

# ENGAGING WITH ROBUST CROSS-PARTICIPANT VARIABILITY IN AN ENDANGERED MINORITY VARIETY: INTONATION IN DÉISE IRISH

Connor McCabe

Trinity College, Dublin  
cmccabe1@tcd.ie

## ABSTRACT

This paper explores the issue of speaker uniformity in the phonetic study of endangered language varieties, with reference to work on the dialect of Irish (Gaelic) spoken in Gaeltacht na nDéise (Co. Waterford). Detailed prosodic study of this subvariety of Munster Irish directly engaged with variation across generations and degrees of ‘traditionalness’. Age and score on a 10-point traditionalness scale showed no correlation with one another, justifying the consideration of the two as distinct factors.

A falling H\*+L predominated in both prenuclear and nuclear position. Relative distribution of pitch accent types (H\*+L, H\*, L\*+H) and boundary tones (H%, 0%) frequently correlated with participant age, and more rarely with traditionalness score.

The importance of a realistic view of interspeaker variability in endangered varieties, and how to approach this quantitatively, is discussed.

**Keywords:** Intonation, variation, sociophonetics, endangered varieties

## 1. INTRODUCTION

A degree of interspeaker variation is expected in the study of any language. The numerous social and linguistic pressures affecting endangered varieties may cause this variation to be more pronounced [15].

Irish (Gaelic), though officially the primary language of the Republic of Ireland, is spoken natively by only a small percentage of the population. Historically continuous Irish-speaking populations are scattered around the periphery of the island in regions known as *Gaeltachtaí*. This paper focusses on the microdialect of Irish spoken in the Waterford Gaeltacht, also known as *Gaeltacht na nDéise*. Déise Irish is a subvariety of the Munster macrodialect, and has a number of distinct phonological, lexical, and morphosyntactic features. Like other dialects, Déise Irish is under considerable pressure from English. However, its extreme subminority status (1.7% of the national Gaeltacht population; [16]) means that it is also subject to influence from dialects of Irish more robustly represented in Irish-language media, especially those of Kerry and Conamara.

This paper adapts data and analyses from unpublished recent work on Déise prosody [11], elaborating on the importance of engaging with and seeking to explain participant variability. Distribution of intonational features (described autosegmentally-metrically using IViE; [7]) is compared with participant age and relative ‘traditionalness’. A 10-point traditionalness scale based on phonological, lexical, morphosyntactic, and acquisition factors is used, experimenting with a quantitative approach to intuitions found in the literature on variation in endangered speaker populations [5,8,10,14].

**Figure 1.** Map of Ireland with Gaeltacht areas indicated in bold [16], and arrow indicating the Déise



## 2. BACKGROUND

### 2.1 Participant variation

The primary goal of [11] was to create a pitch accent and boundary tone inventory that would be comparable with existing data for other dialects of Irish [4,6]. Interviews were conducted using a Zoom H4n recording device with eleven participants who all identified as native speakers of the local variety. Wide idiolectal variation was immediately evident.

Participants were asked a series of biographical questions (e.g. what language each parent spoke, which language predominated in the home, language(s) of education, etc.), and a continuum emerged between more and less traditional speakers. The former showed fewer signs of supraregionalisation of their idiolect; the latter included both those with mixed acquisition situations and those with significant influence from other dialects of the language. The unpredictable nature of acquisition in endangerment situations, especially

when a gradiently similar macrovariety is available (see [10] on Louisiana Creole, Louisiana French, and Standard French) interrupts the expected link between speaker age and relative conservatism [5,8,10].

In order to operationalise measurement of the ‘traditionalness’ intuition, a rough 10-point scale was devised. Simple features for which presence/absence was easily identifiable from interviews were selected. Half points were included when participants demonstrated awareness of a feature, but failed to use it in their own speech. Four segmental features were selected, along with two lexical features, one prosodic feature, two morphological features, and one ‘acquisition’ feature (with half a point awarded per Irish-speaking parent). A full description of the features selected can be found in Appendix A of [11]. Participant age showed no correlation with traditionalness score ( $r^2=0.0214$ ), supporting the independence of the two factors.

**Table 1.** Lowest, highest, and median scores from [10]’s 11 participants. Age included in brackets below participant label.

Feature <sup>1</sup>	06 (56)	02 (49)	NC <sup>2</sup> (94)
Diphthongisation e.g. <i>Rinn</i> /rain <sup>i</sup> /	1	1	1
<-th> as [x]	0	.5	1
/lʲ/ as [ɣ]	0	0	.5
-/N’/# as [ŋ]	0	1	1
LEXIS: <i>bleán</i> > <i>crú</i> ‘milk.VERB’	.5	.5	1
LEXIS: <i>clois</i> > <i>airigh</i> ‘hear’	0	0	1
Past-tense marker <Dh’->	0	.5	1
<i>Cho’naic</i> ‘saw’ (Final stress)	0	1	1
<i>sa</i> + eclipsis	0	.5	1
Irish-speaking parents	1	.5	1
Score:	2.5	5.5	9.5

## 2.2 Previous work on Irish intonation

Work as part of the Prosody of Irish Dialects (PoID) project [12], and subsequent related research, provides information on pitch accents, boundary tones, and alignment patterns in the three Irish macrodialects. Investigations of Connacht and Ulster

Irish were able to include areal microvariation [4,6]. Munster Irish was represented only by Kerry [4], the most robust subdialect. The only existing description of intonation in the other Munster subdialects of Cork and the Déise are anecdotal descriptions in dialectological works from the 1940s [3,13].

Dalton [4] found an overwhelming preference for falling pitch accents (H\*+L) in Kerry Irish. Falls comprised 100% of nuclear accents in all sentence types (declarative, Yes/No-questions, and WH-questions). There was a small minority of prenuclear highs (H\*) and rises (L\*+H), the latter always preceded by a high boundary tone (%H). [2] and [13] describe (impressionistic) nuclear rises and highs in the Déise and Cork.

It was expected that Déise intonation would roughly pattern with Kerry Irish. The possibility of nuclear rises and/or highs was borne in mind.

## 2.3 Elicitation

Participants were recorded in a quiet room in a local school. In order to ensure maximum comparability of data, the same corpus of declarative sentence, Y/N-questions, and WH-questions used in [4] was adapted for use. The sentence list totalled 67 items, and 3 repetitions were attempted for all participants. In some cases, this was cut short for reasons of stamina or time constraint. A short story, *Bean an Leasa*, was also read, consistent with methodology in other IViE work [7].

## 2.4 Analysis

Sentence list and short story readings were analysed in Praat [1], using IViE conventions. The decision to use IViE was in keeping with the aim of comparability with previous work on Irish. The IViE provision for a neutral boundary tone option (0%) is particularly useful for the parsimonious analysis of Irish data [4,6]. Levels of analysis were gradually layered onto one another, allowing for frequent checks of analytical consistency across files.

Once analysed, distribution of intonational features (as a percentage of all cases) was compared with participant age and traditionalness score. Potential correlations were evaluated using the coefficient of determination  $r^2$ , with a consideration threshold of  $r^2 \geq 0.2$  based on psychological literature [3]. The use of a descriptive rather than inferential statistic was appropriate to both the exploratory nature of the work and the sample size in question [9].

<sup>1</sup> For explanation of these feature labels, see chapters 3.3 and 5.1 of [11], available online at <https://bit.ly/2BRbcZo>

<sup>2</sup> NC did not receive a numerical label, as his interview was unique. He was unable to complete the standard elicitation task due to his age and health.

### 3. RESULTS

Findings for pitch accent and boundary tone inventory and distribution are summarised below. Results for statistical comparison of age and traditionalness as predictors of individuals' distributions are reported; the issue of evident participant variability is discussed in section 4.

#### 3.1 Prenuclear Pitch Accents

Distribution of prenuclear pitch accents in the Déise closely resembled that described by [4] for Kerry Irish. There was a strong preference for falling H\*+L (76-97% of all prenuclear accents), with a notable minority of prenuclear rises (L\*+H; 1-17%), and a more scarce H\* (0-10%).

Findings for the three sentence types elicited are considered in sequence below.

Distribution of prenuclear pitch accents in declaratives were best predicted by participant age. This applied to H\*+L ( $r^2=0.2055$ ) and L\*+H ( $r^2=0.29$ ), but not to H\* which showed relationships with neither age nor traditionalness. Older speakers exhibited a relatively more pronounced dominance of H\*+L in prenuclear position, with younger speakers allowing for a stronger (minority) presence of L\*+H and H\*.

For WH-questions, participant traditionalness score correlated with relative dominance of prenuclear H\*+L ( $r^2=0.3231$ ). More traditional speakers tend towards exclusive use of prenuclear falls for WH-questions, while less traditional ones show a slight incursion of L\*+H and H\*.

Finally, neither potential predictor achieved the  $r^2$  threshold of 0.2 for prenuclear pitch accent distribution in Y/N-questions. Traditionalness score fell just short of this with  $r^2=0.194$ . As in other sentence types, H\*+L comprised the vast majority of tokens.

Table 2. Summary of prenuclear pitch accent types

Participant (Age, Score)	N	H*+L	L*+H	H*
01 (63, 3.5)	513	83%	17%	0%
02 (49, 5.5)	498	91%	7%	0%
03 (46, 7.5)	155	76%	14%	10%
04 (64, 7.5)	375	97%	1%	0%
05 (73, 6)	64	97%	1%	0%
06 (56, 2.5)	358	87%	8%	5%
07 (78, 6)	323	91%	9%	0%
08 (52, 7)	327	86%	13%	0%
09 (47, 8.5)	329	94%	3%	5%
10 (34, 7)	321	86%	13%	0%
NC (94, 9.5)	60	95%	0%	5%

#### 3.2 Nuclear Pitch Accents

Nuclear pitch accent distribution roughly parallels that of Kerry. However, while H\*+L is the only nuclear pitch accent attested in the latter variety, Déise participants exhibited notable variation. H\*+L was consistently the dominant nuclear pitch accent, but only for a single participant was it the exclusive nuclear accent type attested. Distribution of nuclear pitch accents for all sentence types showed some degree of correlation with participant age.

In declaratives, participant age emerged as a predictor for (i) relative strength of H\*+L ( $r^2=0.2379$ ), and (ii) relative weakness of L\*+H ( $r^2=0.37$ ). This is consistent with the youngest participant (10; 34 years old) exhibiting nuclear rises in 27% of her declaratives, versus 9% of declaratives for the two participants with the next highest L\*+H usage. This result compliments 10's use of nuclear H\*+L H%, which also highlights a degree of ambiguity in assignment of accent labels.

For WH-questions, the only significant correlation to emerge was between degree of nuclear L\*+H presence and participant age ( $r^2=0.2035$ ). Younger speakers showed a higher rate of L\*+H usage, while older speakers often used no nuclear rises at all in questions.

Two correlations emerged for the distribution of nuclear pitch accents in Y/N-questions. The first was between L\*+H usage and participant age ( $r^2=0.2064$ ), parallel to the relationship found in WH-questions. The second was between nuclear H\* usage and traditionalness score ( $r^2=0.3302$ ). A higher rate of nuclear H\* in Y/N-questions was found for speakers with a lower traditionalness score.

Table 3. Summary of nuclear pitch accent types

Participant (Age, Score)	N	H*+L	L*+H	H*
01 (63, 3.5)	336	96%	4%	0%
02 (49, 5.5)	299	93%	3%	4%
03 (46, 7.5)	219	90%	6%	3%
04 (64, 7.5)	310	84%	6%	10%
05 (73, 6)	64	92%	2%	6%
06 (56, 2.5)	378	83%	9%	8%
07 (78, 6)	292	92%	5%	3%
08 (52, 7)	361	89%	9%	2%
09 (47, 8.5)	343	95%	2%	3%
10 (34, 7)	308	71%	27%	2%
NC (94, 9.5)	43	93%	0%	7%

#### 3.3 Boundary Tones

A number of interesting trends emerged for both initial and final boundary tones across all sentence types. The low boundary tone L% found in

Conamara, was unattested. This is consistent with the binary 0%/H% boundary inventory described for Kerry [4].

In declaratives, initial boundary tone distribution correlated with traditionalness score ( $r^2=0.2778$ ). More traditional speakers preferred a neutral boundary %0, while less traditional speakers showed a significant minority of initial high %H. This is particularly interesting in light of a strong %H preference for declaratives in Cork Irish [13], and may support a link between traditionalness and supraregionalisation. Final boundary tones were almost exclusively neutral (0%) for all participants.

Both initial and final boundary tone behaviour for WH-questions correlated with participant age ( $r^2=0.2623$ ). Initial %H as a marker of WH-questions has been described for both Kerry [4] and Cork [13]. Broadly speaking, younger participants showed a higher rate of %H usage than their older counterparts. The same was true of final boundary tones: younger speakers appeared more likely to end WH-questions with a high H%. This trend is substantially defined by the robust H% usage exhibited by the young participant 10 (72% of WH-question final boundaries).

Y/N-questions exhibit a split in directionality of age trend. For initial position, older speakers show a stronger tendency to use %H rather than %0 ( $r^2_{AGE}=0.4188$ ). In final position, it is younger speakers who prefer the high specification (H%;  $r^2=0.6069$ ). Younger speakers may be more likely to think of H% as typically ‘question-like’ based on English, consequently including more instances of this when directed to produce ‘realistic’ question intonation.

**Table 4.** Summary of initial and final boundary tones

Participant (Age, Score)	N	%H	%0	H%	0%
01 (63, 3.5)	336	24%	76%	6%	94%
02 (49, 5.5)	299	14%	86%	5%	95%
03 (46, 7.5)	219	3%	97%	8%	92%
04 (64, 7.5)	310	5%	95%	2%	98%
05 (73, 6)	64	13%	87%	3%	97%
06 (56, 2.5)	273	15%	85%	4%	96%
07 (78, 6)	292	27%	73%	6%	94%
08 (52, 7)	361	11%	89%	5%	95%
09 (47, 8.5)	343	17%	83%	7%	93%
10 (34, 7)	307	19%	81%	17%	83%
NC (94, 9.5)	43	0%	100%	0%	100%

#### 4. DISCUSSION

The above highlight a wide range of variability in intonation preferences, despite all participants

ostensibly speaking “Déise Irish” as their primary language/dialect.

Ultimately, participant age emerged as a more frequent predictor of the distribution of pitch accents and boundary tones (8 of 13 categories considered). Traditionalness score was a far stronger predictor for a significant minority of features (3 of 13, with a marginal fourth one). Participant traditionalness was also useful in rationalising speaker subgroupings, even for categories in which it was not itself of strictly predictive utility.

Generational variation is unsurprising. Increased presence of nuclear rises, especially in questions, is consistent with expected influence from English. Participants were instructed to read sentences as naturally as possible, which may have encouraged an exaggerated use of final rises as ‘typical’ indicators of questions.

Traditionalness variation is of particular interest. The minority of cases for which traditionalness score was of predictive utility represented increased. This is taken to indicate a supraregionalisation trend for speakers with increased exposure to other dialects. Several participants, for example, received post-primary education through Irish outside of the Déise.

The traditionalness scale used for this work was exploratory and aimed to include a mix of potential subfactors contributing to speaker traditionalness. In future, it may be of interest to compare methodologically parallel scales of traditionalness in different domains (phonology, lexis, acquisition, etc.)

#### 5. CONCLUSION

The aim of this paper was to emphasise the danger of taking (relative) speaker uniformity for granted when dealing with intonation in endangered minority varieties. A degree of variation is expected when dealing with any language variety, but the erratic nature of acquisition situations and usage patterns in endangerment situations magnifies this. Variation, and its potential sources, must be engaged with as part of the realistic description of these highly pressured varieties. This is an issue receiving increased attention in current variationist sociophonetics [15].

In the case of Déise Irish, speakers are under pressure not only from English, but from other major dialects of Irish. A traditionalness scale allowed for an exploratory quantitative approach to variation beyond strictly generational change. This methodology complemented a standard autosegmental-metrical approach to describing the intonation of an understudied subvariety of Irish.

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