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Adult New Speakers of Welsh: Accent, Pronunciation and Language Experience in South Wales

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Abstract: This study examines the experiences of adult new speakers of Welsh in Wales, UK with learning pronunciation in Welsh. Questionnaire data were collected from 115 adult L2 speakers with English as an L1 located in South Wales. We investigated self-reported perceptions of accent and pronunciation as well as exploring which speech sounds were reported to be challenging for the participants. We also asked participants how traditional native speakers responded to them in the community. Perceptions of own accent and pronunciation were not rated highly for the participants. We found an effect of speaker origin affected responses to perceptions of accent and pronunciation, as well as speaker learning level. In terms of speech sounds that are challenging, the results show that vowel length as well as the consonants absent in the L1 (English) were the most common issues reported. A range of responses from traditional native speakers were reported, including speaking more slowly, switching to English, correcting pronunciation or not responding at all. It is suggested that these results indicate that adult new speakers of Welsh face challenges with accent and pronunciation, and we discuss the implications of this for language teaching and for integration into the community.

Keywords: second language acquisition; speech production; accent; pronunciation; new speakers; minority language bilingualism

1. Introduction

In the field of L2 pronunciation teaching and learning, intelligibility and comprehensibility are often regarded the most important considerations (Derwing and Munro 2015). Whilst models of L2 speech learning (Best 1995; Tyler 2019; Flege 1995; Escudero and Boersma 2004; Van Leussen and Escudero 2015) do allow for 'native like' production by individuals who learn a language during adulthood, this is seen as an unusual outcome rather than the expectation for most individuals (Best and Tyler 2007). As such, direct imitation of the accents, dialects or other pronunciation traits of native speakers is not seen as being particularly desirable for L2 speakers, especially in contexts where they would be using the target language mostly with other non-native speakers (Jenkins 2002). However, whilst this may be true in the case of international languages, such as English, there is evidence that this is not the case for smaller, regional or minority languages. New speakers of many, such as Breton (Hornsby 2015a), Sami (Jonsson and Rosenfors 2017), and Corsican (Jaffe 2013), face the additional challenges of navigating the questions of identity and legitimacy posed by the perceived 'nativeness' in their speech. Indeed, the concept of new speakerhood is intrinsically linked to the context of minority language endangerment and the will to protect and transmit these languages.

The issue of the perceived degree of 'nativeness' is reflected in the terms used to describe speakers and their roles in these contexts. Research in the field of language acquisition and research regarding widely spoken, global languages, such as English and Spanish, refer to first and second language (L1 and L2) or 'native' and 'non-native' speakers. This is viewed as problematic in the context of minority languages (O'Rourke and

Pujolar 2013) as it is considered that these terms encourage the perception of a hierarchy of speaker legitimacy, which undermines individuals who have acquired the language outside familial settings (Hornsby 2019). The terms 'new' and 'traditional' speakers are used to better reflect the complex social realities attached to speakerhood of non-majority languages. Hornsby (2015b) states that new speakers are often defined as individuals who have attained the minority language through formal education, as opposed to familial transmission, which means that every new speaker has invested their time and resources to attain language. This does not mean that there are not those who acquire minority languages through community transmission or any other linguistic context, but these are exceptions and most have made significant efforts.

The current study considers the experiences of individuals who are, or have, acquired the language as adults. This is opposed to individuals who are acquiring Welsh through Welsh medium education at primary or secondary levels (Mayr et al. 2017), or those learning Welsh in English medium primary or secondary schools (Selleck 2018). We choose to refer to individuals who have made this effort as 'new' speakers as opposed to 'learners'. The term 'new speaker' has been used in the Welsh context, often to refer to individuals accessing the language through Welsh medium education (Selleck 2018; Robert 2009) but is arguably confined to academic discourse. The alternatives used in non-academic discourse in Wales, such as 'dysgwyr' (learners), can exclude competent users who are able and wish to use the language (Hornsby and Vigers 2018). We also use the terms L1 and L2 when discussing the process of acquiring language competence. Understanding the motivations and perceptions of individuals who often go to great lengths to attain a language is of vital importance to support language transmission outside of the classroom setting, both for new and traditional speakers.

1.1. The Welsh Context

Welsh is a Brittonic Celtic language spoken by 562,000 (19%) of Wales' 3.1 million inhabitants (Welsh Government 2011). All speakers also speak English and both languages have equal legal status, with education at all levels, local and national government, and some media available in Welsh. There was a marked decline in speaker density during the 19th century, a period of rapid industrialization which led to great population growth and movement within the country, especially towards the coal mines of the southern valleys. These social changes, combined with the negative attitudes towards bilingualism commonly held at the time, led to many parents choosing not to transmit the language to their children. There are now many individuals who are reclaiming the language despite the broken chain of transmission within their families. Hodges (2010) refers to this as the 'cenhedlaeth goll' (lost generation) of speakers and in the context of individuals who desire to interact with the Welsh language and how this can influence choices regarding Welsh medium education.

There is variety in terms of speaker density within the population in different areas, with as much as 80% of some communities speaking Welsh in the north West, whilst many communities in the south and east have considerably lower percentages. This means that new speakers in the various regions can face different challenges in their linguistic journeys. Whilst an individual in Gwynedd, a county in the north west with the highest percentage of Welsh speakers, might expect to find the language in daily use in the community, individuals in the more urban southern regions would have to seek out opportunities to gain access to the language. The present study focuses on individuals currently living in South Wales. The average population density over the 14 counties of South Wales reporting ability to speak Welsh was 13.6%, ranging from 43.9% in the county of Carmarthenshire to 7.8% in the county of Blaenau Gwent (Welsh Government 2011). This suggests that opportunities for Welsh to be transmitted within the community may be more limited in South Wales and that individuals who choose to acquire the language may be forced to search for more formalised opportunities to use Welsh.

In recent years, there has been an increase in the interest and support for individuals choosing to learn Welsh as adults. These individuals residing in Wales may come from Wales or from further afield. Individuals who were educated in Wales will almost always have had some Welsh lessons in school as a second language. Therefore, speakers of Welsh English who are learning Welsh as adults are likely to have had some contact with the language in childhood whilst those form outside of Wales often have no previous experience. In 2017, the Welsh Government published the current Welsh language strategy, Cymraeg 2050: A million Welsh speakers, which outlines the aim to increase the number of speakers of Welsh to one million by 2050. The Welsh Government recognises the importance and contribution of the Welsh for Adults sector in achieving opportunities for adults to learn Welsh and improve their Welsh language skills. Data from providers of language teaching, such as the National Centre for Learning Welsh, indicate that growing numbers of people are choosing to learn, with 13,260 individuals accessing their Welsh for Adults provision in 2018–2019 (National Centre for Learning Welsh 2020). Online providers, such Duolingo, have also noted a marked increase in uptake, with Welsh being the fastest growing language on the platform (Watkins 2020). Understanding experiences of learning pronunciation, as well as how new speakers interact with traditional speakers, will not only allow providers to tailor their teaching to the needs of their clients but also allow for greater understanding of the challenges that individuals face with integrating into communities.

1.2. Sounding 'Native'

Passing for a native speaker is often considered to be the ultimate mark of success in language learning, and pronunciation is one of the most obvious elements (Gnevsheva 2017). However, it is commonly accepted that native-like acquisition is not the norm for most individuals learning languages, especially those learning as adults. Whilst there is evidence that some individuals do indeed acquire 'native-like' proficiency (Birdsong 2003) these are generally accepted to be the exception and not the rule. Most models of second language perception and production do allow for the possibility of 'native-like' perception and production in the target language despite cross-linguistic influences from the first language. The Second Language Linguistic Perception model (Escudero 2005; Van Leussen and Escudero 2015) also posits that dialects within the L1 can influence the perception of the target language, meaning that individuals who speak the same language might face differing challenges, especially in terms of vowel perception and production (Escudero and Williams 2012). This is of particular interest in the context of Welsh new speakers as the linguistic background of the individuals choosing to learn and use the language can vary greatly, from Welsh English to other varieties of British English (Müller and Ball 1999), to an array of languages from all around the world.

In addition, the concept of adopting the accents and pronunciation of traditional speakers may not be desirable for some new speakers, given that they have connotations of links to geographical locations and socio-economic status. In many instances, traditional varieties of minority languages are linked to rural life, with the speech of older, traditional speakers being viewed by some as more 'authentic' (Bucholtz 2003). This concept of an inherent bond between specific ideals of language, history and location may not reflect the modern, urban realities of many new speakers across many language contexts. This was reported for Scottish Gaelic (McLeod and O'Rourke 2015; Nance et al. 2016), where individuals displayed very different aspirations in terms of constructing speaker identities around more or less traditional varieties. In both papers, whilst some speakers felt strongly that they wished to use localised dialects, especially those used by family members, others felt that they had no desire to emulate the speech of traditional linguistic heartlands to which they had no connection. Trosset (1986) observed similar attitudes by some new speakers of Welsh, especially those who had no connection to particular areas, who felt that using more traditional varieties could become performative rather than allowing for greater ease of communication.

This calls into question the assumption that 'nativeness' is the ultimate goal in minority language learning. Whilst some do aspire to pass as native speakers, assuming that this is a universal phenomenon for all new speakers risks adding pressure to conform with identities that may not feel relevant to their experiences.

1.3. Sounding 'Welsh'

Despite having a standard written form, Welsh does not have a standard spoken variety, and as such, the phonetic inventory of the language varies between dialects (Ball and Williams 2001; Awbery 2009). These are generally discussed as northern and southern varieties, though there are numerous local variants within this divide. While this study considers individuals currently living in South Wales, we provide a general overview of the phonetic inventory of northern and southern varieties as it is possible that some tutors use northern variants when teaching, and there are some aspects of vowel pronunciation that differ between the varieties that can be ambiguous to those learning the language.

Welsh has 29 distinctive consonants (Ball and Jones 1984; Ball and Williams 2001; Hannahs 2013). These include the plosives /b, d, g, p, t, k/, the nasals /m, n, ŋ/, the trills /r, rʰ/, the fricatives /f, v, θ, ð, s, ʃ, χ, h/. The lateral fricative /ɬ/, the approximant /j/and the lateral approximant /l/are also present. The affricates /ʧ/ and /ʤ/ are present in some loan words. Welsh has initial consonant mutation in certain lexical and syntactic environments, and the voiceless nasals /mʰ, nʰ, ŋʰ/ occur in word initial position in nasal mutated forms. The orthography of Welsh consonants is generally agreed to be fairly transparent, and the consonants are similarly pronounced across dialects, though the identity of certain phonemes in southern dialects is contested (Ball and Williams 2001). The identity of the uvular fricative, for example, /χ/, has been argued by some to be velar in some varieties (Fynes-Clinton 1913; Watkins 1961). Generally, there is a 1:1 relationship between the orthographic representation of consonants and their pronunciation, with most phonemic units being represented by a single grapheme. However, certain phonemic units are represented with digraphs, such as <ll> and <ch>, representing /ʧ/ and /χ/.

The vowels of Welsh vary more between dialects, though there are many similarities (Ball and Williams 2001; Hannahs 2013; Mayr and Davies 2011). All monophthongs, except for schwa, have both a short and long form. As shown in Table 1 below, southern varieties contain 11 monophthongs, while northern varieties have an additional pair /ɨ, ɨː/. This difference influences the number of diphthongs in both dialects: 13 for northern varieties and 8 for southern varieties. Earlier accounts (Ball and Williams 2001) suggested that the northern pairs are only differentiated in length whilst the southern pairs differ in terms of vowel quality as well as duration. However, acoustic analyses of the vowel inventories of both dialects (Mayr and Davies 2011) suggest that these distinctions are present in both varieties.

When it comes to orthography, in minimal pairs where vowel length is the differentiating factor, e.g., 'tan' (until) and 'tân' (fire), the circumflex is used to indicate the long vowel. However, when there is no minimal pair, there is no indication of vowel length, e.g., 'nos' (night) having a long vowel /noːs/ but no orthographic information to show this. There are several rules which dictate vowel length in various contexts, but this is not always reflected in the orthography (Morris-Jones et al. 1928; Ball and Williams 2001). This is confounded by the vowels in certain words, e.g., 'pell' (far) being pronounced differently according to differing dialects. The standard pronunciation in northern varieties would feature a short vowel [peɬ], but speakers of southern varieties would more likely produce [peːɬ]. The orthography, therefore, gives much less information regarding the pronunciation of monophthongs than consonants and could potentially pose difficulty to new speakers, particularly if they lack access to spoken input.

Diphthongs are represented by a combination of the two vowel graphemes but are not considered as unit graphemes in the way that consonants, such as <ch> and <ll>, are. Some diphthongal graphemes have more than one realisation. For example, <wy> represents

/ʊɪ/ but also a combination of consonant plus vowel /wɪ/ or /wə/ and <yw> represents /ɪʊ/ and in some cases /əʊ/ (Ball and Williams 2001). The ambiguities around vowel length and diphthong identity are considered in this study as they may pose challenges for new speakers due to the fact that there are several options for pronunciation, especially as these are not present in English L1.

Table 1. The vowels of northern and southern Welsh. Adapted from Mayr and Davies (2011).

Northern Welsh		Southern Welsh	
Short vowels	Long vowels	Short vowels	Long vowels
i ɨ u	iː ɨː uː	ɪ ʊ	iː uː
e ə o	əː oː	ɛ ə ɔ	eː oː
a	aː	a	aː
13 diphthongs		8 diphthongs	
Front closing	Back closing	Front closing	Back closing
aɪ ɔɪ eɪ	ɪʊ ʊʊ aʊ əʊ ɨʊ	aɪ ɔɪ ʊɪ eɪ	ɪʊ ɛʊ aʊ əʊ
Central closing			
aɨ ɑɨ ɔɨ ʊɨ əɨ			

There is evidence of the influence of long-term language contact on the pronunciation of Welsh and English in Wales. There have been several investigations of language contact and (the lack of) differences between the pronunciation of bilingual speakers of Welsh and English, compared to monolingual speakers of English who live in the same communities. For example, Mayr et al. (2017) investigated the effects of long-term language contact on the production of monophthongs by bilingual and monolingual speakers in south Wales. They found strong convergence between both languages and that the majority of cross-linguistic vowel pairs were produced identically in Welsh and English by the participants. This convergence has also been reported in prosodic features by Mennen et al. (2020) who investigated the production of lexical stress in the same speakers as Mayr et al. (2017). They reported that Welsh and Welsh English have become alike in their realisation of lexical stress which they suggest indicates convergence between the two languages in the community. This convergence in segmental and prosodic features is important for this study because we investigate people learning Welsh who are originally from Wales and have lived in the community for many years, as well as participants with English as an L1 from elsewhere in the British Isles. This may have implications for participants' perception of their own pronunciation in the present study.

The production of vowels was acoustically investigated in adults learning Welsh by Müller and Ball (1999). They compared the production of Welsh and English monophthongs and diphthongs by the individuals attending a Welsh language class in South Wales and their tutor. They found that speakers of 'Welsh English' were more likely to produce vowels similar to those of the tutor, a native speaker of Welsh, whilst those who spoke 'non-Welsh English' showed a tendency to diphthongise monophthongs. As mentioned above, we are interested in the question of speaker origin in the present study, aiming to investigate whether speakers from Wales who have decided to learn Welsh have differing perceptions of their own accent and pronunciation to speakers who have moved to South Wales from further afield.

Rees and Morris (2018) considered the challenge of pronunciation from the point of view of Welsh for Adults tutors. By using a questionnaire and conducting focus groups they were able to gain understanding of the elements of pronouncing Welsh which tutors saw as challenging for individuals at various points of their language learning trajectories. The input from language tutors is of particular interest, as these individuals teach a wide range of students and are often very experienced, but generally have very little phonetic training. The tutors generally agreed that the vowel sounds posed greater challenges in the longer term, especially the diphthongs. In addition, they suggest that further

pronunciation training across all levels, from beginners to advanced speakers, could be beneficial. However, they also note that developing opportunities for new and traditional speakers to interact within their communities is vital.

1.4. Interactions between New and Traditional Speakers

The interactions between new and traditional speakers of minority languages are of great importance when considering the trajectories of new speakers. There is evidence of hierarchization, and even friction, between these groups in many settings, including Breton (Hornsby 2019) and Scottish Gaelic (McLeod et al. 2014; McEwan-Fujita 2010). In some cases, it is even claimed that the differences between the varieties spoken by both groups are so vast that most new speakers do not understand traditional varieties (Hewitt 2020), but this is strongly refuted by others, who view this as "actively [engaging] in the creation of such divisions, through a rhetoric of failure to reach 'authentic speakerhood'" (Hornsby 2019, p. 395). In the case of Welsh, the experiences of individuals starting to learn Welsh by attending Welsh for Adults courses for beginners in North Wales have been examined from different perspectives in two large-scale studies. Baker et al. (2011) considered the implications of differing motivation to learn in the context of language planning, noting that individuals who had long-term integrative motivation, such as wanting to speak Welsh with their children, generally had more favourable outcomes in terms of language learning. This was echoed by Andrews (2011) who saw that integrative motivations, such as using the language in the community, were considered to be of greater importance than instrumental reasons, such as improved employment opportunities. It is, however, worth remembering that these studies were carried out in areas where there are more opportunities to use Welsh in the community than the areas considered in the current study.

Indeed, in areas where the language is only spoken by a small percentage of the population, access and opportunities to use the language are often considered to pose some of the greatest challenges. Mac Giolla Mac Giolla Chríost et al. (2012) suggest that this lack of opportunities to communicate is partly due to the tendency of traditional speakers to switch to English when speaking with new speakers. This may happen for many reasons, which can be positive in their intention, e.g., wanting to facilitate communication (Trosset 1986), but is discouraging for individuals wishing to integrate into Welsh-speaking communities. This challenge is even greater in communities where the language is not used by the majority of the population as casual contact with traditional speakers, e.g., interactions in shops or cafés, is unlikely. This would suggest that individuals are forced to search for more formal opportunities to interact with other speakers. However, there is very little evidence available directly from the new speakers in communities in South Wales that are not in the traditional heartlands of the language. Hornsby and Vigers (2018) investigated the experiences of five 'new' speakers in the traditional Welsh-speaking areas of North Pembrokeshire and South Ceredigion. They found that, despite having attended Welsh-medium education and having a high level of competence in the language, the new speakers did not always feel that traditional speakers treated them as valid speakers and therefore that "a linguistic repertoire that includes Welsh competence does not automatically confer legitimacy as a speaker." (p. 425) Indeed, they mentioned that they encountered individuals who chose not to speak Welsh with them, despite being aware of their ability to use the language. This raises questions regarding the ways in which new speakers define themselves within their communities, but also the ways in which the communities define them.

1.5. The Present Study

There are many considerations when discussing adult new speakers' accent and pronunciation as they are linked to questions of identity. Whilst studies have been conducted regarding the perception of language tutors of the challenges faced by individuals in their classes, no large-scale study has been conducted with the adult new speakers themselves.

Therefore, very little is known about adult new speakers' perception of their own pronunciation. Studies in minority language teaching and learning are moving away from the 'native' speaker as a model (O'Rourke and Pujolar 2013). It is still assumed that more "native-like" pronunciation would lead to increased confidence in speaking and using Welsh, despite new speakers not having been surveyed.

Based on the considerations presented above, the present study sought to investigate aspects of adult new speakers' perceptions of their accent and pronunciation in Welsh. Specifically, we sought to investigate whether there is a relationship between speaker background and the stage of their learning journey in perceptions of their own pronunciation in Welsh. Based on previous work on contact between Welsh and English in Wales, as well as the findings of Müller and Ball (1999), we are interested in comparing the experiences of participants with English as an L1 from Wales with speakers from elsewhere in the British Isles. We also sought to identify some of the specific segmental aspects that adult new speakers perceive as challenging. Finally, we sought to investigate the reported responses of traditional 'native' speakers of Welsh to L2 accent and pronunciation encountered by participants learning or who have learnt Welsh.

2. Method

An online questionnaire was implemented, which asked adult new speakers of Welsh about the challenges that they face in learning to pronounce and use Welsh as new speakers in their communities.

2.1. Participants

114 (77 female (68.4%); 36 male (31.6%)) adult new speakers completed an online questionnaire about their experiences of learning and using Welsh. They were recruited online through Welsh language social media, advertising by language course providers and by word of mouth. This allowed for individuals who have a wide range of contact with the Welsh language.

All were living in South Wales at the time of responding, with 55 originally from Wales (47.8%) and 59 from outside of Wales (52.2%) (England n = 53, Scotland, n = 3 Northern Ireland = 2, Republic of Ireland n = 1). The participants' ages ranged from 21–82 (M = 52.65, SD = 15.37). All reported being L1 speakers of English and 65 participants reported that they were familiar with languages other than Welsh and English. When asked to describe their abilities in Welsh 52 (49.56%) identified as 'beginners', 37 (33.04%) as 'intermediate speakers', 18 (15.65%) as 'advanced speakers' and 7 (6.09%) as 'fluent speakers'. Twenty-one speakers had been learning Welsh for less than 1 year, 48 had been learning Welsh for between 1 and 4 years, 20 for between 5 and 10 years and 25 for greater than 11 years. Fourteen participants reported having started learning before the age of 10, but six of these individuals reported a prolonged period of not interacting with the language and noted that they had been learning for 2 years or less. None of the 14 reported being fluent speakers.

2.2. The Questionnaire

The questionnaire was designed using JISC Online surveys to enable the collection of a broad range of qualitative and quantitative data about the experiences of L2 speakers of Welsh. The questionnaire design was influenced by earlier research in the field, both in terms of speaker identity and pronunciation. The questionnaire was presented bilingually, and participants were free to answer in either language, or a combination of both. A variety of types of questions were used, from open-ended questions allowing free text answers to statements that were responded to on Likert scales. This was done to collect a broad range of data in a relatively short amount of time, but also to allow for the expression of experiences and attitudes that would not be possible in closed questions alone.

Firstly, we asked participants to respond to a series of statements on a 9-point Likert scale about whether individuals sound like, or wish to sound like, 'native' speakers. We

also asked whether speakers were proud of their accent, and whether they wanted to change their accent. By considering perceptions of accent as well as the perceived difficulty of various speech sound, we are able to see general trends of self-evaluation. Full details of these items can be found in Table A1 in the Appendix A. Whilst this method is notorious for providing unreliable data in terms of pronunciation accuracy (Mitterer et al. 2020) it reveals how individuals feel about their own difficulties.

The section of the questionnaire that asked about specific speech sounds that were challenging was designed to mirror the questions asked by Rees and Morris (2018) of Welsh for Adults tutors. By considering the similarities and differences in responses it is hoped that a fuller picture will emerge of the challenges of perception and pronunciation which new speakers face.

The participants were asked which sounds were difficult for them by responding to several examples of individual segments, presented in quotation marks and with example words, e.g., *Ynganu/pronouncing 'll' e.e. lle, pell* (full details of these items can be found in Table A2 in Appendix A). Participants could choose as many of the speech sounds that they found challenging. They were also encouraged to leave further comments regarding elements that they find, or found, challenging. Nine individual aspects of pronunciation were discussed. They were chosen based on the questions posed by Rees and Morris (2018) and their absence from Standard Southern British English. These included three consonants: the lateral fricative <ll>/ɬ/, the velar/uvular fricative <ch>/x/ or /χ/ and the trilled <r, rh>/r/. It should be noted that there are options for other r-realisations in Welsh. For example, intervocalically, a tap [ɾ] would be expected. Some native speakers may also produce an approximant [ɹ] or a uvular trill [ʀ] (Morris 2013) but we focus on the "rolling" of the/r/following Rees and Morris (2018). We were particularly interested in vowel length, as well as the vowel/o/in word-final position. We also asked participants about their production of the diphthongs <ae>/aɪ/, <wy>/ʊɪ/ and <yw>/ɪʊ/. For vowel length, we asked participants about their ability to distinguish between long and short vowels with and without the circumflex, with examples to illustrate the distinction tân/tan and bys/byr.

Finally, we asked participants how traditional "native" speakers responded to their accent or pronunciation (Table A3 in Appendix A). Participants could tick as many options as were applicable and were asked to expand if they clicked "other".

2.3. Analysis

The questionnaire featured several questions investigating Likert responses to questions about accent and pronunciation, as well as tick box questions about challenging pronunciation features and responses of 'native' speakers. In order to investigate the effect of speaker background in the analysis of the four questions about accent and pronunciation, we used statistical analysis. We were investigating a multinomial dependent variable with ordinal values from 1–9, where '9' is higher than '8' which is higher than '7', etc. We conducted an Ordinal Logistic Regression which is specifically designed for ordinal data analysis (Baayen 2008, p. 208; Endresen and Janda 2016). This approach produces an analysis model, similar to a conventional multiple regression where there is one dependent variable and one or more independent variables. However, the dependent variable is treated as an ordered categorical variable and it is not assumed that there are equal intervals between categories on the response scale. In this analysis, we used the PLUM procedure in SPSS version 27. We report the Wald chi-square test statistics along with the corresponding *p*-values of the overall omnibus tests for each independent variable. In order to investigate how levels of the independent variables Origin (Welsh, Other) and Level (Beginner, Intermediate, Advanced, Fluent) contribute to the model, we also examine the coefficients (Appendix B, Tables A4–A7). We report deviance goodness-of fit test results for the models where a non-significant *p*-value indicates a good fit. We also report the pseudo R2 values (Nagelkerke) to provide an indication of the overall performance of the model by indicating the proportion of the variance explained by the model.

For the questions about challenging features of pronunciation, we present percentage responses to tick box questions, and proportion of overall responses for the question about how native speakers respond for each level (Beginner, Intermediate, Advanced and Fluent).

3. Results

3.1. Accent and Pronunciation

The participants were asked to rate how far they agreed or disagreed with four statements about their accent and pronunciation when speaking Welsh. We presented the four statements on a nine-point Likert scale from 1 = not at all, 9 = completely. We asked how far they agreed with the following statements:

- My pronunciation in Welsh is like a 'native' speaker's.
- I'm proud of my accent when speaking Welsh.
- I want to change my accent in Welsh.
- I want to sound like a 'native speaker'.

The median scores for each of the statements above is presented in Figure 1 below.
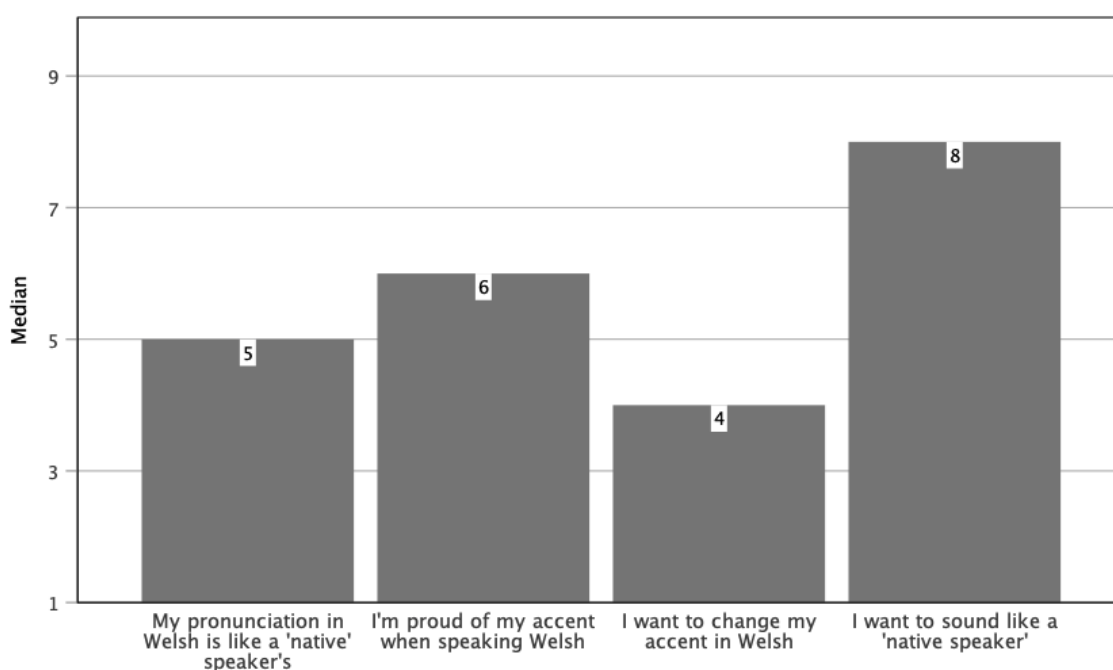
Figure 1. Median scores for statements on accent and pronunciation (1 = Not at all, 9 = Completely).

The median scores across the dataset illustrated in Figure 1 show that participants generally did not strongly agree that their pronunciation was like that of a native speaker, nor that they were particularly proud of their accent. Interestingly, however, participants tended to disagree with the statement "I want to change my accent in Welsh" but strongly agreed that they wanted to sound native. In order to investigate whether responses to these statements were affected by social variables, we explored the impact of four predicting factors.

In order to investigate the effect of speaker background variables on the responses presented above, we conducted ordinal logistic regression analyses on the four statements separately. We were primarily interested in whether participants from Wales had different perceptions of their accent and pronunciation as participants from outside Wales and included the variable Origin (Wales vs. other) in the models. As we had collected data from participants at different levels on their language learning journey, we also included Level in the models (Beginner, Intermediate, Advanced and Fluent) as well as gender (Male, Female) and age. We report the final and most optimal ordinal regression models below

containing statistically significant predictors. In the ordinal regression analyses for all four statements, gender and age were not found to be significant predictors in the models. Figures 2 and 3 below illustrate the median rating for each question based on the predictors Origin and Level.

3.1.1. My Pronunciation in Welsh Is Like a 'Native' Speaker's

The final and most optimal model included Origin and Level as statistically significant predictors of rating on sounding more like a native speaker (Origin Wald $\chi2(1)$ = 20.412, p < 0.001; Level Wald $\chi2(3)$ = 27.095, p < 0.001). The deviance goodness-of-fit test indicated that the model was a good fit to the observed data $\chi2(52)$ = 46.092, p = 0.704. The pseudo R2 value for this model is 0.366, suggesting that the model explains around 36.6% of the variance in responses. Inspection of Figure 2 and inspection of the coefficients in Table A4 indicate that participants from Wales considered their pronunciation to be more similar to that of a native speaker than participants from outside Wales. For level, Figure 3 illustrates that, in general, Advanced and Fluent participants rated their pronunciation as more similar to that of a native speaker than the Beginner and Intermediate groups. The coefficients in Table A4 for Beginner, Intermediate and Advanced are negative, indicating that, compared the Fluent group, these groups rated their pronunciation as less native-like. Consultation of Table A4 suggests that, as the level increases, the likelihood of rating pronunciation to be more native-like increases.

### 3.1.2. I'm Proud of My Accent When Speaking Welsh

Both Origin and Level were statistically significant predictors for pride in accent (Origin Wald $\chi2(1)$ = 1.435, p < 0.001; Level Wald $\chi2(3)$ = 12.455, p = 0.006). The deviance goodness-of-fit test indicated that the model was a good fit to the observed data $\chi2(52)$ = 59.095, p = 0.232. The pseudo R2 value for this model is 0.226, suggesting that the model explains around 22.6% of the variance in responses. Inspection of Figure 2 and the coefficients in Table A5 illustrates that participants from Wales were prouder of their accent than participants from outside Wales. For level, Figure 3 illustrates that participants of a higher level (Advanced and Fluent) were prouder of their accent than Beginner or Intermediate participants. This is confirmed in the coefficients in Table A4, which are negative and significant for Beginner and Intermediate compared to the Fluent Group. However, the comparison between the Advanced and the Fluent group is not significant. Overall, this suggests that participants of a higher level (Advanced and Fluent) were prouder of their accent when speaking Welsh than Beginner or Intermediate participants.

3.1.3. I Want to Change My Accent in Welsh

Origin and Level were also included as statistically significant predictors of wanting to change accent in Welsh (Origin Wald $\chi2(1)$ = 16.184, p < 0.001; Level Wald $\chi2(3)$ = 8.852, p = 0.031). The deviance goodness-of-fit test indicated that the model was a good fit to the observed data $\chi2(52)$ = 49.464, p = 0.574. The pseudo R2 value for this model is 0.210, suggesting that the model explains around 21% of the variance in responses. Figure 2 illustrates that participants from outside of Wales were more likely to want to change their accent in Welsh than speakers who were from Wales, which is reflected by the positive coefficient in Table A6. The effect of level is illustrated in Figure 3, suggesting that lower-level participants were more likely to want to change their accent than higher level participants. Inspection of Table A6 indicates positive and significant coefficients for Beginner and Intermediate groups compared to the Fluent group, indicating that Beginner and Intermediate groups were more likely to agree that they wanted to change their accent than the Fluent group. The comparison between the Advanced and Fluent group is not significant. Taken with Figure 3, this suggests that participants in the lower groups were more likely to want to change their accent than participants in the Advanced and Fluent groups.

3.1.4. I Want to Sound Like a 'Native Speaker'

For the final question about accent and pronunciation, speakers were asked to what extent they wanted to sound like a native speaker. Neither variable was significant in the model, suggesting that neither of the factors influenced responses to this question (Origin Wald $\chi2(1) = 0.425$, $p = 0.514$; Level Wald $\chi2(3) = 3.103$, $p = 0.376$ coefficients also appear in Table A7). The deviance goodness-of-fit test indicated that the model was a good fit to the observed data $\chi2(52) = 42.137$, $p = 0.804$. The pseudo R2 value for this model is 0.036, suggesting that the model only explains around 3.6% of the variance in responses. From Figures 2 and 3, responses across groups for both origin and level are similar for this question, indicating that, in general, participants wanted to sound native to a similar extent.
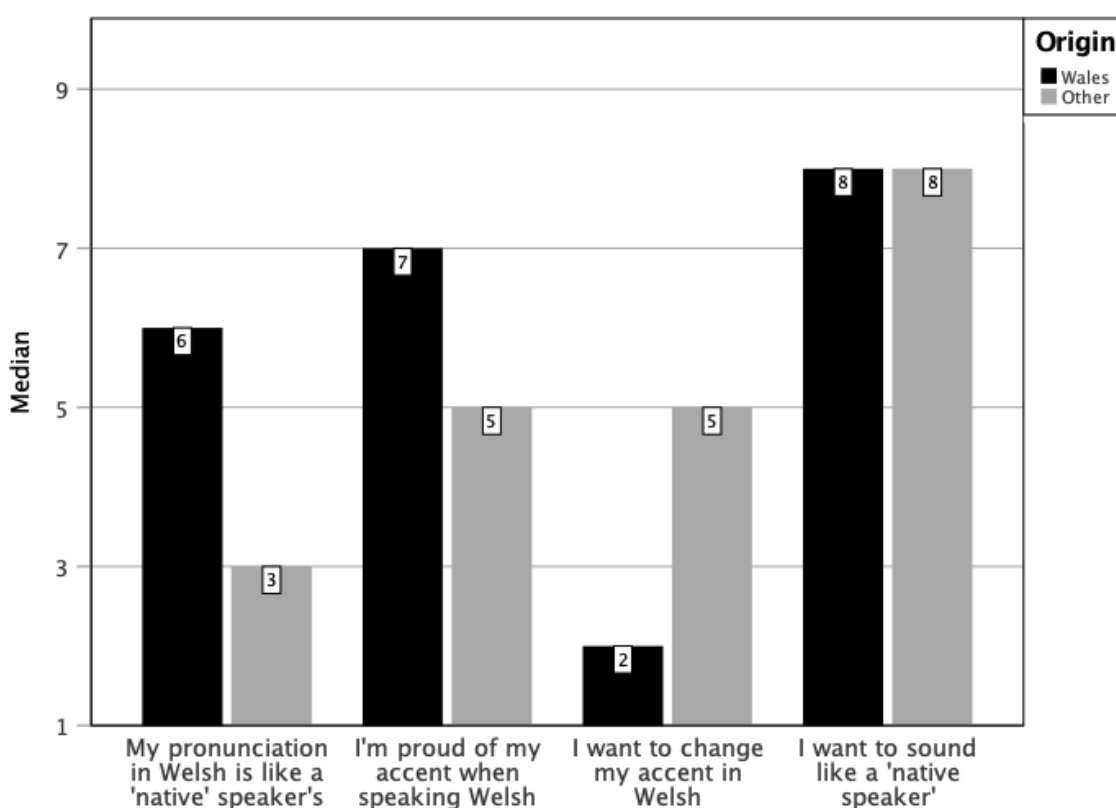
Figure 2. Median scores for statements on accent and pronunciation for speakers from Wales, and from outside of Wales (1 = Not at all, 9 = Completely).

Summing up these results, the ordinal logistic regression analyses indicate that speaker origin and level are statistically significant predictors of ratings on three of the four questions about accent and pronunciation. In general, speakers from outside of Wales hold more negative views of their own accent and pronunciation and want to change their accent more than speakers from Wales. We also discovered that, as level increased, perceived similarity to native speakers, as well as pride in accent was greater, and desire to change accent was less strong. In general, respondents strongly agreed that they wanted to sound native, but no speaker factors predicted responses.
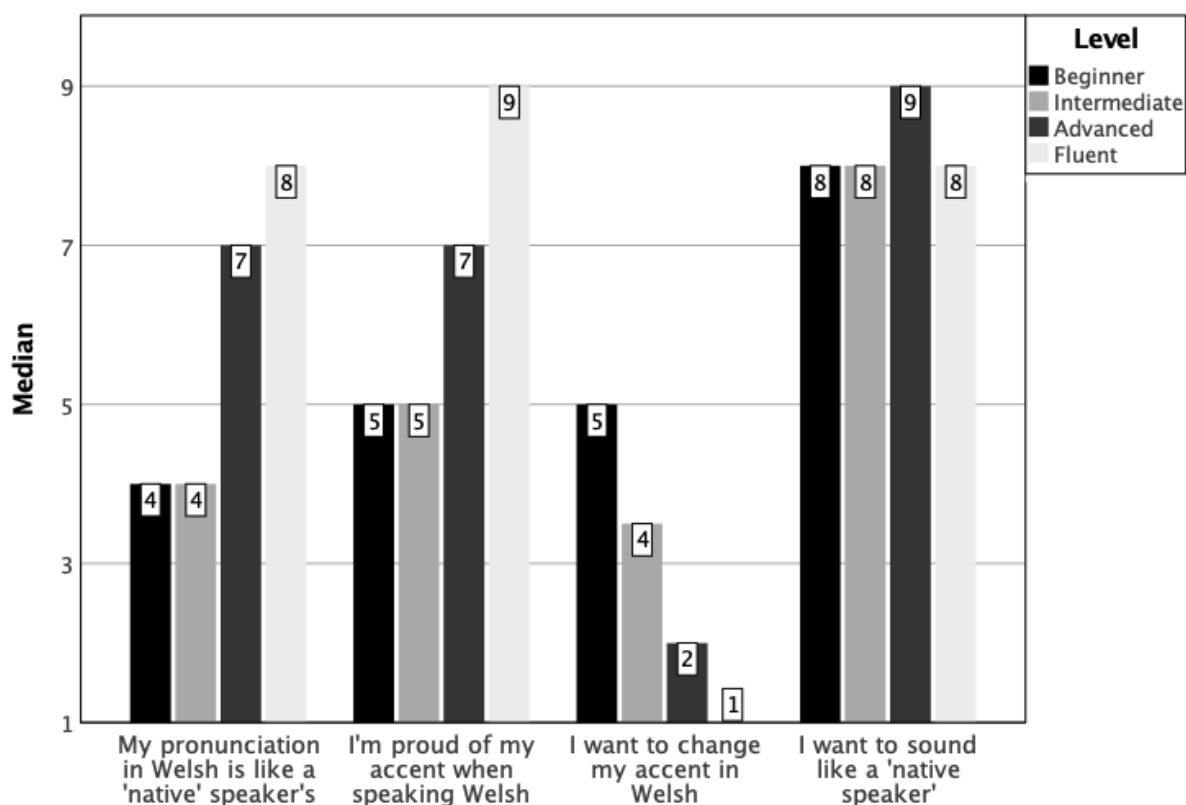
Figure 3. Median scores for statements on accent and pronunciation for the four levels (1 = Not at all, 9 = Completely).

3.2. Questions About Specific Speech Sounds

We asked several questions on which speech sounds were challenging for the participants: consonants that are absent in the L1 (English), vowel length with and without the diacritical mark of the circumflex, the pronunciation of three diphthongs and the pronunciation of /o/ at the ends of words. Participants responded by ticking features that were "challenging for me". Figure 4 below presents the percentage of participants (*n* = 115) who ticked each feature.

With regard to the consonants, inspection of Figure 4, above, shows that the pronunciation of <r> was reported as challenging by around 22% (*n* = 26) of the respondents. Challenges with the trilled /r/ were reflected in the comments made by participants, with several noting that they find "rolling the r sound" difficult, with some also mentioning that they find perceiving and producing the difference between <r> /r/ and <rh> /r^h/ challenging. The pronunciation of the voiceless fricatives <ll> and <ch> were reported to be less challenging than <r>. The voiceless lateral fricative <ll> was reported to be challenging by 10% (*n* = 12) of respondents. Only 8% (*n* = 9) of respondents reported that the voiceless velar/uvular fricative <ch> was challenging. Some participants commented that the <ll> sound was challenging in certain contexts, especially word-finally, and others mentioned that they found it difficult to distinguish between <ll> and <ch>.
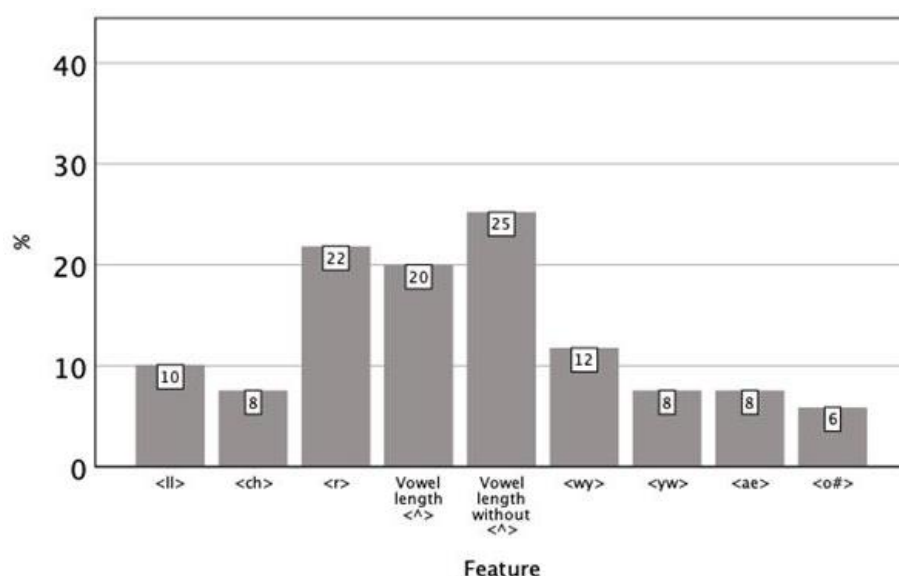
Figure 4. Percentage of speaker responses about individual features of their own pronunciation.

Inspection of Figure 4, above, indicates that the most reported difficulties that individual participants faced with vowels was vowel length. This was reported to be difficult for 25% (*n* = 29) of individuals when the distinction was not signalled by a circumflex in the orthography, but 20% (*n* = 23) of respondents also found vowel length difficult even when the circumflex was present. In terms of the diphthongs, participants generally reported that these were not as challenging as vowel length distinctions. For <wy>, 12% (*n* = 14) found the pronunciation difficult. Several individuals mentioned the difficulties posed by the orthographic ambiguity of <wy>, which can represent a pure diphthong, or a combination of consonant [w] plus vowel. For example, "Knowing which way some sounds need to be pronounced in a word if there are two alternatives, e.g., wy can be either 'oi' or 'wee'", "gwahaniaethu gwahanol ynganiadau wy" ("differentiating between different pronunciations of 'wy'"). Eight percent (*n* = 9) responded that they struggled with the pronunciation of <yw>. This was reflected in a comment from one respondent, who stated that they faced challenges with "Vowels, especially groups of vowels—w and y most of all. I understand there are meant to be rules that govern this, but it seems like there must be quite a lot of variations depending on the exact letter combinations." Only 8% of respondents indicated that <ae> was challenging. The final vowel feature we asked participants about was the production of the monophthong /o/ in word final position based on tutors' responses in the Rees and Morris (2018) paper that this vowel is often diphthongized. Very few respondents (5.8%, *n* = 7) said that this was challenging to them. We therefore see that some individual speakers are aware of the difficulties that can arise from the ambiguity with vowel length and the digraphs, but participants did not comment specifically about /o/ being challenging to pronounce at the ends of words.

3.3. Responses of Traditional 'Native' Speakers

Finally, we asked participants how traditional 'native' Welsh speakers responded to their accent/pronunciation. Participants were provided with a several response options and were able to tick multiple answers. Figure 5 below illustrates the proportion of responses for each level.
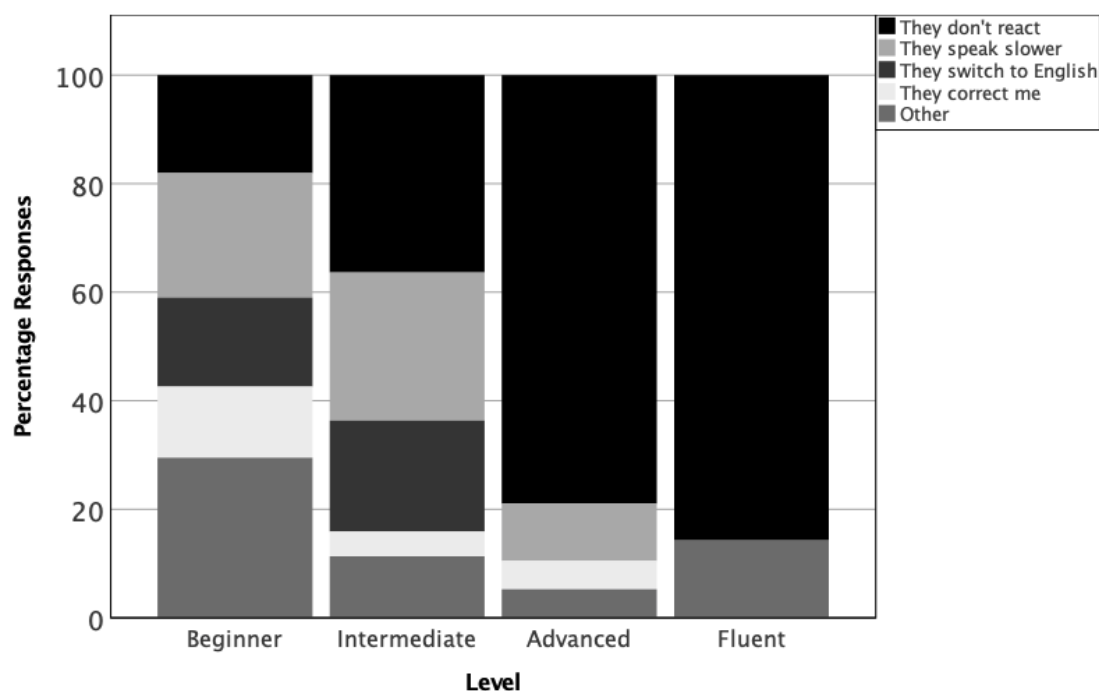
Figure 5. Proportion of responses per level for "How do 'native' speakers react to your accent/pronunciation"? Beginner *n* = 52; Intermediate *n* = 38; Advanced *n* = 18; Fluent *n* = 7.

As illustrated by Figure 5, as the level increased, the proportion of responses that native speakers did not respond to their accent increased. In fact, most Advanced and Fluent speakers reported that native speakers did not respond to their accent/pronunciation at all. Beginner- and intermediate-level speakers, on the other hand, experienced native speakers responding to their accent by speaking slower, switching to English or correcting their pronunciation. Interestingly, all the "other" responses in the beginner group were related to speakers not having an opportunity to speak Welsh with a 'native' speaker outside the classroom. Responses in the "other" category for the intermediate level indicated that native speakers responded differently depending on the situation. One speaker reported "most Welsh speakers seem pleased that I've tried" whilst another speaker reported that native speakers "talk to me like I'm a baby/small kid". Some advanced speakers experienced native speakers speaking slower and correcting their pronunciation but did not report native speakers switching to English. Participants in the advanced and fluent groups who selected "other" reported that native speakers were surprised that they had learnt Welsh, and that they were asked if they were from North Wales. Overall, it seems that there were a range of responses by native speakers reported by the participants in the study, but that native speakers responded less to a participant's accent/pronunciation in more advanced speakers.

4. Discussion

The results reported within this paper demonstrate that in producing Welsh speech, adult new speakers face a range of challenges. Exploring the experiences of adult new speakers has revealed that pronunciation and accent is an important consideration for individuals at all stages in their language learning journeys.

There is evidence that the individuals perceived their accent and pronunciation in general to be not like that of a native speaker, but that most individuals felt strongly that they wanted to sound similar to a 'native speaker'. This is important in terms of understanding the motivations and aspirations of the new speakers and their interactions with traditional speakers. The nature of 'native' speech is vague, especially when some of the participants noted that they had no contact with traditional speakers outside the

classroom setting. However, despite the native-like target, participants did not indicate a strong desire to change their own accents. This may be due to participants seeing native-like pronunciation as unattainable. The questions of the perceived links between native-like pronunciation and speaker legitimacy have been discussed in Welsh and in other contexts. For example, Nance et al. (2016) explored the accent aims of new speakers of Scottish Gaelic. They found that some speakers wished to sound like native-speakers, but other speakers preferred production in line with a new-speaker model and considered a native-speaker target as inauthentic. In our study, participants strongly agreed that sounding like a native speaker was the ideal, but in the future, we may want to explore what this ideal means, how new speakers construct their identity and where they fit into their communities.

Feelings about one's own accent and pronunciation changed as the stage of the learning journey increased. That is, beginner and intermediate individuals reported sounding less native, were less proud of their accent and wanted to change their accent more than advanced and fluent speakers. Individuals reported becoming prouder and more native as the level of ability increased. However, we also found that speakers who were from Wales, and identified as being Welsh, were less likely to want to change their accent, were prouder, and reported having pronunciation that more closely resembled that of a native speaker than individuals who were from outside Wales. This finding is in line with the previous research by Müller and Ball (1999), who found that the variety of English spoken as the L1 affected the production of the vowels in Welsh in the late adult bilinguals. This was explained due to different varieties of English having certain sounds that are closer or further from those found in Welsh. In particular, they found that speakers who had Welsh English as their L1 were more likely to pronounce monophthongs without glide, whereas the non-Welsh English speakers tended to diphthongize the front and back mid vowels. They note that, for all speakers, this reflected their use in English and resulted in an "English" accent in Welsh for the non-Welsh English group. Furthermore, Mayr et al. (2017) and Mennen et al. (2020) investigated language contact and the convergence in segmental and prosodic features seen between Welsh and English in Ammanford in Carmarthenshire. Our finding that speakers from outside Wales are less proud of their accent and believe that they sound less native suggests that the variety of the L1 is important. That is, individuals from Wales may already have the 'new' phonemes in their repertoire from the community or in Welsh lessons in early education. Others from outside of Wales have to learn to distinguish the production of vowels from those in their L1 variety.

This has important implications for language teachers in the classroom, who may have speakers with both differing abilities when it comes to pronunciation, but also different levels of self-confidence in their accent and pronunciation. Indeed, the comparison between the results from the current study and Rees and Morris (2018) provide an insight into the language learning process from both sides. Both groups agree that the unfamiliar consonant sounds can initially pose difficulties, and that orthographic ambiguities could also prove challenging. However, the tutors also saw the diphthongization of monophthongs, especially /o/, as features that could pose problems, with 76% of participants (the highest of any of the sounds) stating that it was 'challenging for some', with a further 10% stating that it was challenging for beginners only. This is in contrast with the participants of the current study where very few reported that this was a challenging feature. This poses questions regarding vowel perception, especially in terms of individuals who have very limited input. It could be that the word-final /o/ is assimilated into an existing vowel category in the English L1 /oʊ/ and that the speakers do not perceive the difference. These differences and their links to different variants or dialects of the L1 could be an important direction for future research. For example, this is a key point in the L2LP model of speech perception and learning (Van Leussen and Escudero 2015) which posits that the L1 dialect can affect the perception of the target language. Future research on the perception (and production) of speech by adults who are learning Welsh could consider the effects of the L1 variety. This would have implications for the theoretical understanding of perceiving and

learning new sounds and for the development of pedagogy in the field where speakers with different dialects of the L1 learn in the same classrooms.

An interesting situation arises from the findings of how traditional 'native' speakers respond to new speaker accent and pronunciation. We found that new speakers at different levels on their learning journey received different responses from native speakers. Beginners reported a range of responses from native speakers: no reaction, speaking more slowly, switching to English, correcting pronunciation and several responded that they did not have an opportunity to speak with traditional speakers outside of the classroom, which highlights the challenges of learning a language in a minority setting. This may have been caused in part by the fact that data collection was conducted during the COVID-19 pandemic, which meant that opportunities to interact with others more widely were limited. Intermediate speakers also reported a range of responses, but a greater proportion reported no response from native speakers than in the Beginner group. On the other hand, the majority of more advanced participants (Advanced, Fluent) did not note any reaction at all from native speakers. This suggests a more complicated picture than the reported tendency of native speakers switching to English with adult new speakers in general (Trosset 1986; Mac Giolla Chríost et al. 2012). Further research in this area may be beneficial in highlighting the interactions between new and traditional speakers in the community. Increasing the use of Welsh for new speakers, especially outside traditional heartland areas, will be important for achieving the Welsh Government's ambitious aim of reaching 1 million speakers of Welsh by 2050 (Welsh Government 2017).

This study has highlighted some of the challenges that adult new speakers face in learning the pronunciation of Welsh. Whilst some findings do echo those previously reported by language tutors by Rees and Morris (2018), many elements differ, suggesting that 'learners' may not perceive differences in their speech that are important for traditional native speakers. One important limitation of our study is that the data were self-reported, which rely on the participants' awareness of their own pronunciation and traditional 'native' pronunciation. We noted that several participants did not have a chance to interact with native speakers outside of the classroom, which may have implications for what they perceive as 'native'. Furthermore, the focus of this study was to explore some of the segmental aspects of Welsh pronunciation in south Wales, but it should be recognized that it is not only segmental aspects that can be challenging for people learning a language. Future research on the pronunciation of Welsh by adults who are learning the language may want to consider differences in lexical stress placement and realization, as well as the implementation of intonational tunes. Similarly, we have concentrated on data from south Wales. Future research may want to consider comparisons with communities with larger proportions of Welsh speakers, for example in north west Wales, where there may be more opportunities to use Welsh in the community.

In addition, the participants of this study were mostly less experienced speakers, potentially due to a lack of opportunities to use the language. Future research may also consider the perception and production of Welsh speech by fluent new speakers who are using the language in their community on a regular basis, as well as the reception of their accent and pronunciation by traditional speakers. This would be useful in highlighting non-native features of L2 speech in order to inform language tutors and providers to support new speakers in achieving competence or confidence in pronunciation that allows them to integrate into Welsh speaking communities and use Welsh beyond the classroom.

Appendix A

Table A1. Accent and pronunciation items in the questionnaire.

I ba raddau mae'r datganiadau isod yn wir i chi? | To What Extent Are the Following Statements True for You 1 = Ddim o gwbl/Not at all 9 = Yn llwyr/Completely									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Mae fy ynganiad wrth siarad Cymraeg yr un peth â siaradwyr 'brodorol' | My pronunciation in Welsh is like a 'native' speaker's	☐	☐	☐	☐	☐	☐	☐	☐	☐
Rydw i'n falch o fy acen wrth siarad Cymraeg | I'm proud of my accent when speaking Welsh	☐	☐	☐	☐	☐	☐	☐	☐	☐
Rydw i eisiau newid fy acen yn Gymraeg | I want to change my accent in Welsh	☐	☐	☐	☐	☐	☐	☐	☐	☐
Rydw i eisiau swnio fel 'siaradwr brodorol' | I want to sound like a 'native speaker	☐	☐	☐	☐	☐	☐	☐	☐	☐

Table A2. Individual aspects of pronunciation items in the questionnaire.

Pa mor heriol ydi'r rhain i unigolion sy'n dysgu Cymraeg? | How Challenging Are the Following for Individuals Learning Welsh?	
	Heriol i fi/ Challenging for me
Ynganu/pronouncing 'll' e.e. lle, pell	☐
Ynganu/pronouncing 'ch' e.e. chi, cwch	☐
Rolio/rolling 'r' e.e. oren, dŵr	☐
Ynganu 'o' ar ddiwedd geiriau/pronouncing 'o' at the end of words e.e. nofio, eto	☐
Ynganu/pronouncing 'ae' e.e. mae	☐
Ynganu/pronouncing 'wy' e.e. mwy	☐
Ynganu/pronouncing 'yw' e.e. byw	☐
Gwahaniaethu rhwng llafariaid hir a byr gyda to bach/Distinguishing between long and short vowels with a circumflex e.e. tân/tan	☐
Gwahaniaethu rhwng llafariaid hir a byr heb do bach/Distinguishing between long and short vowels without a circumflex e.e. bys/byr	☐

Table A3. 'native' speaker reaction to accent and pronunciation item in the questionnaire.

Sut mae siaradwyr 'brodorol' yn ymateb i'ch acen/ynganiad? | How Do 'Native' Speakers React to Your Accent/Pronunciation?	
Dydyn nhw ddim yn ymateb/They don't react	☐
Mae nhw'n siarad yn arafach/They speak more slowly	☐
Mae nhw'n troi i'r Saesneg/They switch to English	☐
Mae nhw'n 'cywirio'/They 'correct' me	☐
Arall/Other	☐
Os dewisoch chi Arall, rhowch fanylion os gwelwch yn dda | If other, please give details:	

Appendix B

Table A4. Coefficients for My pronunciation in Welsh is like a 'native' speaker's.

Factor	Coef	S.E.	Wald	*p*-Value
[LikeNative = 1]	−4.925	0.862	32.683	<0.001
[LikeNative = 2]	−4.166	0.843	24.446	<0.001
[LikeNative = 3]	−3.203	0.830	14.902	<0.001
[LikeNative = 4]	−2.833	0.826	11.747	0.001
[LikeNative = 5]	−1.862	0.817	5.190	0.023
[LikeNative = 6]	−1.477	0.812	3.307	0.069
[LikeNative = 7]	−0.378	0.791	0.229	0.632
[LikeNative = 8]	1.549	0.775	3.997	0.046
[Origin = Welsh]	1.634	0.362	20.412	<0.001
[Level = Beginner]	−3.987	0.850	22.031	<0.001
[Level = Intermediate]	−3.464	0.852	16.539	<0.001
[Level = Advanced]	−2.284	0.880	6.730	0.009

Table A5. Coefficients for I'm proud of my accent when speaking Welsh.

Factor	Coef	S.E.	Wald	*p*-Value
[ProudAccent = 1]	−3.652	0.796	21.052	<0.001
[ProudAccent = 2]	−3.259	0.778	17.559	<0.001
[ProudAccent = 3]	−2.209	0.752	8.641	0.003
[ProudAccent = 4]	−1.900	0.747	6.462	0.011
[ProudAccent = 5]	−1.066	0.740	2.074	0.150
[ProudAccent = 6]	−0.559	0.737	0.575	0.448
[ProudAccent = 7]	0.227	0.734	0.096	0.757
[ProudAccent = 8]	1.227	0.740	2.751	0.097
[Origin = Welsh]	1.435	0.356	16.232	<0.001
[Level = Beginner]	−2.014	0.757	7.068	0.008
[Level = Intermediate]	−2.015	0.771	6.824	0.009
[Level = Advanced]	−0.757	0.821	0.848	0.357

Table A6. Coefficients for I want to change my accent in Welsh.

Factor	Coef	S.E.	Wald	*p*-Value
[ProudAccent = 1]	0.018	0.838	0.000	0.983
[ProudAccent = 2]	0.714	0.842	0.718	0.397
[ProudAccent = 3]	1.077	0.845	1.625	0.202
[ProudAccent = 4]	1.588	0.849	3.497	0.061
[ProudAccent = 5]	2.311	0.857	7.266	0.007
[ProudAccent = 6]	2.630	0.862	9.298	0.002
[ProudAccent = 7]	3.297	0.8s79	14.074	<0.001
[ProudAccent = 8]	3.568	0.889	16.117	<0.001
[Origin = Welsh]	−1.446	0.360	16.184	<0.001
[Level = Beginner]	2.302	0.871	6.991	0.008
[Level = Intermediate]	1.831	0.879	4.340	0.037
[Level = Advanced]	1.420	0.935	2.306	0.129

Table A7. Coefficients for I want to sound like a 'native speaker'.

Factor	Coef	S.E.	Wald	*p*-Value
[ProudAccent = 1]	−3.391	0.861	15.513	<0.001
[ProudAccent = 2]	−2.964	0.811	13.355	<0.001
[ProudAccent = 3]	−2.526	0.776	10.597	<0.001
[ProudAccent = 4]	−2.207	0.758	8.479	0.004
[ProudAccent = 5]	−1.031	0.724	2.029	0.154
[ProudAccent = 6]	−0.648	0.719	0.812	0.368
[ProudAccent = 7]	−0.452	0.718	0.396	0.529
[ProudAccent = 8]	0.224	0.717	0.098	0.755
[Origin = Welsh]	−0.227	0.348	0.425	0.514
[Level = Beginner]	0.017	0.731	0.001	0.982
[Level = Intermediate]	−0.238	0.747	0.101	0.750
[Level = Advanced]	0.735	0.826	0.791	0.374

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