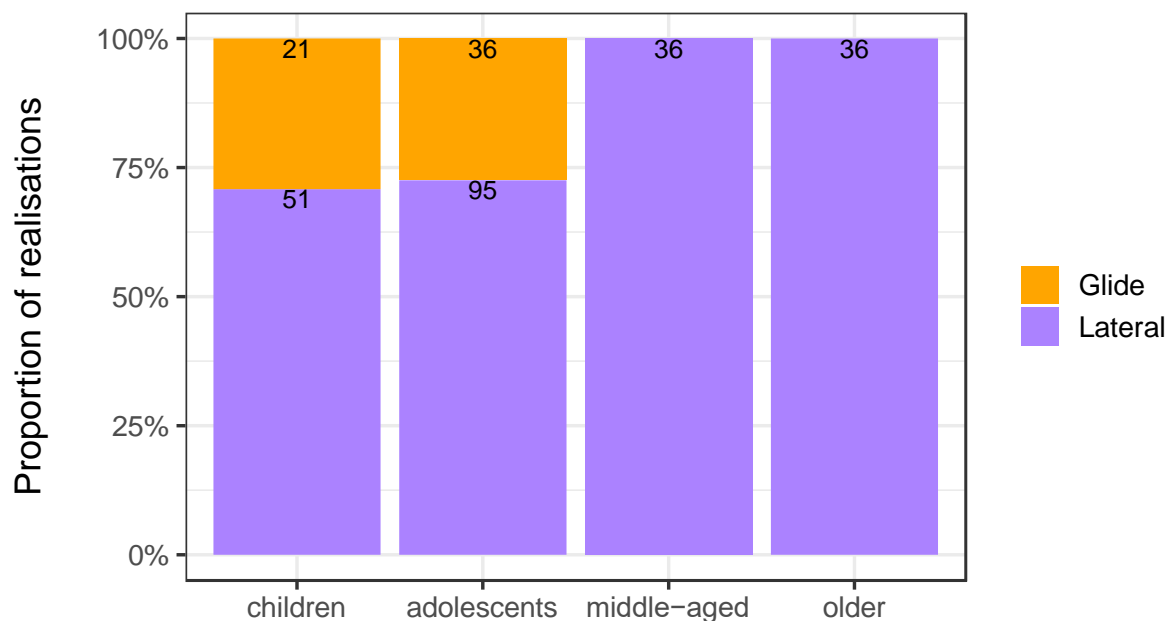
## 28 29 **4 Results**

### 30 31 **4.1 Auditory analysis**

32  
33 The first analysis auditorily coded laterals as to whether they were realised as laterals or  
34 palatal glides. The latter variant only occurs in the palatalised lateral category. The results of  
35 this labelling are shown in Figure 4. The middle-aged and older speakers did not produce  
36 any of their palatalised laterals as glides at all so this finding is not analysed further  
37 statistically. The children produced 29% of their palatalised laterals as palatal glides and the  
38 adolescent speakers 27%.

39





1  
2 *Figure 4: Proportions of phonemically palatalised laterals produced as glides or laterals (auditory coding) for each speaker*  
3 *group. Token counts are shown at the top of each bar.*

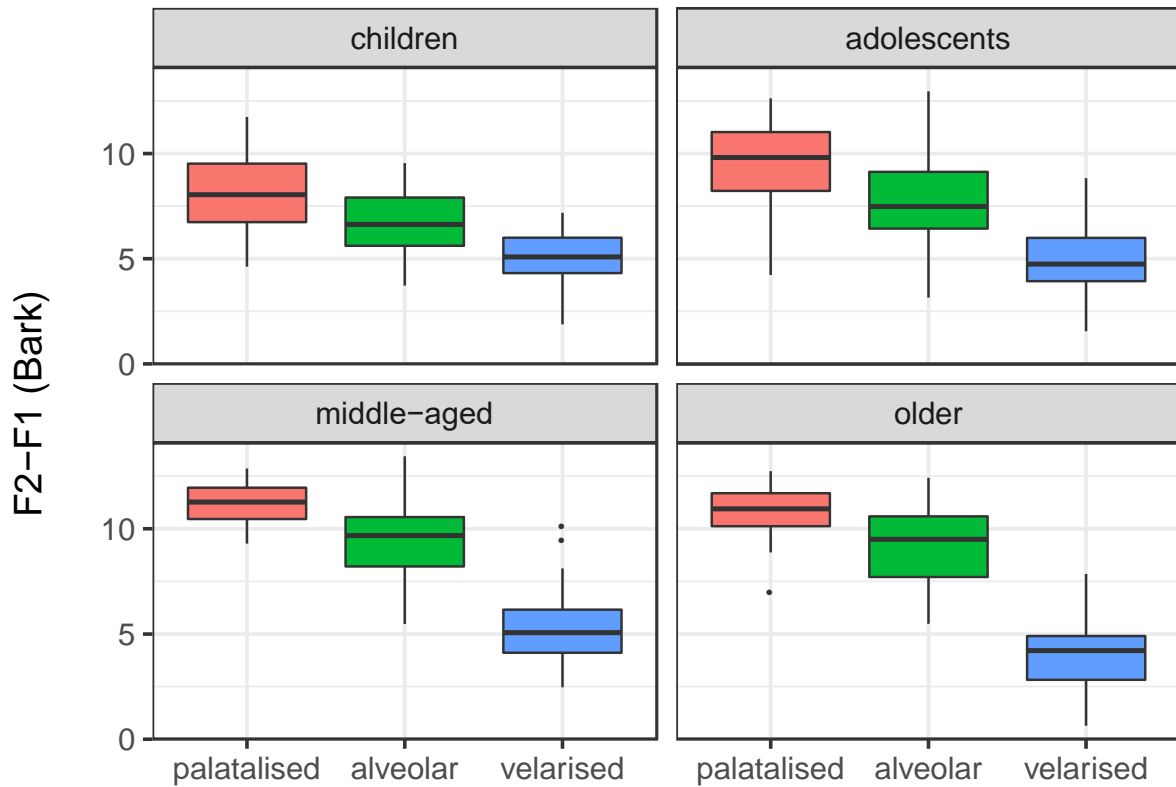
#### 4 5 **4.2 Acoustic analysis**

6  
7 The first acoustic analysis considers whether all speaker groups maintain the phonemic  
8 categories described for Gaelic laterals (Figure 5). This was analysed via a CTree built for  
9 each group. The CTrees built for each group are shown in Figure 6-Figure 9. These figures  
10 show that overall, each group of speakers display a distinction between velarised and  
11 alveolar/palatalised laterals, and then another significant split between alveolar and  
12 palatalised laterals as the first branches in the tree.<sup>1</sup> The adolescent female speakers  
13 produce slightly higher F2-F1 in alveolar laterals than the male speakers. There are no  
14 differences according to gender among the children. Word position differences include  
15 initial palatalised laterals have higher F2-F1 than medial palatalised laterals in adolescent  
16 and middle-aged speakers, and initial velarised laterals have higher F2-F1 than medial  
17 laterals in adolescent speakers.

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19  

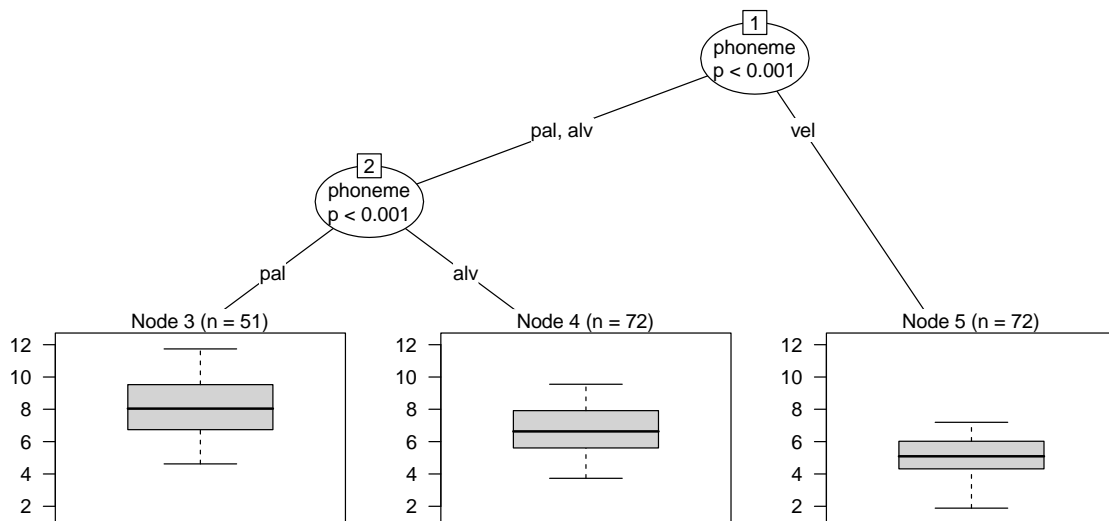
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<sup>1</sup> Note Nance (2020) considered differences within the group of children and found the youngest (7-year olds) do not produce a difference between palatalised and alveolar laterals. However, here I have aggregated all of the children together to compare them to other groups of speakers.



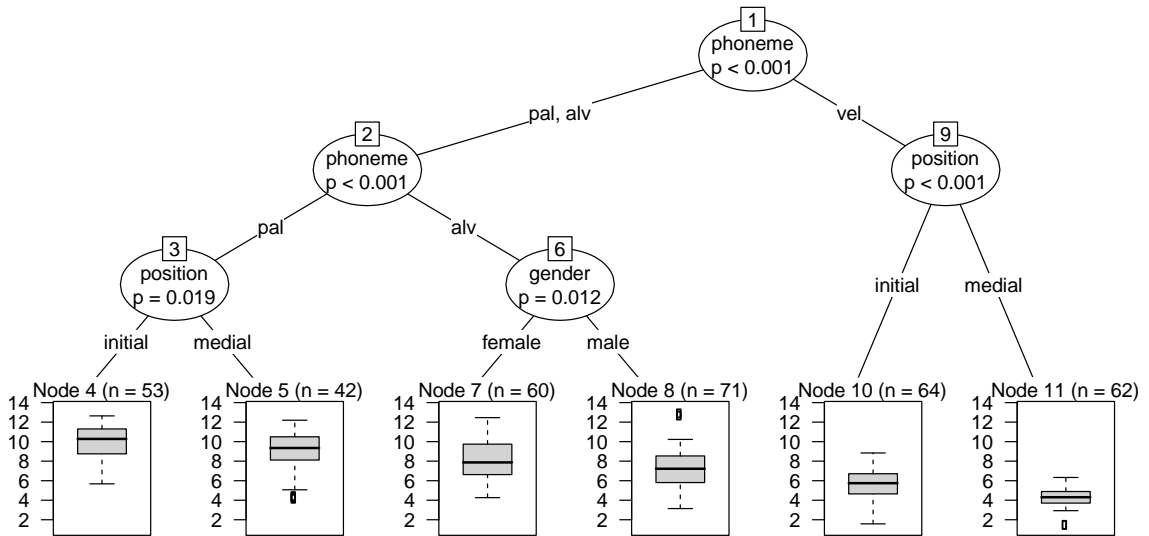
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Figure 5: F2-F1 values from all speaker groups. Each facet shows boxplots of palatalised, alveolar, and velarised laterals.

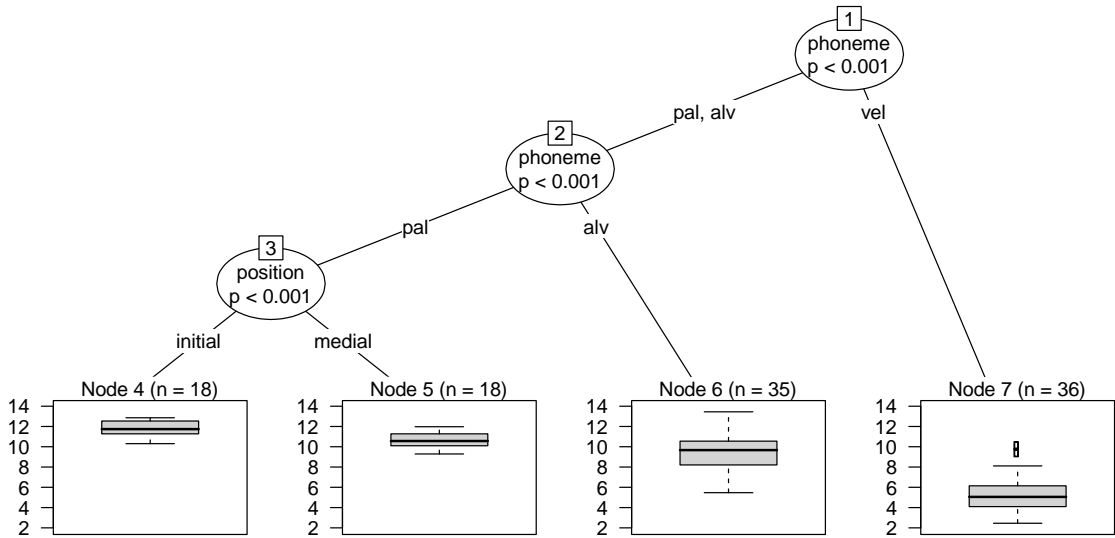


5  
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Figure 6: CTree analysis of children's lateral data.



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Figure 7: CTree analysis of adolescents' lateral data.



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Figure 8: CTree analysis of middle-aged speakers' lateral data.

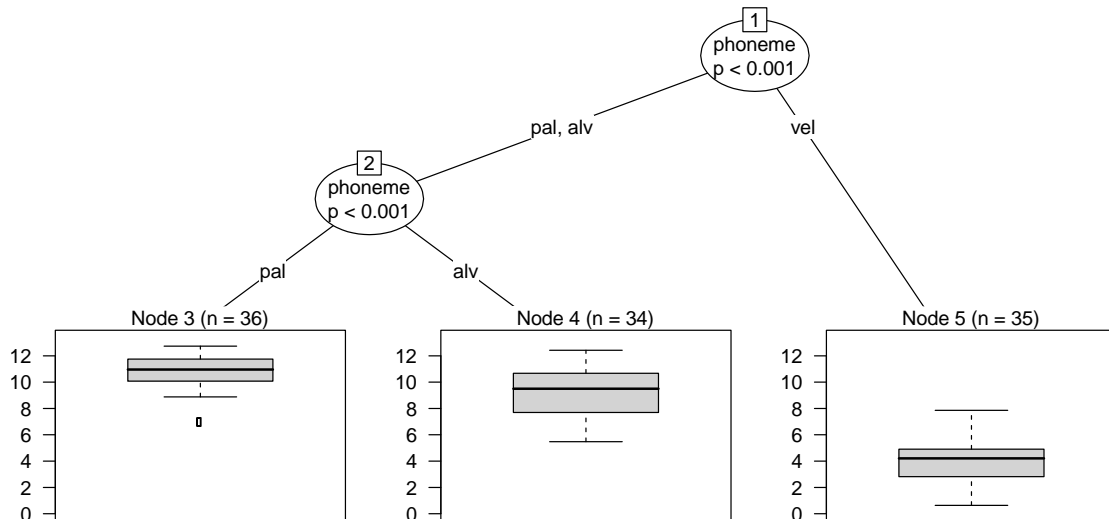


Figure 9: CTree analysis of older speakers' lateral data.

### 4.3 Euclidean Distance analysis

The Euclidean Distance analysis is shown in Figure 10. Middle-aged and older speakers have the largest Euclidean Distance, adolescents are somewhere in the middle and children have the lowest.

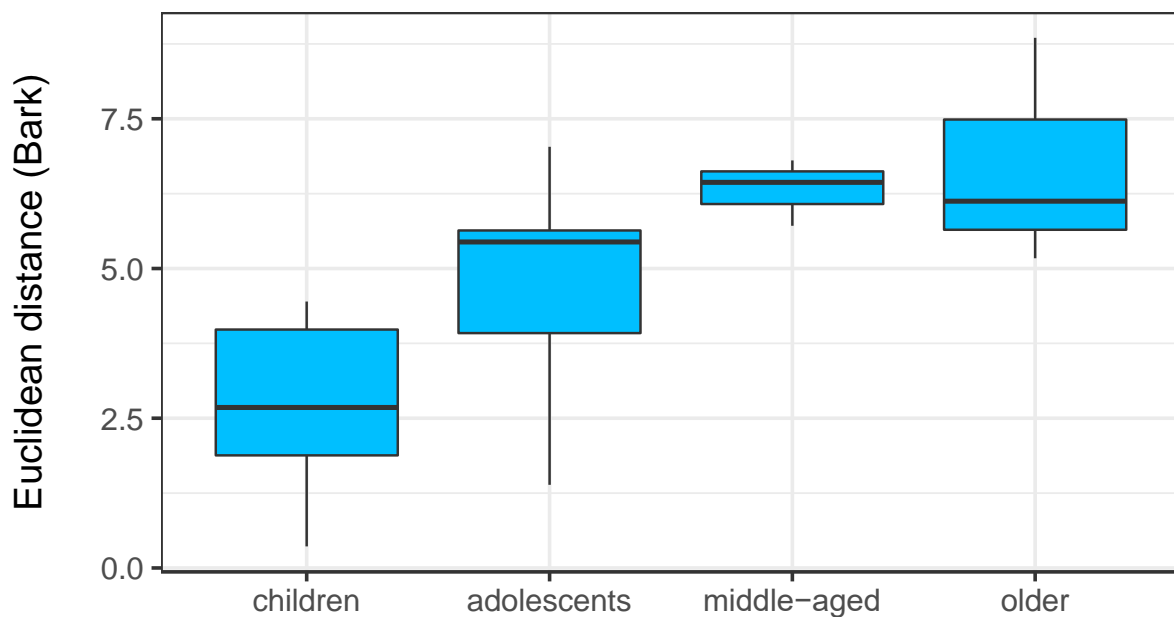


Figure 10: Euclidean distance between median velarised and palatalised F2-F1 laterals for each speaker.

The Euclidean Distance was then regressed against speaker group and the results are in Table 1. The model shows a significant effect of group ( $F(3,28) = 10.91, p < .001$ ) by which children are significantly lower than older speakers. Adolescents have a lower value than the older speakers but this is not significant ( $p = .06$ ). Middle-aged speakers have almost the same Euclidean Distance values as the older speakers.

1  
2 *Table 1: Regression model conducted on Euclidean Distance*

	<b>Estimate</b>	<b>SE</b>	<b>t</b>	<b>p</b>
Intercept	6.71	0.8587	7.818	< .001
Children	-4.0389	0.9358	-4.316	< .001
Adolescents	-1.9276	0.9791	-1.969	.06
Middle-aged	-0.3955	1.2145	-0.326	.75

3  
4 **4.4 Summary of results**  
5

6 The auditory analysis shows that children and adolescent speakers produce their  
7 phonemically palatalised laterals as palatal glides nearly a third of the time (Section 4.1).  
8 Middle-aged and older speakers do not do this. In terms of acoustics, all speaker groups  
9 make a distinction between phonemic categories (Section 4.2), but the acoustic difference  
10 (Euclidean Distance) between categories is greater among older and middle-aged speakers  
11 and significantly lower among children (Section 4.3).  
12

13 **5 Discussion**  
14

15 The analysis presented here considers possible sound changes in progress in the Gaelic  
16 lateral system. The results above show differences between generations and using the  
17 apparent-time model we might infer sound change here: potentially, the palatalised lateral  
18 is changing to be realised as a palatal glide some of the time, and categories of laterals are  
19 becoming more similar across generations. In this section I will discuss how we must be  
20 cautious about using the apparent-time model in contexts of small or endangered languages  
21 where the context of generations differs significantly, such as the context of Gaelic.  
22

23 The first important factor is that in minority language settings where the language is  
24 acquired to a large extent through the educational system, acquisition of complex structures  
25 not shared in the dominant language may be later than can be expected in other language  
26 settings, or might not occur at all. For example, Thomas et al. (2014) found that young  
27 Welsh speakers with lower amounts of input in the home lag behind L1 Welsh-speaking  
28 children in morphology acquisition. They suggest that such children might ‘catch up’ when  
29 sufficient quantity of input is received, but this will take longer if they only receive input at  
30 school. Kennard (2013) considers mutation acquisition in child Breton speakers, young  
31 adults, and older speakers. She shows that although children in immersion education have  
32 not yet acquired the mutation system, young adults who have finished Breton immersion  
33 education have done so. It may be the case that the young Gaelic speakers recorded here  
34 will, in the future, acquire the lateral system in the traditional manner, but have not done so  
35 yet. In light of these findings, there may not actually be a sound change in progress at all in  
36 Gaelic laterals.  
37

38 A second important factor is that an apparent-time model assumes some kind of continuity  
39 in the speech community. As discussed in the Introduction, there is no definitive way of  
40 precisely defining the speech community, but it can be assumed that a definition would  
41 include some shared linguistic and social practices. The different groups of speakers  
42 analysed here differ in many linguistic and social practices surrounding Gaelic and Gaelic

1 use: how they acquired the language (to a greater or lesser extent depending on family),  
 2 their experience of Gaelic at school, the use of Gaelic in the wider community, their  
 3 language code choice among friends, and their experience of Gaelic's political status in  
 4 Scotland. As such, the community of Gaelic speakers on Lewis is socially and linguistically  
 5 not consistent, leading to the question as to whether it is meaningful to consider speakers  
 6 part of the same speech community and comparable as generations. Thomason & Kaufman  
 7 (1998:10) specifically highlight contexts of extreme language shift as situations which might  
 8 be too unstable to constitute the sociolinguistic context where change via transmission can  
 9 occur. Yet the context of Lewis described here is not one of extreme shift, younger speakers  
 10 are of course still Gaelic speakers, but their experience of Gaelic is different.

11  
 12 A final factor in endangered/revitalising language settings is that the youngest group of  
 13 speakers will not be socially or numerically the same as the older groups. For example, in  
 14 the context of contemporary Gaelic, in 2018-19 there were 3,467 pupils enrolled in primary  
 15 GME classes, but only 1,423 in secondary (Bòrd na Gàidhlig 2020). GME is increasing in  
 16 popularity and availability so it is probable that the secondary figures will rise in coming  
 17 years, but even allowing for this there is considerable drop-off between primary and  
 18 secondary-age speakers. Dunmore (2019) shows that few former GME pupils who are now  
 19 young/middle-aged adults continue to use Gaelic. For younger generations then, it is likely  
 20 that at each life stage only those speakers most motivated and most dedicated to Gaelic,  
 21 with resources available, continue using the language. In this respect, the population of  
 22 young adult Gaelic speakers are a small, and (typically) dedicated, proportion of the children  
 23 who start GME and may not be comparable.

24

## 25 **6 Conclusion**

26

27 This study considers the extent to which linguistic and social practice must be shared  
 28 between generations in order to make them meaningfully comparable through the  
 29 apparent-time model. To attempt to answer this question I would suggest that a socially-  
 30 informed knowledge of the community is crucial and must be included in any possible  
 31 analysis of sound change in such communities. Recognition of what is *enough* shared social  
 32 practice must in some part stem from how the community perceives itself. While there are  
 33 sometimes suggestions of communication breakdowns between GME pupils and older  
 34 speakers (e.g. Will 2012:124), it is largely recognised that GME pupils are the future of the  
 35 language and an important part of Gaelic society (e.g. Bòrd na Gàidhlig 2018).

36

37 Even when it is accepted that comparing generations is possible, I argue that it is important  
 38 to consider the points raised in the Discussion above when interpreting results. For  
 39 example, in the case of the data presented here, I do not think it possible to conclusively say  
 40 sound change is taking place without further data. Certainly, there are differences between  
 41 the speaker groups compared, but further conclusions are not possible. The context of  
 42 Gaelic throws into sharp focus these questions of what can constitute a speech community  
 43 and thus be meaningful in generational comparison. However, this issue is not limited to  
 44 small and endangered languages. Older and younger speakers in different communities will  
 45 always differ in some aspects of social and linguistic practice so these factors must be taken  
 46 into account in studies of community language change.

47

## 1 7 Ethical statement

2

3 This project was granted ethical approval through the School of Social and Political Sciences  
4 and the College of Social Sciences Ethics Committee, University of Glasgow (adolescent,  
5 middle-aged speakers, older adults), and the Faculty of Arts and Social Sciences-  
6 Management School Ethics Committee, Lancaster University (children). Adult participants  
7 gave consent to anonymously participate in the research. Parents gave consent for the  
8 adolescent and child speakers to anonymously participate in the research and I underwent a  
9 background assessment by Disclose and Barring Service (Scotland) and Protection of  
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11

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13

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19

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3

4

1 **10 Appendix**

2

3

Table 2: Word list used for child speakers

Target lateral	Word	IPA	English	Word position
ɹ̥	salach	sɑɹ̥ɔx	<i>dirty</i>	medial
ɹ̥	balach	paɹ̥ɔx	<i>boy</i>	medial
l	baile	paɫə	<i>town</i>	medial
l	eilean	ɛlan	<i>island</i>	medial
ɹ̥	duilleag	t̥uɹ̥iːak	<i>page</i>	medial
ɹ̥	cailleach	kʰaɹ̥iːɔx	<i>old woman</i>	medial

4

5

Table 3: Word list used for adolescent, middle-aged and older adults

Target lateral	Word	IPA	English	Word position
ɹ̥	latha	ɹ̥a.ə	<i>day</i>	initial
ɹ̥	loch	ɹ̥ɔx	<i>lake</i>	initial
l	liosta	ɫsʰt̥ə	<i>list</i>	initial
l	leat	laʰt̥	<i>at you</i>	initial
ɹ̥	leabhar	ɹ̥iː.əɾ	<i>book</i>	initial
ɹ̥	leugh	ɹ̥iːv	<i>read</i>	initial
ɹ̥	salach	sɑɹ̥ɔx	<i>dirty</i>	medial
ɹ̥	balach	paɹ̥ɔx	<i>boy</i>	medial
l	baile	paɫə	<i>town</i>	medial
l	duilich	t̥uɫiç	<i>sorry</i>	medial
ɹ̥	cailleach	kʰaɹ̥iːɔx	<i>old woman</i>	medial
ɹ̥	duilleag	t̥uɹ̥iːak	<i>page</i>	medial

6