

Focus in Donegal Irish (Gaelic) and Donegal English bilinguals

Maria O'Reilly, Amelie Dorn and Ailbhe Ní Chasaide

Phonetics & Speech Science Laboratory, Centre for Language and Communication Studies,
School of Linguistic, Speech and Communication Sciences, Trinity College Dublin

{moreill12; dorna; anichsid}@tcd.ie

Abstract

This paper examines the effects of focus on the global and local f_0 variations in the contours of Donegal Irish and Donegal English, produced by bilingual speakers. The analysis was conducted on a controlled data set, where contrastive focus was elicited on each of the 3 potentially accented syllables along with broad focus. Results suggest that focus in non-final IP position in both of these Northern varieties is realised by expanding the f_0 range associated with the focal accent and subsequent obligatory deaccentuation of the postfocal material, as well as range reduction or deaccentuation of prefocal accents. IP-final focus largely resembles broad focus.

Index Terms: focus, intonation, Irish Gaelic, Irish English.

1. Introduction

This paper examines two focus types (broad and contrastive) in Donegal Irish (Gaelic) in Gaith Dobhair, and Donegal English as spoken by bilinguals (Irish and English) in Gaith Dobhair and neighbouring Rann na Feirste (see Figure 1).

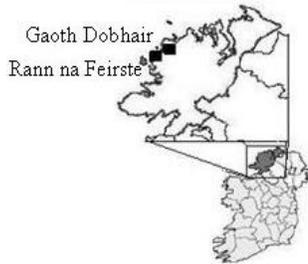


Figure 1: Map of Ireland and County Donegal showing the location of informants.

The present study is prompted by a number of factors. First of all, it is part of an ongoing investigation of the intonation of Irish and Irish English, which until recently were relatively little studied. This accords with a growing global interest in intonational typology. Ultimately this intonational study is intended to be part of a broader study which will eventually encompass timing/rhythmic aspects as well as voice source correlates of prosodic structures.

In the present study the data is from two separate groups of Irish/English bilingual speakers. Virtually all Irish speakers are bilingual nowadays, whereas the majority of Donegal English speakers are not necessarily fluent in Irish. A three-way comparison is eventually envisaged, which will include Donegal English monolinguals: such a three-way comparison may shed light on language contact issues, and the likely cross-language influences.

The varieties of the two languages studied here are of particular interest in that their basic intonation contours are unusual. With respect to Irish (Gaelic) and Irish English, the varieties we are dealing with here are distinctly Northern ones, characterised by a dominant pattern of rising (L*H) pitch accents in declaratives as well as in various question types. Thus, for both Donegal Irish [1-3] and Donegal English [4], a typical declarative with three pitch accents will look as follows:

L*H L*H L*H 0%

The rising pitch accents associated with these Northern varieties of Irish and Irish English makes them very different to the more universally attested pattern in languages, where high (H*) and high-falling (H*L) pitch accents are more typically associated with declaratives. Note that the mainstream Southern varieties of Irish and Irish English tend to have this latter pattern [1-3, 5-6].

Focus has been studied widely from a semantic, syntactic and prosodic perspective [7-12]. It can be expressed through intonational, grammatical and morphological means. In terms of intonation, focal accents are signalled by an increased pitch excursion, while post-focal material is generally deaccented. Pre-focal material is reported to remain neutral, i.e. largely unaltered [11].

If we assume that these same intonational means are likely to characterise the data of this study, it is of interest to see how they would be realised for utterances with L*H accents. For example, if a greater pitch excursion is associated with the focused element, is this likely to come about as a result of a greater depression in the L*, or an upward shift of the trailing H? In this paper we present material for the two languages, as produced by the two groups of bilingual speakers. The data we present here comprise a sentence of Irish and of English, with three potential accents (hereafter referred to as A1, A2 and A3). These sentences were elicited in four focal conditions: broad focus (bf), and contrastive focus on the first, second or third accentable element (fA1, fA2, fA3, respectively).

It was of particular interest to determine whether the same intonational means referred to above would also be used for focal contours in these languages for signalling focus. It was furthermore of interest to look at the extent of the similarity in the f_0 contours of these Irish and English bilinguals.

2. Methods and materials

2.1. Materials

Data for this study was collected as the base set for the analysis of focus in Irish and Irish English. Two structurally similar data sets for Irish and English were designed. Both broad and contrastive focus were elicited from two target declarative sentences (see Table 1). Broad focus was prompted

by a question of a general type ('What's the news?'), while contrastive focus by yes/no questions where the trigger word was replaced with an alternative in order to elicit the contrastive rendition.

Data for Irish was recorded in the semi-anechoic recording booth in the Phonetics Laboratory in Trinity College. Data for English was recorded in a quiet room of an educational institution in Gaoth Dobhair using a digital recorder, ZOOM Handy Recorder H4.

For each language, 5 speakers from the Irish speaking area (*Gaeltacht*) in Donegal were recorded. All 10 informants were bilingual native speakers of Irish and English, whose first language of choice is Irish. This was intended to allow for a first-hand experimental investigation of a possible underlying influence of Irish on the prosodic structure of English. From the Gaoth Dobhair area 5 speakers were recorded for Irish and 2 for English. The other 3 informants recorded for English came from Rann na Feirste.

Sentences were prompted 4 times for each focal condition in randomised order on a computer screen. This gives 16 sentences per speaker (1 target sentence x 4 conditions x 4 repetitions) and a total of 80 sentences per language. Data was analysed using the PRAAT Software [13].

Table 1. Target sentences in broad and contrastive focus in English (a) and Irish (b).

(a)	Nora's	living	in	Mallow.		
(b)	Bhí	Méabh	ina	luí	ar an	leabaí.
	/vʲiː	ˈmʲeːvʲ	ənə	ˈlʲiː	ər ə	ˈlʲaːbʲiː/
	was	Méabh	in her	lying	on the	bed
	'Méabh was lying on the bed.'					

2.2. Methods and measurements

Prior to taking measurements, careful auditory analysis and visual inspection of the f_0 contours were carried out. For both the Irish and English sentences we found some variability in the tonal patterns. As expected the prevalent L*H was found in both nuclear and pre-nuclear accents most of the time, regardless of the focal condition. However, there were also some occurrences of nuclear and pre-nuclear high (H*) or falling (H*L) accents. It is unclear at this point whether this reflects typical variations in the intonation contours for these varieties or whether these are evidence of occasional intonational 'code switching' or accommodation phenomena. In any case, for the present paper, we have excluded these occurrences from the analyses and what follows, concerns the contours realised as the more typical sequence of rising accents. Furthermore, there were a number of cases auditorily judged not to have the focal accent in the appropriate location: these were also excluded from the present analysis. In total, approximately 20% of the sentences in either language was excluded.

Following the initial auditory analysis, data was segmented into syllables and transcribed for accents and boundaries using the IViE labelling system [14]. The annotation served as the basis for identifying the f_0 turning points for adequate contour representation. Following this, the contours in both languages were annotated using 7 f_0 points (see Figure 3). In each stress group two f_0 points were taken: the low point corresponding to the L* and the following peak corresponding to the trailing H tone (B-C for A1, D-E for A2,

and F-G for A3, see Figure 3). These paired f_0 measurements were taken at the corresponding segmental time points in each stress group regardless of whether an actual accent was present or not in order to have comparable measurements, even when deaccentuation was found. The additional f_0 point (A) was measured at the beginning of the IP, and fell on the first unstressed syllable in DI and on the first segment of A1 in DE, in order to keep the same number of measurement points in both languages.

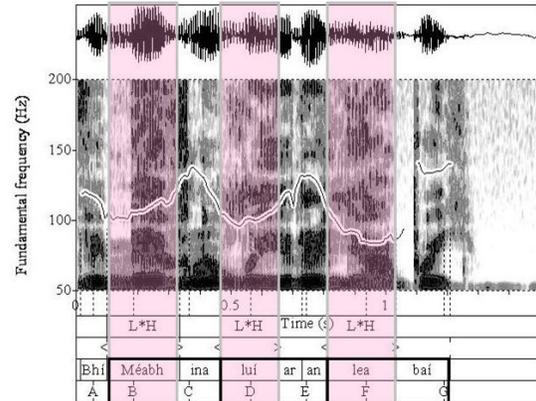


Figure 3: Example of a broad-focus declarative in the Irish sentence 'Bhí Méabh ina luí ar an leabaí'. Shown are (top to bottom): waveform, spectrogram with superimposed f_0 contour, timescale, accent labels, rhythmically prominent syllables, orthographic transcription and f_0 measurement points (A-G). Vertical boxes (pink) mark the 3 stressed syllables. Horizontal boxes (black) mark the 3 stress groups and their corresponding f_0 measurement points.

3. Results

Initially the data points obtained from the analysis were plotted separately for each speaker. Inspection of the f_0 plots showed that all speakers produced structurally identical contours in both Irish and English (excepting of course those sentences which had been discarded). In terms of their realisation, there were some differences in the data with respect to the precise timing of H of the rising accent (L*H) in both broad and contrastive focus conditions. Timing aspect, however, are not dealt with in this paper and are therefore not included in the following analysis.

The f_0 values were averaged for each condition for each speaker, and then averaged across all speakers within each variety and subsequently plotted in order to obtain the 'prototypical' contours. Figure 4 presents the resulting f_0 data for Donegal Irish (DI) and Donegal English (DE). Each focal condition (fA1, fA2, fA3) is shown individually (panels a-c) relative to broad focus. Values are shown in semitones (ST) relative to 100Hz (= 0).

Looking at the realisation of broad focus alone (the dashed lines in Figure 4a), the results for DI and DE are very similar, and it is clear that the most extreme pitch movement is found on the final (nuclear) accent. One difference between the two languages concerns the more frequent deaccentuation of the medial accent in DE compared to DI.

Comparing fA3 with the broad focus condition (solid and dashed lines in Figure 4c) we note only slight changes. There

is no boosting of the range of the rise in A3, as might conceivably have been expected: in fact for DE the nuclear accent in broad focus exhibits a greater range. Perhaps the most striking difference is in the relatively shallower declination line in fA3: the L of the third accent (A3) starts from a higher f_0 , while the first accent (A1) has a slightly lower f_0 and this flattens the slope of the declination somewhat.

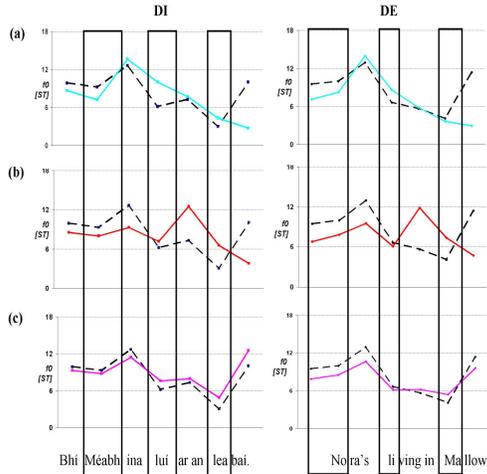


Figure 4: Proto-typical contours of Donegal Irish (DI) and Donegal English (DE) in broad (dashed line) and contrastive focus produced in the first, second or third stress group (a, b, c, respectively). Vertical boxes indicate the 3 stressed syllables. F_0 points are presented in semitones relative to 100 Hz (=0).

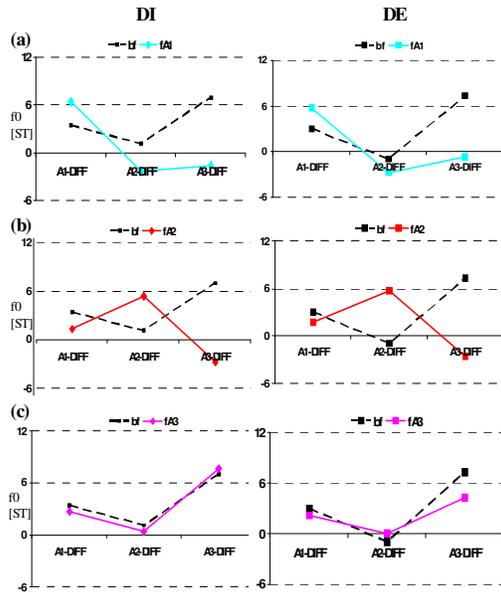


Figure 5: L-H distance in semitones (relative to 100 Hz (=0)) for the 3 stress groups in fA1, fA2 and fA3 (panels a-c, respectively) compared to broad focus (dashed line) in Donegal Irish (DI) and Donegal English (DE).

Comparing now fA2 (contrastive focus on the second accentable element) with broad focus (Figure 4b) there is a clearly visible boost of the f_0 rise associated with the focal accent. The post-focal material is essentially deaccented, and the pre-focal accent is compressed relative to the focal accent, particularly in DI. The boosting of the f_0 range as well as range compression of the pre-focal accent in fA2 results in the starkest difference among the 3 contrastive focus conditions compared to broad focus.

When the IP-initial element is in focus (fA1, Figure 4a), there is likewise a rather strong increase in the range of the f_0 rise on A1, compared to the broad focus condition. This range expansion is brought about by a lower L and higher H in the L*H accent. The focal accent is followed by deaccentuation on the two subsequent elements.

Figure 5 displays in semitones the f_0 range (L-H) associated with each accent. The figure presents again a comparison of fA1, fA2 and fA3 (panels a-c) compared to the corresponding measurements in broad focus (dashed line).

In the fA1 condition (Figure 5a), we see that the f_0 range of the rise for A1 is substantially increased. The remainder of the utterance is even more dramatically affected in terms of the deaccentuation, which is reflected in the negative values for both A2 and A3 following the focal accent (not only is there no rise, but there is an overall falling slope).

In the fA2 condition there is again a strong increase in the f_0 range of the rise on the focal accent. The resulting f_0 contour in fA2 is almost a mirror image of the broad-focus contour. In other words, the second accent is very strong in fA2, while it is hardly, if at all, present in broad focus. This trend holds true for both DI and DE, with the effect being stronger for the latter, where the accent on A2 is generally absent in broad focus. Again, as in fA1, the postfocal material is deaccented (negative value for A3 in Figure 5b). The reduction in the range of A1 can also be clearly seen.

The effects of contrastive focus on A3 are, as already observed, the least pronounced of the 3 focal conditions (Figure 5c). While for DI the f_0 range in each of the stress groups is nearly identical, the range of the rise on nucleus (A3) in DE is greater for broad than for contrastive focus which runs counter intuitive to your initial expectations.

4. Discussion

It should be borne in mind that the dataset incorporates renditions of focus in two structurally-simple declaratives in read speech, therefore the observations presented below should be treated as representative of focus as realised in scripted speech. While we believe that similar if not identical trends will be found in naturally-occurring focus utterances, this will remain something to be demonstrated later.

The realisation of broad focus is strikingly similar in Donegal English and Donegal Irish. The present data confirm earlier findings that the prevalent nuclear contour type in broad focus declaratives in Donegal Irish is L*H 0%, while the rising accent is also typical of the pre-nuclear positions [1].

In languages such as European Portuguese and Florentine Italian narrow focus on the IP-final element results in the choice of a structurally different accent type, as has been reported in [9, 15]. Although non-rising accents were found intermittently in the present data, we are fairly clear that this was not correlated with a specific focal condition.

Findings from the contrastive focus data provide us with new insights concerning the scaling aspect of the focal accent and its relationship to the other accents within the IP. As

observed, contrastive focus is produced for the most part by the same means in both languages.

First of all, when a non-final element is in focus there are major shifts in the entire contour. The focal accent has a larger f_0 excursion. Post-focal material in contrastive focus is overall deaccented, and follows a gradually falling trajectory. Deaccentuation of post-focal material has also been previously reported for English [7-8]. The pre-focal accents are usually retained, although they tend to be produced with a compressed pitch range relative to their realisation in broad focus, and may also on occasion be deaccented.

When contrastive focus occurs IP-finally, there may be rather little difference in the contour compared to broad focus (DI), or the size of the f_0 excursion on the nuclear accent may be even less than in broad focus (DE). There has been some discussion in the literature [7, 16] as to whether broad focus is truly different from narrow focus in the case where the nucleus falls on the last accented element. The results on the f_0 range in our data (Figure 5c) would suggest that contrastive focus in the IP-final position is not brought about by the raising of the peak, and these results broadly resemble the findings in [16]. We would tentatively conclude that there may be a fine difference in terms of the slope of the declination, but point out that as the differences are minor, one would need much more data to establish this.

5. Conclusions

The results of this study show that focus brings about different dynamic relationships in the f_0 contour depending on its location within the phrase. When it is located on the final accented element it has relatively minor consequences. When it is realised in the IP-initial position, it results in major boosting of the rise associated with this accent, with deaccentuation of the subsequent accents. IP-medially, it entails extensive boosting of the rise along with deaccentuation of the post-focal material and frequent compression of the pre-focal accent.

On the whole these results echo those in the literature reported for other languages, with respect to the expanded f_0 range of the focal accent, as well as the deaccentuation of the postfocal material [11, 12]. Whereas some studies suggest that the pre-focal material may remain unaltered [11], our data suggests otherwise: both in DI and DE there was some compression of prefocal accents, and occasionally deaccentuation was found.

A question was raised at the outset concerning the effects of focus on accentuation in a language whose main melodic pattern involves a sequence of rising accents. In particular, it was of interest to see whether the boosting of f_0 range would be brought about by lowering the L rather than raising the H. This was not found to be the case with respect to fA2 and fA3 (where relevant): if anything the L value was higher than in broad focus, and the greater range was predominantly the consequence of raising the H. In the case of fA1, there was indeed a substantial lowering of f_0 on the L. But even here we must note that there was a concomitant raising of the H.

This study showed basic differences in the intonation contours of declaratives in broad and contrastive focus of the Donegal varieties of Irish and Irish English. In addition to the comments made earlier concerning future directions, we feel that one important aspect that will merit a close look concerns the alignment of the L and H elements in focus. Data including syntactic/morphological focus might also be worth looking at, particularly in Irish where the latter means are employed more

frequently than in English. Eventually, we intend to investigate the intonational/prosodic aspects of focus in utterances in unscripted speech.

6. References

- [1] Dalton, M. & Ní Chasaide, A., "Nuclear accents in four Irish (Gaelic) dialects", *Proc. XVIth ICPhS*, Saarbrücken, 965-968, 2007.
- [2] Dalton, M. & Ní Chasaide, A., "Tonal Alignment in Irish Dialects", *Language and Speech*. Thames Ditton, 48 (4), 441-24, 2005.
- [3] Dalton, M. & Ní Chasaide, A., "Melodic Alignment and Micro-Dialect Variation in Connemara Irish", in C. Gussenhoven & T. Riad [Eds.] *Tone and Intonation in Europe*. Mouton de Gruyter, Berlin, 2007.
- [4] Dorn, A., "An Intonational Analysis of Donegal English", MPhil. Dissertation, Trinity College Dublin, 2006.
- [5] Grabe, E., "Intonational variation in urban dialects of English spoken in the British Isles", in P. Gilles & J. Peters [Eds.] *Regional Variation in Intonation*. Max Niemeyer Verlag GmbH, Tübingen, 9-31, 2004.
- [6] Kalaldehy, R., Dorn, A. & Ní Chasaide, A., "Tonal Alignment in Three Varieties of Hiberno-English", *Proc. Interspeech 2009*, Brighton, 2443-2446, 2009.
- [7] Ladd, D. R., *Intonational phonology*, Cambridge, CUP, 2007.
- [8] Gussenhoven, C., "Types of focus in English", 2007. Online: <http://www.let.ru.nl/gep/carlos/matt.pdf>, accessed on 20 Oct 2009.
- [9] Frota, S., "The Prosody of Focus: a Case-Study with Cross-Linguistic Implications", *Proc. Speech Prosody 2002*, Aix-en-Provence, France, 319-322, 2002.
- [10] Selkirk, E., "Contrastive FOCUS vs. Presentational focus: Prosodic Evidence from Right Node Raising in English", *Proc. Speech Prosody 2002*, Aix-en-Provence, France, 2002.
- [11] Xu, Y., and Xu, C. X., "Phonetic realization of focus in English declarative intonation", *Journal of Phonetics* 33, 159-197, 2005.
- [12] Chen, S., Wang, B., & Xu, Y., "Closely related languages, different ways of realizing focus", *Proc. Interspeech 2009*, Brighton, UK, 1007-1010, 2009.
- [13] Boersma, P., & Weenik, D., "Praat: doing phonetics by computer," Version 5.1, 2009, www.praat.org/
- [14] Grabe, E., Nolan, F., & Farrar, K., "IViE - A comparative transcription system for intonational variation in English", *Proc. 5th ICSLP*, Sydney, 1259-1262, 1998.
- [15] Avesani, C., and Vayra, M., "Broad, narrow and contrastive focus in Florentine Italian", in *Proc. 15th ICPhS*, Barcelona, 1803-1806, 2003.
- [16] Hanssen, J., Peters, J., & Gussenhoven, C., "Prosodic Effects of Focus in Dutch Declaratives", *Proc. Speech Prosody 2008*, Campinas, Brazil, 609-612, 2008.