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**Assessing children's proficiency in a minority language: Exploring the relationships between home language exposure, test performance and teacher and parent ratings of school-age Irish-English bilinguals.**

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**Abstract**

There can be significant diversity in the language experience of minority language children, and in the levels of proficiency reached. The declining numbers of children now exposed to Irish include those from homes where only/mainly Irish is spoken, those with only one Irish-speaking parent, and children from homes where one/both parent(s) speak 'some Irish', while levels of language use in the wider community also vary widely. The proficiency of children from Irish-speaking homes seems impressive compared with their L2 learner classmates, but still shows particular linguistic needs. Since acquisition of complex morphosyntactic features depends on both the quantity and quality of input, and extends well into the school years, assessing children's performance on features such as grammatical gender may provide a useful index of need for language enrichment, even among young speakers judged by teachers and parents to be fluent. We report data from 306 Irish-speaking participants aged 6-13 years from a range of language backgrounds, most of whom live in Gaeltacht (officially designated Irish-speaking) areas. Information was collected from parents on children's home language and new measures of receptive and productive use of grammatical gender marking in Irish were administered. Performance on these measures is compared with scores on standardised measures of Irish and English reading vocabulary, as well as teacher and parent ratings.

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## **Introduction**

### ***Bilingualism, language input and experience***

Crosslinguistic research has shown that successful bilingual acquisition is highly dependent on language input and experience (e.g., Rodina and Westergaard 2017; Hoff, Welsh, Place and Ribot 2014; Thordardottir 2014), but debate continues about the precise contribution of input and exposure in bilingual acquisition. Carroll (2017) criticised the tendency among some researchers to focus on vocabulary, and to attribute differences in bilingual outcomes only to differences in exposure. Gathercole (2017) argued that this misrepresented the many studies examining the role of exposure that have also considered the contribution of factors such as transparency of form-function mappings in acquiring more complex morphosyntax, the similarities/differences between the languages being acquired, and socioeconomic status (SES), among others.

Several studies (Gathercole and Thomas 2009; Grosjean 2010; Paradis 2011) show that bilingual children's sensitivity to input and exposure factors appears to be greater for minority languages than for majority languages. Gathercole and Thomas's (2009) study of Welsh-English bilinguals found that their acquisition of the majority language tends to be unproblematic, while their minority language Welsh acquisition is vulnerable and highly dependent on the quantity and quality of input received in that language, which is usually received from a more limited number of speakers and in restricted domains of use. They noted that the children with the most exposure to Welsh at home and in school showed faster acquisition of vocabulary and grammatical gender marking in Welsh than those with lower home levels of Welsh exposure. Based on their findings, they proposed that children need a 'critical mass' of input in a language in order to progress from their early item-learning approach to more abstract formal representations. They claimed that this is particularly relevant for the acquisition of the complex aspects of morphosyntax that are typically acquired later in monolingual acquisition, such as grammatical gender, which is considered further below.

### ***Assessment of later acquired complex morphosyntax***

A number of studies of the acquisition of grammatical gender in simultaneous bilinguals show patterns of development that mirror monolingual acquisition in each language: Unsworth et al. (2014) found that Greek-Dutch bilinguals showed early acquisition (before age 3) of grammatical gender in Greek, which has a transparent gender system, but later

acquisition (after age 4) of the more opaque Dutch system. Unsworth et al. argued that while formal complexity is a major factor in acquiring grammatical gender marking, amount of input in each language was one of the best predictors of gender acquisition in both languages, a finding supported by Kaltsa, Prentza, Papadopoulou and Tsimpli (2017) in their study of Greek-Albanian bilinguals.

Rodina and Westergaard (2017) noted the interaction of factors such as age of onset, input quantity and system transparency on the timing of acquisition of gender in Russian-Norwegian bilinguals in Norway. Gender marking in Russian is predictable, and is acquired relatively early by monolingual speakers, whereas the Norwegian gender system is non-transparent and is acquired late by monolinguals (Rodina and Westergaard 2015). Rodina and Westergaard showed that the performance on Norwegian gender tasks of Russian-Norwegian bilingual children aged 4-8 years living in Norway was similar to that of Norwegian monolingual peers, showing late mastery of this opaque system even among monolingual children with home input exclusively in Norwegian. However, they found that level of home input in Russian (the minority language) did impact significantly on these bilinguals' acquisition of Russian gender marking, since children with lower levels of Russian input not only made more errors in Russian gender assignment, but also made qualitatively different errors than Russian monolinguals. They concluded that their results showed an interaction between the formal complexity of each language's gender system, and amount of input in each language: Russian-Norwegian bilinguals showed similar acquisition to Russian monolinguals of the more transparent Russian gender system when both parents were Russian speakers offering Russian input at home, but later acquisition when they received Russian input from only one parent. Rodina and Westergaard attributed the later acquisition of Russian gender marking among these children to them receiving insufficient early input in the language to master the Russian declension system, which they argued results in them not becoming sensitive to gender cues. They concluded that early age of onset does not compensate for reduced levels of input in the minority language.

The impact of variation in both formal complexity and levels of input on the acquisition of grammatical gender in each language among bilingual children show that studies of gender are a fruitful area of investigation. Further research on typologically distinct languages is required to examine the course of acquisition of grammatical gender systems among bilinguals, particularly those where the gender system of the minority language is complex. We argue that, for the acquisition of minority languages in particular, grammatical gender could be viewed as a type of 'canary in the coalmine,' as a system whose acquisition

is particularly vulnerable to being delayed or even de-railed due to the interaction of formal complexity and declining levels of input. Such vulnerability appears to be particularly evident in high-contact contexts which are conducive to accelerated linguistic change in the minority language. In this regard, children acquiring Irish and English constitute an interesting group for a number of reasons: the Irish grammatical gender system is significantly more complex than the semantic gender system in English; young Irish-English bilinguals receive widely different levels of input in the minority language depending on home and school factors; and the wider sociolinguistic context has led to high levels of contact between the minority and majority language. This context is briefly described below followed by a short outline of grammatical gender marking in Irish.

### ***The Irish context and studies of Irish acquisition***

While Irish is the first official language of the constitution of the Republic of Ireland, English is the dominant language. In the 2016 Census (CS0 2017), 1.76 million people reported being ‘able to speak Irish’ but nationally only 1.7% (73,803) reported that they speak Irish daily outside of the education system (interpreted as evidence that it is the language of their home). Clusters of Irish speakers live in *Gaeltacht* areas, which are officially designated Irish-speaking communities. Of the approximately 96,000 people living in *Gaeltacht* areas at the time of the 2016 Census, 66% reported that they can speak Irish, but only 21% reported that they are daily speakers of the language outside of education, showing a fall of 11% since the 2011 Census. The data for this study were collected in (and adjacent to, in the case of one school) the Connemara *Gaeltacht* in the west of Ireland, the *Gaeltacht* area with the highest percentage of daily speakers of Irish.

In primary schools in the Republic of Ireland, Irish is a compulsory subject for all children from school entry, and almost 92% of children learn Irish as a single subject in mainstream English-medium schools. Almost 7% attend Irish-medium schools (immersion) schools known as *Gaelscoileanna*, attended mainly by children learning Irish as their L2. The remaining pupils (about 9,000) attend *Gaeltacht* schools which are officially Irish-medium, attended by children from *Gaeltacht* homes where only Irish or Irish and English are spoken, but these schools also include children from English-only homes in the locality (Mac Donnacha, Ní Chualáin, Ní Shéaghda & Ní Mhainín, 2005). As a result, *Gaeltacht* primary schools must cater for a wider range of proficiency in Irish than is normally found in the Irish-immersion *Gaelscoileanna* and consequently show greater variability in their adherence to Irish-medium teaching for all subjects other than English.

Since the first publications on L1 Irish acquisition (Hickey, 1990, 1991, 1993), Irish in the *Gaeltacht* has come under increased pressure, and recent studies by Muckley (2016), Péterváry, Ó Curnáin, Ó Giollagáin and Sheahan (2014) and Lenoach (2014) have examined the impact of English on Irish acquisition and use in the contemporary *Gaeltacht*. Muckley (2016) analysed narratives produced by Irish L1 children aged 3-6 years, and stressed the need for clinicians to consider their current and cumulative Irish exposure in assessing their production. Lenoach (2014) administered a bilingual vocabulary (picture naming) task (among other measures) to 33 children from Irish dominant homes aged 4-17, finding higher scores for the English items than Irish. He interpreted his results as showing that while younger participants show a larger average Irish vocabulary than English at age 4, English is dominant even among this group by about age 8. Péterváry et al. (2014) collected production data using a picture description task from 50 children aged 7-12 years. The results showed an increase in accuracy from younger to older children on measures of vocabulary and many specific features of Irish, but they noted significant morphological errors e.g. in marking the plural, a complex feature of Irish (see Hickey 2012). Both the Péterváry et al. study and Lenoach concluded that their results showed that, by middle childhood, children raised in Irish-speaking homes become dominant in English, with evidence of incomplete acquisition or attrition of Irish. However, their analysis provided relatively less information about the percentage of accurate usage of specific language features in obligatory contexts, or about the language experience of the participants. The current study set out to develop more focused testing of performance in Irish grammatical gender, as an area which is both challenging and informative about the language needs of young Irish speakers, allowing comparison of the performance of participants from different home language backgrounds on these tests of gender marking with their scores on standardised measures of Irish vocabulary, as well as with their teachers' and parents' informal ratings of their Irish proficiency. The Irish gender marking system is briefly outlined below.

### ***Irish-English bilinguals acquiring grammatical gender***

Irish nouns have two genders (masculine and feminine), which are, for animate nouns, mostly semantically motivated based on their biological sex (Stenson, 1993). For inanimate nouns, however, gender is determined according to features such as the type of ending and the quality of the final consonant (i.e. broad [velar] or slender [palatalised]). The system for discerning the gender of the noun using this cue is complex and irregular in many cases. Nouns in Irish are marked for gender using initial mutations, a set of morphophonological

changes to the initial phoneme of words depending on the morphosyntactic context (see Nic Fhlannchada & Hickey 2017, for a detailed explanation of the morphosyntactic changes applied to nouns in each of the contexts of grammatical gender use). Lenition is one such morphophonological change, whereby the initial phoneme is lenited (made more lenis in articulation). Lenition is a plurifunctional marker: it is used not only to signal feminine gender after the definite article and to mark agreement between feminine nouns and adjectives, but is also used (*inter alia*) after some prepositions and in marking past tense and genitive case. In third person possession, the possessed noun is lenited to signal that the possessor is a masculine noun, contrasting with the lenition of feminine nouns (but not masculine nouns) after the article. This is an opaque and complex system.

Adding to the difficulties in acquiring this system is the fact that the sociolinguistic context in Ireland is one in which ‘massive second language learning’ (Muysken, 2000, p. 270) occurs, where exposure to L2 speakers is more likely than to native speakers of the language. Such widespread exposure to non-native speakers has been shown to have a ‘backwash effect’ on a minority language (see, for example Jones, 1998 regarding Welsh, and R. Hickey, 2007 regarding Irish) in accelerating convergence towards the majority language. Bilingualism is now universal among those raised as L1 speakers of Irish (Stenson, 1993; Snesareva, 2016), as all Irish speakers are exposed to English from an early age. English is a majority language with a transparent semantic gender system that is in high contact with the minority Irish language which has an opaque grammatical gender system, which puts gender marking in Irish under even more pressure among these speakers. Mac Donnacha et al. (2005) and Hickey (2001) have shown that the linguistic needs of children from Irish-speaking homes have tended to be poorly addressed, partly due to the tendency to focus on the needs of L2 learners in the same class, and partly due to the official failure (until recent policy reforms) to recognise their need for support and enrichment in Irish. For this reason, examination of children’s performance on tests of grammatical gender marking, and comparison with their scores on the standardised tests typically used in Irish-medium schools offers a closer analysis of Irish proficiency and comparison between children from different levels of Irish exposure, while comparison of objective scores with informal ratings by parents and teachers offers some insight into how these children’s proficiency is viewed by other speakers.

### ***The Present Research***

This study has three aims, the first being to compare performance on receptive and expressive tests of Irish gender marking with scores on standardised tests of reading vocabulary in Irish and English among a sample of Gaeltacht children from different home language backgrounds. The second aim is to explore which aspects of Irish gender marking show development in middle childhood and which no longer appear to be successfully acquired. Analysis of the factors predicting higher scores allows exploration of the contribution of such tests in augmenting standardised vocabulary measures used in schools, in offering a more fine-grained picture of minority language children's linguistic needs. The final aim is to explore the relationship of Irish-English bilingual children's scores on these measures with their parents' and teachers' ratings of their Irish proficiency, given the pervasiveness, accessibility and influence of such informal assessment. It is hoped that the results will help in the earlier identification of these minority language children's linguistic needs, and the development and provision of appropriate language supports.

## **Method**

### ***Participants***

Ethics approval for this study was granted by UCD. Parental consent and child assent was obtained, and 306 children (145 males and 161 females) aged 6 to 13 ( $M = 9.29$ ,  $SD = 1.413$ ) participated in the study. Parents completed the *Child Language Background Questionnaire* (C-LBQ), a measure of each child's home language background. The C-LBQ was adapted for this study from the Alberta Language Environment Questionnaire (ALEQ: Paradis, Emmerzael and Sorenson Duncan 2010), with the aim of collecting detailed information about the language acquisition experience of the child participants via parental report, a frequently-used method of obtaining information on language exposure variables (Paradis 2017). The questions related to demographic information on each family, the child's age when exposure to each language began, and current language use with different interlocutors. Child participants were categorised as living in Irish-Dominant Homes (IDH) if they received predominantly Irish input in the home, including use with primary and secondary caregivers, siblings, friends and in extra-curricular activities. Participants were categorised as being from Bilingual Homes (BH) if they received a significant proportion of their input at home in Irish as well as English. Participants were categorised as being from English-Dominant Homes



(EDH) if they received very little or no Irish input at home. Table 1 presents the sample distribution by age and language background.

INSERT TABLE 1 ABOUT HERE

All participants were attending Irish-medium schools, the majority having started about age four. All but one of the 17 schools recruited for this study were located in official *Gaeltacht* areas, while the remaining school was an Irish-immersion school from an adjacent urban area outside the *Gaeltacht* in an English-speaking district. Parents' report of their occupation was used to identify three categories of socioeconomic status (SES), and the sample was found to be evenly distributed across high, medium and low SES.

### ***Measures***

Data from three types of measures are reported here: standardised tests of Irish and English reading vocabulary, receptive and expressive tests of Irish grammatical gender, and informal ratings of children's language proficiency by teachers and parents. The measures are briefly described below. The vocabulary and receptive gender tests were administered in small groups following explanation of the procedure in each test and discussion of the practice items with the group.

#### **1a. Drumcondra Irish Reading Vocabulary Test [*Triail Ghaeilge Dhroim Conrach do Bhunscoileanna Gaeltachta agus Lán-Ghaeilge*] [TGD-G1]**

This standardised set of graded tests of Irish reading vocabulary is a group-administered measure with grade norms specifically for children attending Irish-medium education in *Gaeltacht* and Irish-immersion schools (*Gaelscoileanna*). In order to limit the test burden, only the Reading Vocabulary subtest of the TGD-G1 was used here.

#### **1b. Drumcondra Primary [English] Reading Test-Revised (DPRT-R)**

The group-administered DPRT-R is a standardised set of graded tests of English reading vocabulary with grade norms for children in the Republic of Ireland (but not specifically for those attending Irish-medium education). Again, only the English Reading Vocabulary subtest was used.

#### **2a. The Receptive-Measure of Irish Morphosyntax (R-MIM)**

The R-MIM was a specially developed measure, adapted from McDaid (2012), which comprised a number of subtests devised to test children's ability to distinguish referents

on the basis of gender marking. The R-MIM was administered in small groups, where each participant was given an individual Answer Booklet. A video of a puppet, ‘Marcas from Mars’ was displayed who explained what ‘help’ he needed from children for each subtest, giving child-friendly instructions in Irish; the researcher then answered questions and provided any further clarifications required by the participants (also in Irish). Following completion and discussion of sample items together, participants individually completed the items in their Answer Booklet. When scoring the R-MIM, a percentage correct score was calculated for each subtest to facilitate cross-subtest comparison. Appendix 1 contains some of the practice items of each of the subtests of the R-MIM.

***R-MIM Subtest 1: Gender assignment for human nouns (14 items)***

Participants were asked to circle the pronoun appropriate to the pictured noun, with response options of *sé* (he), *sí* (she) or *Níl a fhios agam* (I don’t know).

***R-MIM Subtest 2: Gender assignment for inanimate nouns (8 pairs)***

Participants were presented with two inanimate objects side by side (one masculine and one feminine). Participants read and heard an elicitor sentence containing a masculine or feminine pronoun and were asked to circle the appropriate inanimate object.

***R-MIM Subtest 3: Third person possession marking, animate nouns (14 pairs)***

Participants were asked to colour an element of the image of the appropriate animate noun (of two presented) matching the test sentence expressing third person possession by either a masculine or feminine possessor (e.g. her bag, his coat).

***R-MIM Subtest 4: Third person possession marking, inanimate nouns (8 pairs)***

The same procedure as Subtest 3 was used but the two possessor nouns presented in each case were inanimate (e.g. [the window] its glass).

***R-MIM Subtest 5: Gender assignment for animals (32 items)***

Participants were asked to look at a series of pictures of named animals (minus article) and circle for each the appropriate pronoun from *sé* (he), *sí* (she) and *Níl a fhios agam* (I don’t know), following the procedure used in Belacchi and Cubelli (2012).

## **2b. The Expressive-Measure of Irish Morphosyntax (E-MIM)**

The E-MIM was modelled on a measure developed for Welsh by Thomas and Gathercole (2007). Target nouns were chosen from high-frequency consonant-initial nouns which allow gender marking on the initial phoneme. Each of the selected phonemes was tested four times, twice with feminine nouns and twice with masculine nouns. Word frequency was controlled by restricting stimulus noun choice to a set of the 1000 most frequent nouns from a corpus of words in children’s Irish books (Second Author, n.d.) and the

nouns were equally divided between animate and inanimate nouns (see Appendix 2 for sample items of each subtest.) The E-MIM was administered to participants individually, with the practice items being presented on the researcher's laptop and the response format modelled until the child showed s/he understood the format. Participants were then presented with the test items on the laptop and their spoken responses were recorded.

*E-MIM Subtest 1: Grammatical gender following the definite article (28 items; animate and inanimate nouns)*

*E-MIM Subtest 2: Noun-adjective combinations (32 items; animate and inanimate)*

*E-MIM Subtest 3: Third person possession (28 items; animate and inanimate)*

For the analysis reported here, each child's subtest score was calculated only for nouns requiring active marking for noun gender.

### **3. Teacher and Parent Ratings of Child's Irish and English Proficiency**

The Child Rating Form used here was adapted from McVeigh's (2013) study of Irish-medium schools, and asked teachers to rate each child's speaking, reading, writing and understanding of both Irish and English relative to other children in their class, while parents were asked to rate their child's Irish and English compared to other children their age, using a scale from 1 to 5.

## **Results**

### *Children's reading vocabulary scores*

The mean scores on the measures of Irish and English reading vocabulary are presented in Table 2 by age group and home language category (scores are converted here to mean percentage correct to facilitate comparison across measures.) In Irish reading vocabulary, participants from Irish Dominant Homes (IDH) had the highest scores and participants from English Dominant Homes (EDH) had the lowest scores in both the 6-9 year-old group and the 10-13 year olds.

INSERT TABLE 2 ABOUT HERE

In English reading vocabulary, the participants from BH (Bilingual Homes) had the highest mean scores in English reading vocabulary in the younger age-group, while the EDH children scored higher overall in English than the BH children among the older sample. The children from IDH had the lowest mean percentage correct scores in English in both age-

groups. However, looking at the average scores for each age-group, comparisons with the national sample from the *National Assessment of English Reading and Mathematics Performance 2014* (Shiel, Kavanagh and Millar, 2014) show that the older participants in the present research appear to be representative of the national norm for English reading vocabulary, while the younger group appear to be slightly above the norm for English reading vocabulary. Comparable national data were not available for Irish.

A 3 x 2 ANOVA was conducted on the standard scores of the Irish reading vocabulary test (TGD-G1) and the interaction between language background and age was not significant,  $F(2, 250) = 2.98, p = .052$ . No statistically significant difference for age was found between the 6-9 year olds and the 10-13 year olds,  $F(1, 250) = 2.64, p = .106$ . As versions of the TGD-G1 of differing difficulty were administered according to class in school, with varying numbers of items of increasing difficulty, the scores presented are the mean standard scores at each test-level. Thus, the finding of a lack of a significant difference by age should not be interpreted as the older children failing to increase their reading vocabulary from the age of 6 to the age of 13, but rather that on these graded tests (where the challenge increases at each level), the mean standard scores for each age-group did not differ significantly. A statistically significant difference was found for language background,  $F(2, 250) = 7.79, p < .001$ . Scheffé post-hoc analysis found significantly higher Irish reading vocabulary among the participants from IDH ( $M = 108.04, SD = 14.26$ ) with most exposure to Irish in the home, compared to participants from EDH ( $M = 100.51, SD = 13.3$ ),  $p < .01$ , with least Irish exposure at home. These results are presented in Figure 1.

INSERT FIG. 1 ABOUT HERE

Turning to English reading vocabulary, a 3 x 2 ANOVA was used to test for differences according to language background and age on performance on the DPRT-R. The interaction was not significant,  $F(2, 255) = .657, p = .519$ , nor was the main effect of age,  $F(1, 255) = 1.5, p = .222$ . A significant main effect was again found for language background,  $F(2, 255) = 5.62, p < .01$ . Scheffé post-hoc analysis found a significant difference between participants from EDH ( $M = 104.34, SD = 14.52$ ) and from BH ( $M = 103.53, SD = 15.09$ )  $p < .05$ , compared to those from IDH ( $M = 97.24, SD = 11.41$ ),  $p < .01$ . Thus, children with the most home exposure to English showed the expected advantage in English reading vocabulary scores.

### *Children's scores on grammatical gender marking*

Figure 2 presents participants' results on the Receptive-Measure of Irish Morphosyntax (R-MIM) by language background and age. This showed a ceiling effect in Subtest 1, with participants scoring over 90% for accuracy in identifying the semantic gender of animate nouns, regardless of language background or age.

INSERT FIG. 2 ABOUT HERE

On Subtests 2 and 4 of the R-MIM, all groups of participants appeared to be performing at chance, indicating that they were guessing when asked to identify the gender of inanimate nouns<sup>1</sup>. Only Subtests 3 and (to a lesser extent) 5 showed some variability in performance when participants were asked to identify the gender of animate nouns in the context of third person possession and the gender of animals respectively.

Turning to data from the gender production task, Figure 3 shows the results of the three subtests of the Expressive-Measure of Irish Morphosyntax (E-MIM) by language background and age. Given that grammatical gender is not marked on masculine consonant initial nouns following the definite article, nor on the adjectives that follow them, and nor in marking third person possession on consonant initial nouns following feminine possessor nouns, participants could appear to be correct on half of the items if they use a 'mark nothing' default, but have limited accuracy in grammatical gender marking. In order to determine actual accuracy, a total score for nouns requiring active marking for noun gender only was calculated and used for the following analyses.

INSERT FIG. 3 ABOUT HERE

Figure 3 shows that all participants regardless of home language showed very low scores on Subtests 1 and 2, marking less than 10% of feminine nouns for gender after the article in Subtest 1 and less than 1% of nouns for noun-adjective agreement in Subtest 2. Thus, even the older children with most exposure to Irish showed accurate feminine gender marking on only a handful of particular nouns. This points to item-learning from the variety of the minority language currently spoken in input to children, rather than acquisition of the gender marking system expected in Standard Irish. There was relatively more variability in the responses to Subtest 3 (3rd person possession marking), so these differences were explored in a regression analysis in order to address the second research question and assess what factors contributed to the variation in scores on this subtest.

### ***Predictors of higher scores on gender marking of 3rd person possessive***

A standard multiple regression analysis was conducted to calculate how much of the variance in accurately marking masculine 3rd person possession (3rd person feminine possession is the unmarked default here) on Subtest 3 of the E-MIM was accounted for by a number of variables shown to correlate with scores on this measure (see Appendix 3). The variables entered were child language background, age, parental language background, percentage of pupils in the school being raised in Irish-dominant homes (IDH), school type (*Gaeltacht* school or immersion school), Irish reading vocabulary, English reading vocabulary, performance on Subtest 3 of the R-MIM and performance on Subtests 1 and 2 of the E-MIM. The total variance explained by this model was 39.5% (adjusted  $R^2$ ),  $F(13, 184) = 10.90$ ,  $p < .001$ .

Home language background was the strongest predictor of accuracy in marking 3rd person masculine possession: participants from IDH were significantly more accurate than participants from EDH ( $beta = -.475$ ,  $p < .001$ ) and from BH ( $beta = -.395$ ,  $p < .001$ ) (see Appendix 4). Thus the level of input in Irish in the home did make a difference in scores on this measure, despite overall low accuracy in (feminine) gender marking after the article and in Noun-Adjective phrases. It was noteworthy, however, that while Irish reading vocabulary correlated significantly with scores on this subtest (.304), Irish reading vocabulary did not emerge in the regression as a significant predictor of morphosyntactic accuracy as measured by this subtest, pointing to the merits of using a variety of measures to assess proficiency.

### ***Parent and Teacher Ratings***

Informal assessment of children's language by parents and teachers forms an important strand in monitoring development, and the third research aim was to explore how such subjective measures compare with performance on standardised tests. It was noted that teachers rated children's overall Irish proficiency higher than parents did, but nevertheless the correlation between the teachers' and parents' ratings of children's Irish reading was moderately high ( $r = .402$ ). Parent and teacher ratings were compared to actual performance on the measures of Irish and English reading vocabulary (TGD-G1 and DPRT-R). Table 3 shows that teachers' ratings of children's Irish Reading had the strongest positive correlation ( $r = .603$ ) with children's performance on the TGD-G1. Similarly, teachers' rating of children's English Reading had the strongest correlation ( $r = .526$ ) with children's performance on the DPRT-R, though the correlation was somewhat weaker than for Irish reading vocabulary.

INSERT TABLE 3 ABOUT HERE

Teachers' rating of children's English Reading was lower but more highly correlated with their English reading vocabulary scores than the parents' ratings of their English reading.

Figure 4 presents the correlations between parent and teacher ratings and children's reading vocabulary scores separately for children from Irish-dominant homes and children from Bilingual/English-dominant homes. It was noted that the teachers' ratings of children's Irish reading were more strongly correlated with the children's Irish and English reading vocabulary scores for participants from bilingual/English-dominant homes (non-IDH) than they were for participants from Irish-dominant homes (IDH). Examination of the trends indicates that these lower correlations appeared to be due to teachers over-estimating the Irish proficiency of children from Irish-dominant homes, while their ratings for the children from bilingual and English dominant homes were more accurate. Thus, the children from Irish-dominant homes did not show the advantage on an objective measure of Irish reading vocabulary that their teachers expected, compared to the other groups.

INSERT FIG. 4 ABOUT HERE

Nevertheless, teacher ratings of participants from each language background correlated more strongly with actual performance than did their parents' ratings. Again, it was noteworthy that there was closer alignment of parents' ratings of children's Irish with children's reading vocabulary scores for children from bilingual/English-dominant homes than for those from Irish-dominant homes. It appeared that both parents and teachers tended to over-estimate the proficiency of children from Irish-dominant homes, while their ratings for children from bilingual and English Dominant homes correlated more strongly with their reading vocabulary scores (in both languages). Overall, it appears that both teachers and parents rated children from Irish dominant homes as having higher Irish proficiency than was shown in their scores in the reading vocabulary or most of the gender marking tests reported earlier, while the teachers' and parents' ratings of the non-IDH children correlated more strongly with their test scores.

## **Discussion**

The study aimed to investigate how level of minority language input in the home impacts on children's scores on measures on reading vocabulary and on measures of complex morphosyntax such as grammatical gender. On the standardised tests of Irish reading

vocabulary developed for children in Irish-medium schools, participants from Irish-dominant homes (IDH) scored significantly higher than those from English-dominant homes (EDH), which mirrors findings in Welsh by Gathercole and Thomas (2009). The results show effects of home language that are in line with differential input, with an advantage for both IDH and BH children among younger children, but with IDH children showing the greatest increase in the older age-group. By age 12, the EDH children appear to have caught up on the BH children but not on the IDH children in Irish reading vocabulary standard scores. While home exposure appeared to influence acquisition of both Irish and English reading vocabulary, the difference was statistically less significant for English and indicates less significant influence of home language context for the majority language than the minority language. This lends further support to Gathercole and Thomas' (2009) claim that the majority language tends to be acquired regardless of home language variables, while the acquisition of the minority language is more vulnerable and more dependent on home language exposure.

Turning from vocabulary to tests of morphosyntax among these Irish-English bilingual children, the results of the receptive tests of Irish grammatical gender show significant gaps in the understanding of gender marking even among the children from Irish dominant homes. In fact, only recognition of semantic gender in human animate nouns appeared to be fully secure among these participants, regardless of home language, with a weaker grasp of grammatical gender assignment for a small number of familiar animal nouns and only a sporadic understanding of grammatical gender assignment on inanimate nouns. The expressive measure of Irish gender marking showed extremely low levels of accuracy on feminine gender assignment after the article and feminine noun-adjective agreement across all home language groups, even among the children from Irish-dominant homes, with no significant development with age. The only exception was grammatical gender in marking third person masculine possession, which was accurately marked most often by children from Irish dominant homes, but their accuracy scores still did not show that their acquisition of this system was complete, even among older primary-school participants.

These findings echo Rodina and Westergaard (2017) to some extent, but with the key difference that their Norwegian-Russian bilingual participants' showed later but complete acquisition of the opaque grammatical gender system of Norwegian (the majority language) by age 7, while their difficulties with the more transparent Russian (the minority language in Norway) system persisted among those children who received input in both languages from the parent speaking Russian. In the Irish case, it is again the majority language requiring only semantic gender marking that appears to be fully acquired, while the minority language with



a complex and opaque grammatical gender system shows very incomplete acquisition of grammatical gender marking even by age 12, and even among children with the most home exposure to that language.

Elsewhere, there is evidence (Ó Catháin 2012; Nic Fhlannchadha & Hickey 2017) that many young adult Irish speakers (both L1 speakers and high-proficiency L2 speakers) no longer mark Irish grammatical gender reliably, other than on a few well-known feminine nouns now treated as exceptions. This points to the likelihood that input to children now includes highly variable levels of accuracy in grammatical gender marking. This variability, in conjunction with the universality of bilingualism among Irish speakers, the preponderance of L2 speakers over L1 speakers of Irish in Ireland, and the contracting domains of Irish use, appears to have accelerated convergence with the English system of semantic gender marking only, with only a vestige of Irish grammatical gender marking on a few specific nouns, showing some similarities with the results for Welsh presented by Gathercole and colleagues.

Overall, Rodina and Westergaard's and the present study demonstrate the impact of an interaction between limitations in quantity or quality of input in minority languages and comparatively greater formal complexity of certain aspects of the minority language. However, in the context of an endangered minority language such as Irish, high contact leads to accelerated change, particularly in aspects of morphosyntax that are opaque and plurifunctional in the minority language and simpler or more transparent in the majority language. Thus, a significant challenge in assessing bilingual children's acquisition of a minority language is to consider their performance not only on a range of measures, but also in the context of what is the current, rather than the ideal or formal standard variety of the minority language. The picture emerging here, of children with the highest home levels of exposure to the language having only limited advantages in terms of grammatical gender marking in Irish over children from bilingual and English dominant homes, points to the need for assessment to consider also the rapid convergence phenomena evident in input to them among adult speakers, given that proficient speakers of all language backgrounds report that they now struggle with gender marking (Authors 2016).

Analysis of these results points to significant change in children's acquisition of gender marking in Irish, with wider sociolinguistic implications regarding acceptance of new varieties of the language, and educational and linguistic implications regarding how best to address the language needs of these young minority language speakers. However, a focus on those scores as 'failures' against the standard language overlooks the wider Irish language skills of these children. Thus, it is vital that we consider minority language children's

acquisition in particular using a multi-measure approach. The results for complex grammatical gender acquisition considered in isolation under-represent overall acquisition, but examination of such features of the language alongside more general (and normed) measures such as age-appropriate vocabulary helps to widen the assessment lens to encompass relevant psycholinguistic and sociolinguistic factors. In assessing minority language children's performance, it is important to consider whether language change is occurring, or has already occurred among some speakers, and how this is affecting acquisition outcomes. If the target is moving, we need to consider how to report children's apparent 'failures' in order to get a more accurate picture of the shifting context and their actual needs.

The final aim of this paper was to consider how parent and teacher ratings of language proficiency among bilingual children compare to children's scores on formal measures. Parental and teacher report are commonly used methods of accessing information about a child's relative strengths and weaknesses in one or both of their languages (Hansen et al 2017; Bedore, Pena, Joyner and Macken 2011). This can be of particular importance where standardised tests are lacking, or where the minority language is not supported in school: Bedore et al (2010) found that, in a sample of Spanish L1 children, parental rating of Spanish proficiency was more highly correlated with their children's grammaticality in Spanish stories, while teachers' ratings were more highly correlated with English grammaticality, since they interacted with the pupils in English. A relevant factor in the current study is the diversity in home exposure to the minority language among children in the typical *Gaeltacht* classroom, with children ranging from *ab initio* L2 learners to native speakers being taught together, usually in multi-grade groups due to small class sizes. This has been shown (e.g. Hickey, 2001, 2007) to lead to a *de facto* prioritisation of the needs of L2 learners over L1 speakers, given the urgency of the language learners' needs compared to the proficiency of the native speaker group. Here, it was found that while teacher ratings correlated more strongly with Irish reading vocabulary scores than parent ratings, teachers may have been more likely to over-estimate the Irish proficiency of children from Irish-dominant homes than from bilingual/English-dominant homes. Of course, as observed by Hansen et al (2017), teacher and parent ratings are likely to consider more than lexicon when rating children's language, such as authentic accent and fluency. It is relevant to note that in a qualitative study of young adults from Irish dominant homes in the *Gaeltacht* (Nic Fhlannchadha & Hickey 2018) who were studying in university, some speakers reported their awareness that their native-speaker accent could 'hide' or compensate for what they recognised as their own

incomplete control of Standard Irish grammar, which they reported had not been taught in Gaeltacht schools in the way it is in Irish-immersion schools catering for L2 learners. The effect of strengths such as accent obscuring areas of relative weakness may help to explain the finding that the teachers' ratings correlated less strongly with the reading vocabulary scores of IDH children than those from non-IDH backgrounds. It is not unexpected that teachers dealing with mixed groups of L1 and L2 speakers would engage in implicit comparison in rating the IDH children as having higher proficiency than their L2 learner (non-IDH) classmates. However, it is important that such an implicit comparative approach in teachers' informal assessment of the Irish proficiency of IDH children does not overlook their actual language needs, contributing to those needs remaining unaddressed. Thus, the findings of this study and of Hansen et al. highlight the need for greater discussion with teachers in particular of the factors influencing their informal assessment of minority language children's proficiency, recognition that parents and teachers of L1 speakers of minority languages may tend to overestimate their acquisition in comparison with L2 learners, and underestimate the need for targeted support and enrichment in the minority language for optimal simultaneous bilingual acquisition.

Finally, a vitally important issue arising from this study concerns the evaluation of children's performance in a context in which the language they are hearing around them is showing high levels of variability and change. Otheguy (2013) criticised studies claiming incomplete acquisition among migrant groups based on comparisons with monolingual norms, arguing that such norms no longer reflect accurately how the language is used by speakers in the migrant context. The results of this study also speak to Carroll's (2017) concern about psycho- and socio-linguistics operating independently of each other. This is a central issue in assessing children acquiring minority languages in high-contact and often contested spaces. Assessment of minority language bilinguals needs to take into account differences between children in home language exposure and the benefits of using a variety of measures of language proficiency, but it is also important that such assessment is related to current language use among proficient speakers, rather than comparing them only with idealised monolingual speakers of previous generations. The identification of aspects of morphosyntax that may be particularly vulnerable to convergence due to their opacity may offer an opportunity to develop effective assessment leading to more targeted intervention to support acquisition. In the Irish context, there is an urgent need to build on such assessment to develop appropriate language supports for minority language children that recognise that input to them varies significantly in both quantity and quality.

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<sup>1</sup> In the receptive test, participants were asked to select the correct noun/ possessor to go with the elicitor sentence, so even if the elicitor sentence did not actively mark gender (e.g. on feminine nouns), participants needed to understand this in selecting a masculine or feminine response.

## Tables

**Table 1.** Child sample by language background and age

Age	Irish		Bilingual		English		Total	
	Dominant	Home	Home		Dominant	Home		
6	1	.3%	0		0		1	.3%
7	13	4%	14	4.5%	6	2%	33	11%
8	25	8%	18	6%	12	4%	55	18%
9	21	7%	21	7%	37	12%	79	26%
<b>6-9</b>	<b>60</b>	<b>20%</b>	<b>53</b>	<b>17.3%</b>	<b>55</b>	<b>18%</b>	<b>168</b>	<b>55%</b>
10	20	6.5%	19	6.2%	30	10%	69	22.5%
11	11	3.6%	5	1.6%	27	9%	43	14%
12	3	1%	3	1%	10	3%	16	5%
13	1	.3%	1	.3%	0		2	.6%
<b>10-13</b>	<b>35</b>	<b>11%</b>	<b>28</b>	<b>9%</b>	<b>67</b>	<b>22%</b>	<b>130</b>	<b>42%</b>
Missing							8	3%
<b>Total</b>	<b>95</b>	<b>31%</b>	<b>81</b>	<b>26.5%</b>	<b>122</b>	<b>40%</b>	<b>306</b>	

**Table 2.** Irish vocabulary and English vocabulary: Mean % correct score by language background and age.

	<b>Age</b>	<b>Language Background</b>	<b>n</b>	<b><i>M</i></b>	<b><i>SD</i></b>
<b>Irish Vocabulary</b>	<b>6-9</b>	Irish Dominant Home	49	77.01	17.73
		Bilingual Home	49	75.10	15.99
		English Dominant Home	54	66.17	14.74
		<b>Total</b>	<b>152</b>	<b>72.54</b>	<b>16.75</b>
	<b>10-13</b>	Irish Dominant Home	35	83.19	10.89
		Bilingual Home	27	70.74	21.00
		English Dominant Home	67	67.56	17.27
		<b>Total</b>	<b>129</b>	<b>72.47</b>	<b>17.88</b>
	<b>Total</b>	Irish Dominant Home	84	79.58	15.49
		Bilingual Home	76	73.55	17.91
		English Dominant Home	121	66.94	16.14
		<b>Total</b>	<b>281</b>	<b>72.51</b>	<b>17.25</b>
	<b>English Vocabulary</b>	<b>6-9</b>	Irish Dominant Home	49	67.45
Bilingual Home			49	75.25	19.74
English Dominant Home			54	69.04	22.21
<b>Total</b>			<b>152</b>	<b>70.52</b>	<b>10.69</b>
<b>10-13</b>		Irish Dominant Home	35	65.83	13.84
		Bilingual Home	27	67.87	19.82
		English Dominant Home	67	71.80	16.47
		<b>Total</b>	<b>129</b>	<b>69.39</b>	<b>16.75</b>
<b>Total</b>		Irish Dominant Home	84	66.89	17.90
		Bilingual Home	76	72.73	19.95
		English Dominant Home	121	70.59	19.16
		<b>Total</b>	<b>281</b>	<b>70.03</b>	<b>19.08</b>

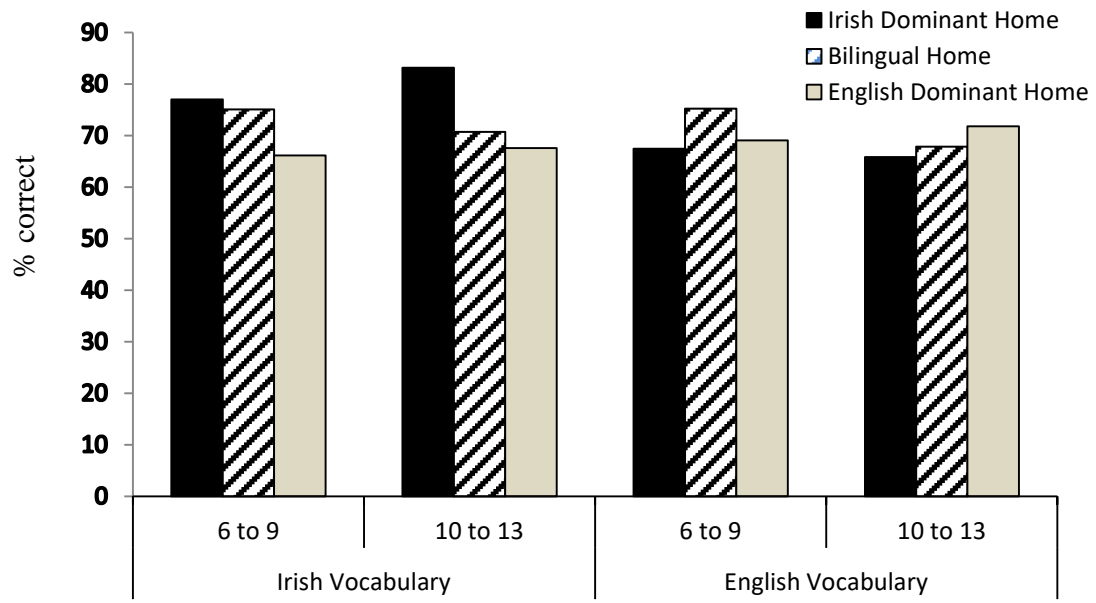


**Table 3.** Correlation between Teacher and Parent ratings and Irish and English reading vocabulary scores

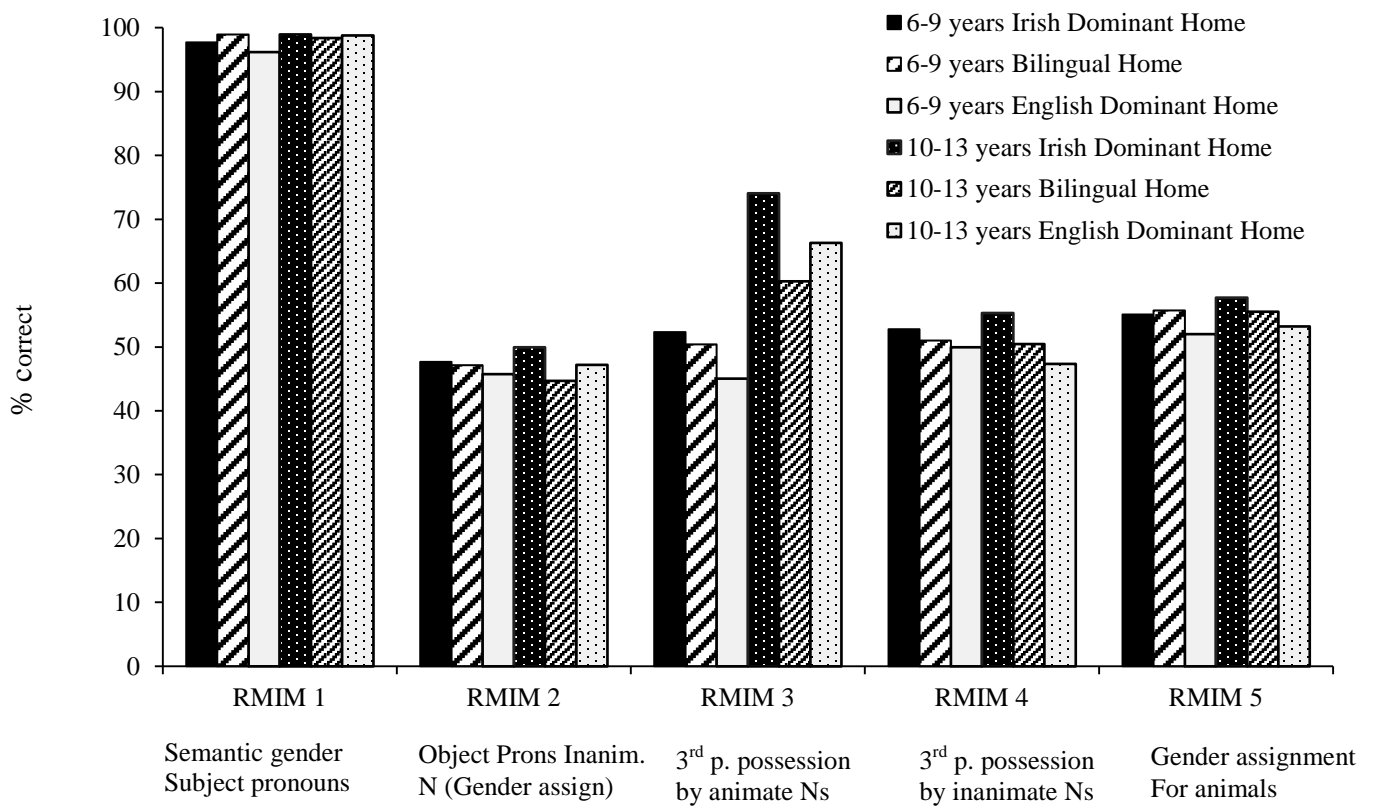
Rating – Vocabulary Score	n	Teachers	n	Parents
Rating of Irish reading - Irish Vocabulary	265	<b>.603**</b>	239	<b>.419**</b>
Rating of English reading – English Vocabulary	254	<b>.526</b>	235	<b>.285</b>

\*\*Correlation is significant at the .001 level

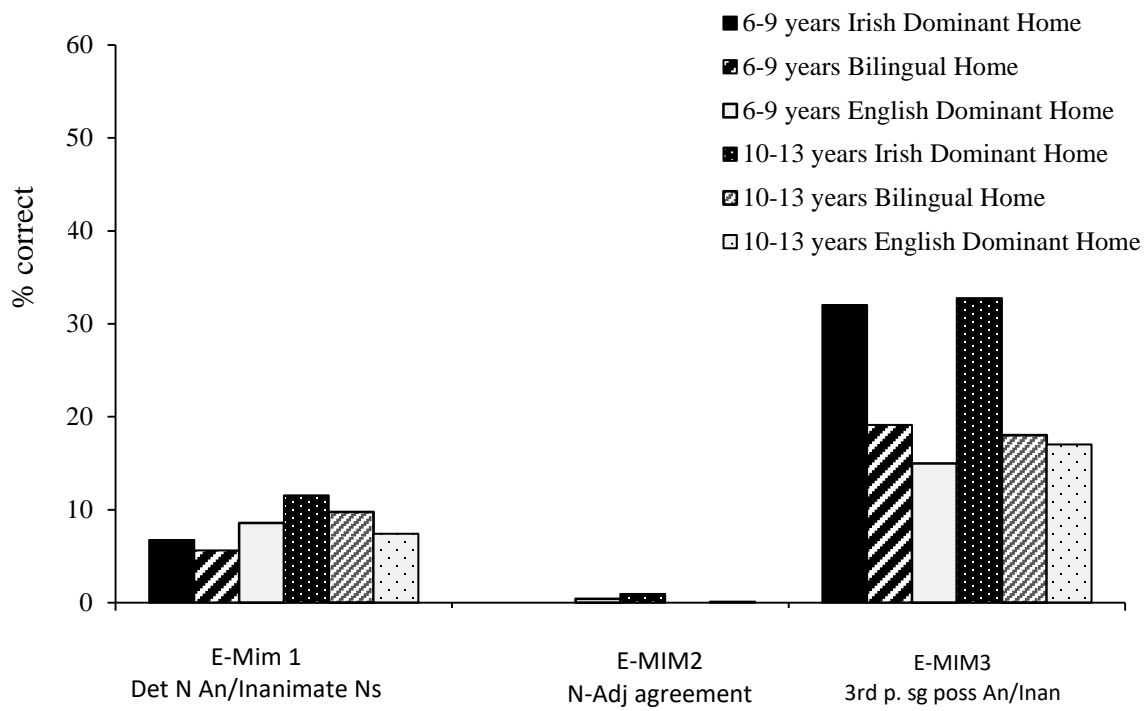
## Figures



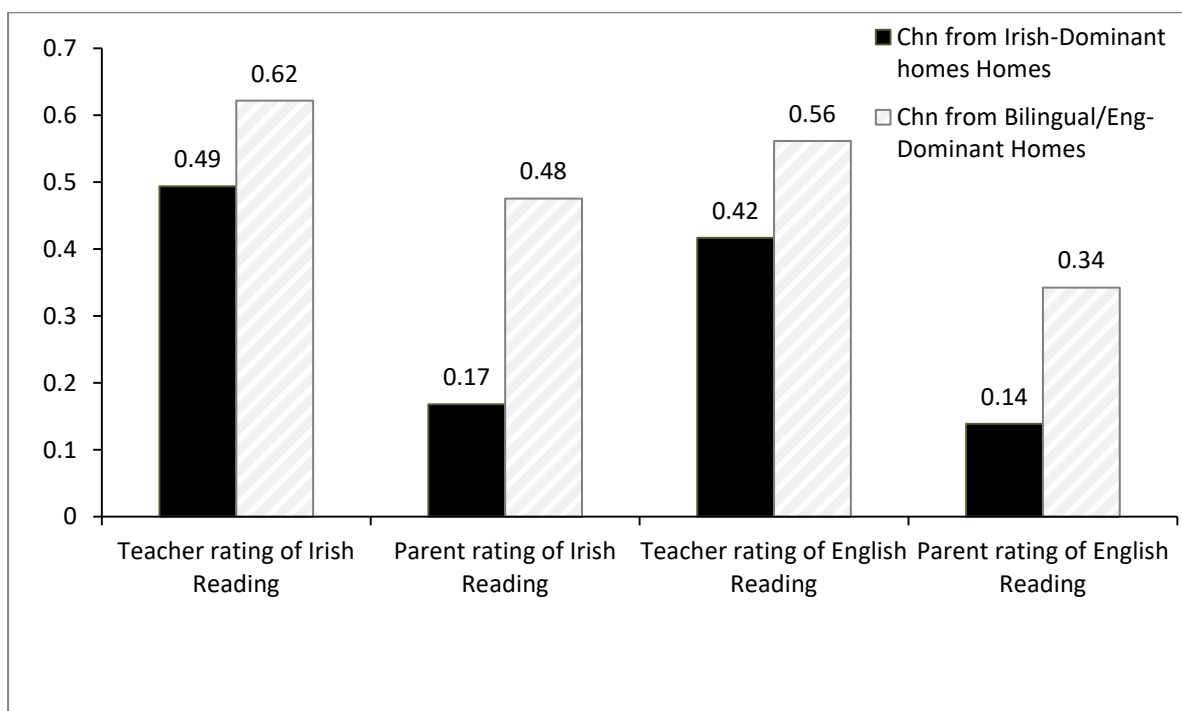
**Figure 1.** Irish and English reading vocabulary: Mean standard scores at each level by language background and age-group



**Figure 2.** R-MIM (receptive gender): Mean % correct scores by language background and age



**Figure 3.** E-MIM (expressive gender): Mean % correct scores by language background and age



**Figure 4.** Correlation between teacher and parent ratings and children's vocabulary scores by home language