Epenthesis in Contact Irish English spoken in the Connemara *Gaeltacht*

Kate Tallon
University of Oxford

Airelle Theveniaut
Université de Bretagne Sud

Abstract

Varieties of 'Contact Irish English' (CIE), i.e. English spoken by native Irish speakers, are often thought to display significant phonological influence from Irish (Hickey, 1986, 2007; Ó hÚrdail, 1997). However, modern systematic acoustic descriptions of CIE speech data are scarce, relative to other Irish English (IrE) varieties. This study investigates a phonological phenomenon often attributed to an Irish influence, that of epenthesis in words with liquid+sonorant coda clusters (LSCCs) e.g., in *film* [ˈfɪləm], in CIE spoken in the Connemara Gaeltacht, an Irish speaking region in the west of Ireland. We examine (i) the extent of LSCC epenthesis and effects of sociolinguistic factors and (ii) whether prosodic contours for epenthesized words are realized similarly to other disyllabic words in Connemara English. 314 LSCC token from sentences produced by 12 L1-Irish bilinguals and 12 English monolinguals were acoustically analysed using Praat (Boersma & Weenink, 2023) and IViE prosodic annotation (Grabe et al., 1998). Statistical findings indicate significantly higher epenthesis rates among bilinguals, with age, Language Profile Score (LPS) and cluster type affecting variation. Prosodically, epenthetic tokens predominantly portray low target tones L*_% (54%), particularly among women, irrespective of age. These results do not align with previous findings for prosodic realization of disyllabic words in Connemara English (Théveniaut & Herment, 2023). By providing empirical evidence, this study enhances our understanding of CIE phonology as well as the role of language contact in shaping phonetic and prosodic variation in bilingual communities.

Keywords: Contact Irish English, sociophonetics, Connemara Gaeltacht, epenthesis, prosodic contours

1. Introduction

1.1. Research context: English in the Gaeltacht

Despite increasing interest in Irish English (IrE) phonology and phonetics in recent decades, much remains to be known about the acoustic characteristics of English varieties spoken in Gaeltacht areas (i.e. regions where Irish remains the primary day-to-day language of the community). Linguistic descriptions of such varieties – often termed 'Contact Irish English' (Hickey, 2007) – have been provided by Hickey (2007), alongside studies with specific regional focus in Gaoth Dobhair, County Donegal (Ní Chasaide, 1979; Ní Ghallchóir, 1981)

and Múscraí, County Cork (Lunny, 1981; O'Cuinneagain, 2019). English in the County Galway Gaeltacht has only recently begun to attract attention from a sociophonetic perspective, with work by Théveniaut (2023) and Tallon (2025). This study builds on this recent work by empirically investigating English speech data from Connemara, County Galway. Examining speech patterns of Irish-English bilinguals in Gaeltacht areas can not only shed light on linguistic variation within IrE but can provide insights into language contact mechanisms. Although transfer effects have been examined from the Irish perspective, particularly with regard to English influence on Irish (e.g. Stenson, 1991), relatively few studies have focused on the sociophonetic influences of Irish on English in the Gaeltacht. Given the steady decline in the number of Irish speakers in the Gaeltacht – where, of approximately 106,000 inhabitants, only 66% are Irish speakers (CSO, 2022) – there is an urgent need to document not only Irish spoken in these areas, but also the varieties of English that remain in contact with Irish.

Descriptions of CIE often highlight a particularly heavy influence from Irish (Filppula, 1995; Harris, 1984; Hickey, 2007; Ó hÚrdail, 1997). Harris (1984, p.305) observes that "the effects of Irish interference are, not surprisingly, most discernible in parts of Ireland with a high incidence of bilingualism." Similarly, Hickey (1986, p.1) notes that the phonological influence of Irish on English is most apparent in Gaeltacht areas. Ó hÚrdail (1997, p.182) also states that Irish influences on IrE "reduce progressively from Gaeltacht area speech to regional (rural and urban) varieties, to unofficial-standard [IrE]." Although such assertions of strong Irish influence are common and generally accepted, empirical investigations of this influence remain limited.

1.2. Epenthesis in Irish English and Irish

Epenthesis of the schwa vowel /ə/ in liquid+sonorant clusters (LSCCs), e.g. [fɪləm] *film*, is a widely reported feature of IrE. Particularly prevalent in /lm/ clusters, it has been frequently observed across IrE varieties (see Hickey, 2007; Maguire, 2018; Wells, 1982). Hickey (2007, p.27) identifies the presence or absence of LSCC epenthesis as a dialectal marker: "if an individual has no epenthesis in *film* [...] then there is a very real sense in which that individual is not a speaker of (southern) Irish English." Hickey (2017) claims that epenthesis in *film* is an "enregistered" feature of IrE more generally, suggesting that it has become lexicalised. Relatively high rates of epenthesis in the word *film* have also been reported by Maguire (2018) for Mid Ulster English and by Sell (2012) in her investigation of epenthesis in Galway City English. Outside of Sell's finding that epenthesis was more common in casual speech and for older speakers of Galway City English, relatively little is known about the influence of sociolinguistic factors on LSCC epenthesis in IrE.

While LSCC epenthesis is most commonly reported in /lm/ clusters, it has also been noted, though less frequently, in /ln/ (e.g., *kiln*) and within some /r/-initial clusters, such as /rm/, /rl/, and /rn/ (e.g. *farm, girl, barn*) (Henry, 1957; Sell, 2012). Hickey (2007, p.275) notes that these epenthesis types are mostly confined to rural IrE and typical of native Irish speakers' English "as expected", echoing his earlier claim that liquid+sonorant epenthesis is a "definite contact phenomenon" from Irish (1986:10). Others also believe LSCC epenthesis to stem from Irish, which shows similar epenthesis in a wider range of consonant clusters (e.g. in *gorm* 'blue', *bolg* 'stomach') (Barry, 1982; Corrigan, 2010; Hickey, 1986; Ó Baoill, 1997; Ó hÚrdail, 1997). However, Maguire's (2018) more recent research on Mid Ulster English suggests that we cannot straightforwardly assume an Irish transfer origin for epenthesis, as MUE epenthesis patterns show closer alignment with those found in English and Scots than with those of Irish. Regarding our expectations for English spoken by native Irish speakers (CIE), if we assume an

Irish source for epenthesis we might expect – as Hickey (2007) did – a relatively high degree of epenthesis in CIE, as CIE is considered to be highly influenced by Irish (Ó hÚrdail, 1997). However, this hypothesis is weakened once we take Maguire's findings into account. If an Irish transfer origin is less plausible than previously assumed, we have no reason to expect a particularly high degree of epenthesis in CIE, when compared to non-contact varieties of IrE.

1.3. Suprasegmental knowledge

Suprasegmental studies of IrE remain scarce in comparison to segmental ones. We nonetheless acknowledge a North-South division which prevails at a suprasegmental level, in both Irish and IrE varieties. Intonational differences distinguish Ulster from Connemara for both languages, for instance, with rising vs. falling patterns (respectively) on declarative sentences (Dorn & Ní Chasaide, 2016, p.1). The focus of these intonation studies is generally the last accented element of a sentence, i.e. the nucleus – nuclear syllable.

Studies comparing varieties of Irish in Connemara, Kerry and Mayo have shown a consistent pattern of declarative sentence HL falls, i.e. from a H(igh) target to a L(ow) one (Dalton, 2008; Dalton & Ní Chasaide, 2007). Conversely, Donegal Irish speakers predominantly produce declaratives with a rising LH shape – from L(ow) to H(igh) (Dalton & Ní Chasaide, 2007; Dorn & Ní Chasaide, 2016). In South Connemara, studied varieties, such as Cois Fharraige and Inis Oírr Irish (Dalton, 2008) both show a predominance of HL (94%) contours in nuclear position (Dalton, 2008; De Bhaldraithe, 1945, p.71), with a fall on the stressed syllable and a low tail.

As for English in the same region, to this day and to our knowledge, Théveniaut (2023) and Théveniaut & Herment (2024) are two of the few intonation studies. Théveniaut (2023) observed 62% of falls in declaratives in County Galway English (both Galway City and the Co. Galway Gaeltacht). More specifically, she found that monolingual English speakers in

Galway City predominantly produced late falls (H*_L%), in which the stressed syllable is produced on a high pitch level and the fall occurs on the following unstressed syllables – e.g. tail. This late fall had already been noticed in Bongiorno (2021), Hayes & Lahiri (1991) and Kalaldeh (2011). In comparison, bilinguals in the Gaeltacht produced more simple falls (H*L_%), with the fall on the stressed syllable and an already low tail. The predominant falling contours found for County Galway English echo results for Wexford (Sullivan, 2006) and Drogheda (Kalaldeh, 2011), where most declarative contours are produced with falls (simple and late ones). In Dublin (Bongiorno, 2021), low target tones L*_% — considered non-ascending when slope < 20 Hz for males and < 60 Hz for females (Kalaldeh, 2011; Grabe & Post, 2002) — were observed. By contrast, most Ulster IrE declaratives feature an LH pattern, closely resembling the unmarked rising contour in Irish (Dorn & Ní Chasaide, 2016; Kalaldeh et al., 2009).

To our knowledge, no intonational analyses have examined epenthetic LSCC words in IrE. Liquid+sonorant epenthesis of this kind gives monosyllabic words a disyllabic-like sound structure, e.g. *film* [ˈfiləm]. As for left-stressed disyllabic words in County Galway, Théveniaut & Herment (2024) found the late fall (H*_L%) to be the most common contour (66%). They also noted that Gaeltacht bilinguals used more simple falls (H*L_%, 10%) than Galway City monolinguals (3%).

2. Method

2.1. Research questions

Given the lack of empirical knowledge on the structure and sociolinguistic patterning of LSCC epenthesis in CIE, this paper seeks to answer the following research questions:

1. (a) To what extent do bilingual Irish-English speakers produce LSCC epenthesis in their English speech?

(b) Do the sociolinguistic factors of age, gender, linguistic background and local attachment affect the occurrence of LSCC epenthesis?

2. (a) Are these epenthetic structures produced with a similar prosodic contour as other disyllabic words in Connemara English?

   (b) Do the aforementioned sociolinguistic factors condition different prosodic contours across groups?

2.2. Data collection

The Gaeltacht areas of County Galway rank among the strongest in terms of the proportion of daily Irish speakers outside the education system. Ceantar na nOileán, an archipelagic region about 50 kilometres outside of Galway City, stands out nationally, with 95% of inhabitants reporting the ability to speak Irish (CSO, 2022). The 2016 Census revealed that 71.7% of the population in Ceantar na nOileán used Irish daily outside of education (CSO, 2022), making it the region with the second highest rate of daily Irish speakers (Tory Island having the highest rate at 74.6%), (CSO, 2022). This attribute makes Ceantar na nOileán a fruitful research location for observing CIE, and it was therefore selected as the main research site for this study.

24 participants were recruited and recorded across Connemara, comprising 12 bilingual speakers (5 M / 7 F) and 12 monolingual English speakers (6 M / 6 F), with ages ranging from 20-79 years, (M = 44, SD = 18). Monolingual English speakers from the Co. Galway Gaeltacht served as a reference group to compare with bilinguals and identify phonetic variation and potential contact effects. The broad age range enabled analysis of age-related variation and apparent-time language change. Monolinguals were recruited from the area of Na Forbacha/ Furbo, and bilinguals from Ceantar na nOileán. Na Forbacha is a Gaeltacht region comprising multiple townlands situated between the villages of Bearna/Barna and An Spidéal/Spiddal, with a population of 868 people (CSO, 2022). While Irish is the main language of the

community, i.e. used in schools, churches and community council settings, the proportion of daily Irish speakers (outside of education) is lower than that of Ceantar na nOileán, at approximately 48% (CSO, 2016). This makes it an ideal area to locate participants who are from the Co. Galway Gaeltacht but who are monolingual English speakers.

Recordings were carried out individually at participant homes, workplaces or accommodation rented for the study. All recordings were made at a 44.1 kHz sampling rate, using an Audio Technica AT2020 microphone and an Apple MacBook Pro running Audacity (Audacity Team, 2022). As part of a larger study investigating multiple phonological features, participants read aloud 100 sentences, 10 of which contained one or more LSCCs, e.g. "The *girl* was cutting down the *elm* trees" (italics absent for participant). Each participant completed a semi-structured interview to facilitate analysis of speech style effects on epenthesis. Table 1 lists the collected words, and Table 2 shows the number of LSCC words by cluster type.

TABLE 1

Recorded words containing liquid+sonorant clusters across speech styles

Read speech	Spontaneous speech
arm	barn
barn	born
corn	girl
elm	girls
farm	learn
film	learned
girl	storm
pearl	turn
	weren't

TABLE 2

Distribution of liquid+sonorant clusters across bilingual and monolingual speaker groups

	lm	rl	rm	rn	total
Bilingual	41	38	37	48	164
Monolingual	37	39	36	38	150

2.2.3 Linguistic Profile Score and Local Attachment Score

The binary distinction of 'bilingual' vs. 'monolingual' oversimplifies reality. Bilinguals differ in proficiency, dominance, and language use, which can influence cross-linguistic transfer (Flege et al., 2003; Tsui et al., 2019). Many self-identified monolinguals also have some Irish proficiency, with 1.9 million reported speakers in the latest Census (CSO, 2022). To capture these nuances, we devised a continuous Linguistic Profile Score (LPS), adapted from the Bilingual Language Profile (Gertken et al., 2014) suitable for both bilinguals and monolinguals with varying Irish proficiency. The questionnaire used to calculate LPS is provided in Appendix A.

Past research shows that social networks, community attachment and social mobility can also shape phonetic variation (Milroy & Milroy, 1985; Jeszenszky et al., 2024). For Galway English specifically, Collins (1997) and Peters (2016) have explored speakers' social networks in relation to their segmental variation. Building on this, a Local Attachment Score (LAS) was also devised for this study, adapted from Milroy & Margrain's (1980) Network Strength Scale. The LAS is a 0–9 scale based on questionnaire responses (see Appendix B). Table 3 provides a summary of each participant's linguistic background, age, gender, Linguistic Profile Score and Local Attachment Score.

TABLE 3

Participant demographic information

Speaker ID	Ling. background	Gender	Age	LPS	LAS
P15	Bilingual	F	20	29	7
P7	Bilingual	F	25	22	7
P13	Bilingual	F	26	32	9
P12	Bilingual	F	27	28	9
P8	Bilingual	F	39	25	5
P11	Bilingual	F	60	30	9
P5	Bilingual	F	79	30	9
P2	Bilingual	M	29	26	9
P4	Bilingual	M	32	28	7
P9	Bilingual	M	38	29	9
P6	Bilingual	M	67	34	9
P3	Bilingual	M	68	34	9
P24	Monolingual	F	29	10	5
P23	Monolingual	F	30	3	4
P25	Monolingual	F	30	12	3
P10	Monolingual	F	55	6.5	5
P1	Monolingual	F	57	5.5	4

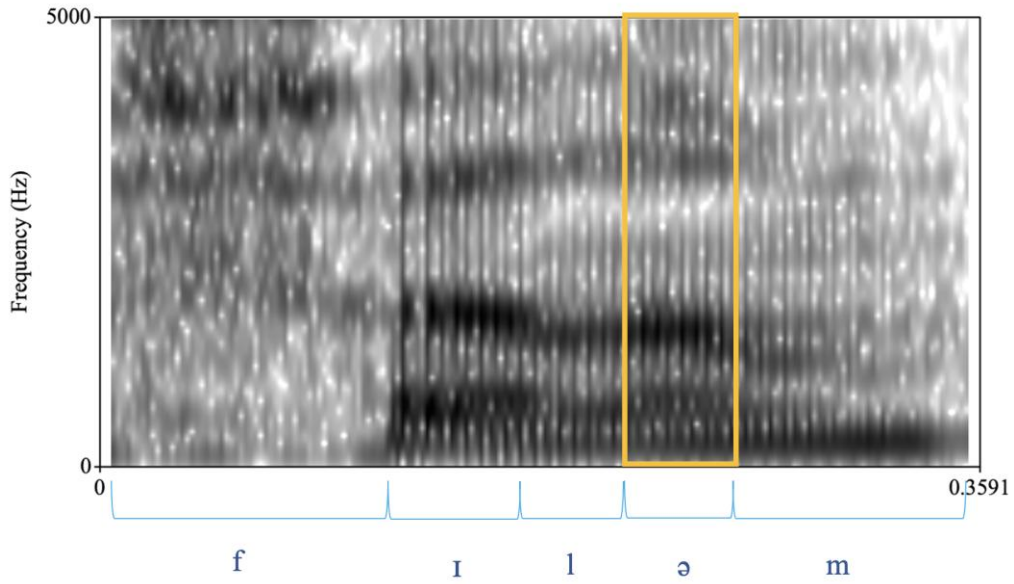
P20	Monolingual	F	63	5	3
P22	Monolingual	M	27	8	2
P16	Monolingual	M	30	6.5	4
P17	Monolingual	M	30	7	4
P14	Monolingual	M	60	7	2
P21	Monolingual	M	64	7.5	5
P18	Monolingual	M	66	7.5	3

2.3 Data analysis

Acoustic analyses of 314 tokens of LSCC clusters in read and spontaneous speech were carried out using Praat (Boersma & Weenick, 2021). Evidence of epenthesis was identified through visual cues, such as the presence of vowel formants (visible as darker bands) in spectrograms and increased amplitude in the waveform. Epenthesis was coded as a binary variable (present or absent). Additionally, in some instances, the final segment of the cluster was syllabic, i.e. [n̩] or [l̩]. In this study, these tokens were not counted as epenthetic. Figure 1 shows an example of schwa epenthesis (highlighted in yellow) in the word *film*, produced by a young female bilingual speaker.

FIGURE 1

Spectrogram of the word 'film' produced with schwa epenthesis by a bilingual speaker (F, 20).



Only 20 (of 314) tokens were drawn from spontaneous speech and their distribution varied considerably across speakers. Due to this limitation, the statistical comparison of speaking styles was not conducted. To assess effects of the other sociolinguistic variables (e.g. age, gender, linguistic background) on LSCC epenthesis, three generalised linear mixed-effects models (GLMMs) were fitted in R (R Core Team, 2023) using lme4 (Bates et al., 2015). The first model investigated the relationship between linguistic background (monolingual vs bilingual), examining the extent to which rates of epenthesis differ between monolinguals and bilinguals. In this model epenthesis was binarily coded as present or absent, with syllabic cases excluded. Speaker and word were included as random intercepts to account for dependencies in the data. A further two models examined epenthesis rates for bilinguals and monolinguals separately, investigating effects of age, gender, Linguistic Profile Score (LPS), and Local Attachment Score (LAS). The results of these GLMMs are presented in Section 3.1.

For the suprasegmental analysis, the second author was kept blind to each speaker's sociolinguistic profile to avoid bias, for instance, a risk of over-identifying patterns in

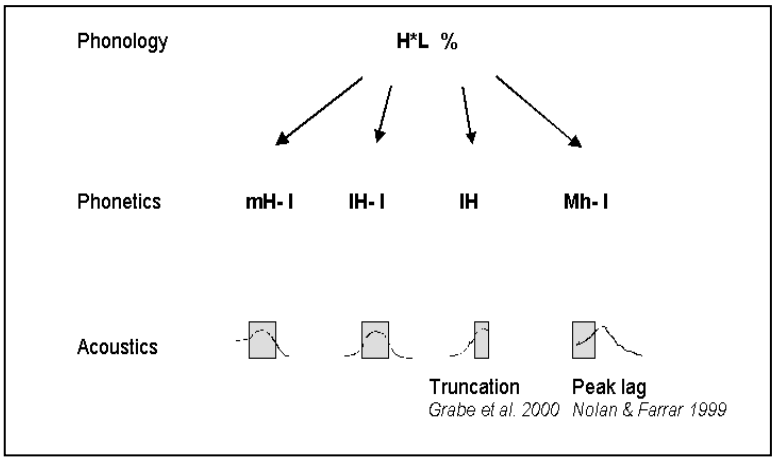
bilinguals based on previous research. The corpus was annotated in Praat using the IViE system (Grabe et al., 1998), adapted from ToBI (Silverman et al., 1992) and based on the autosegmental-metrical (AM) framework (Pierrehumbert, 1980) and the works of Gussenhoven (1984) and Grabe (1998). IViE has been used to document non-standard varieties of English (Nolan & Grabe, 1997) — including varieties of IrE — and Irish (e.g. Bongiorno, 2021; Dalton, 2008; Kalaldeh, 2011; Théveniaut, 2023). It uses four annotation tiers: orthographic, prominence (indicating one stressed syllable per intonational domain), phonetic, and phonological for prosodic annotations.

The phonetic annotation tier provides a detailed indication of the phonetic contour for each intonational domain; each accented syllable is annotated with a capital letter (H, L), distinct from neighbouring unaccented syllables, annotated (h, l). Therefore, an annotation of "H-l" describes the accented syllable produced with a high target, and followed by unaccented syllable(s) produced at a lower level down to the end of the intonational domain. In IViE, a middle tone M can stand as a new landmark within the speaker's pitch range, in-between the tonal targets H and L. For instance, "mH-l" indicates that the start of the fall on the accented syllable is higher than the preceding unaccented ones.

The phonological annotation uses an inventory of contours corresponding to various phonetic annotations. Figure 2 shows possible phonetics-phonology mappings for a falling contour H*L%, with several phonetic contours corresponding to this phonological fall. Here, diacritics "*" and "%" respectively indicate the location of the accented syllable and the boundary tone (e.g. the end of an intonational phrase).

FIGURE 2

Phonetics–phonology mappings for a falling contour in IViE (Grabe, 2001).



Based on several studies of non-standard English varieties, nine phonological contours were originally established in IViE. We add a tenth one, H* L%, observed in previous studies (Bongiorno, 2021; Hayes & Lahiri, 1991; Kalaldeh, 2011; Théveniaut 2023). We also use the diacritic "_" introduced by Théveniaut (2023) to distinguish between two similar contours, e.g. simple fall (H*L_%) and late fall (H*_L%). Table 4 lists the phonological nuclear contours used in this study.

TABLE 4

IViE contours used in this study (adapted from Grabe et al., 1998)

	H*L_%	Simple Fall (Fall on the accented syllable)
	H*_L%	Late Fall (High target followed by a fall)
	L*_%	Low target (low tail if any)
	L*_H%	Late rise (low nucleus + rising tail or high tone)
	H*_%	High target (high tail if any)
	H*L_H%	Fall-rise

3. Results

3.1. Segmental Results for LSCC Epenthesis

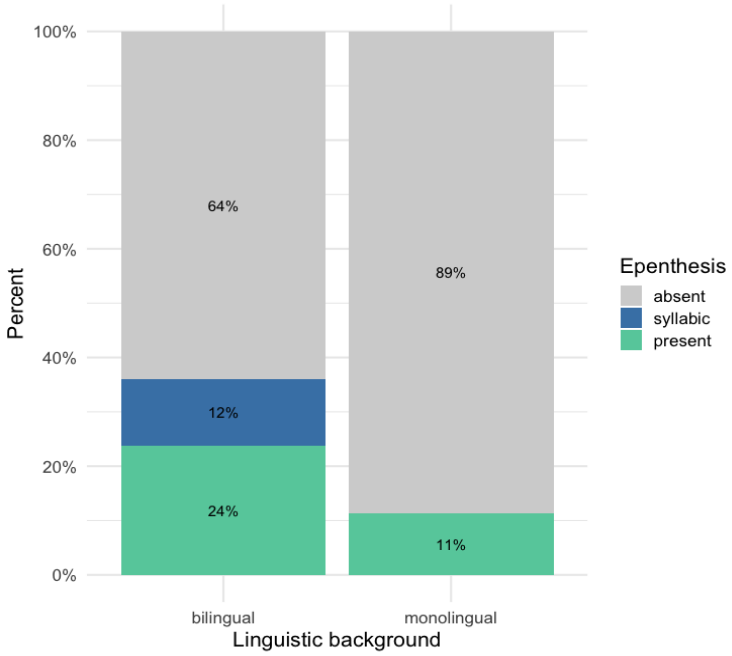
This section reports descriptive and statistical results regarding the realisation of LSCCs by linguistic background (monolingual vs. bilingual groups), followed by separate analyses for each group.

3.1.1. Linguistic Background

Figure 3 displays the epenthesis rates, as percentages, for bilingual and monolingual speakers. It accounts for cases in which a final /l/ or /n/ was produced as syllabic. The results show that bilingual participants displayed a considerably higher frequency of epenthesis (24%), than that observed for monolinguals (11%). Syllabic realisations of final /l/ or /n/ occurred in 12% of bilinguals' words.

FIGURE 3

Rates of LSCC Epenthesis according to Linguistic Background.



The effect of linguistic background on epenthesis was statistically investigated using a generalised linear mixed model (GLMM), described in §2. Table 5 details the model results, which reveals linguistic background as a significant predictor of epenthesis (p = 0.013).

TABLE 5

GLMM Results: Effect of Linguistic Background on Epenthesis Production

Model formula: epenthesis ~ linguistic background + (1 | word) + (1 | speaker)

Notes: *N* = 314 observations. Random intercept: word (SD = 2.34), speaker (SD = 2.64). Model: binomial (logit). Marginal R^2= 0.14; Conditional R^2= 0.82

Predictor	Estimate (β)	SE	z	Pr(>|z|)
(Intercept)	-1.82	1.11	-1.64	0.101
lingMonolingual	-3.19	1.29	-2.48	**0.013**

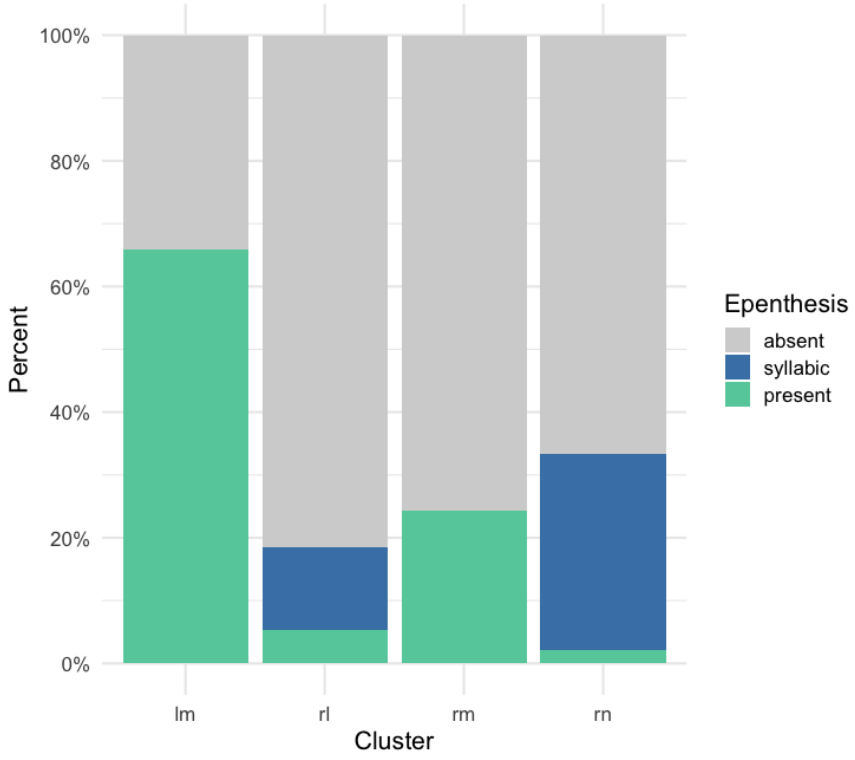
The subsequent sections present descriptive and inferential statistical results for bilinguals and monolinguals in turn, exploring the various sociolinguistic factors.

3.1.2. Bilingual speakers

Cluster type. Figure 4 illustrates the rates of epenthesis by cluster for bilingual speakers. /lm/ shows the highest epenthesis rate (65%), followed by /rm/ (22%). /rl/ and /rn/ epenthesis each occurs at <10% and these are the only clusters that show a final syllabic segment.

FIGURE 4

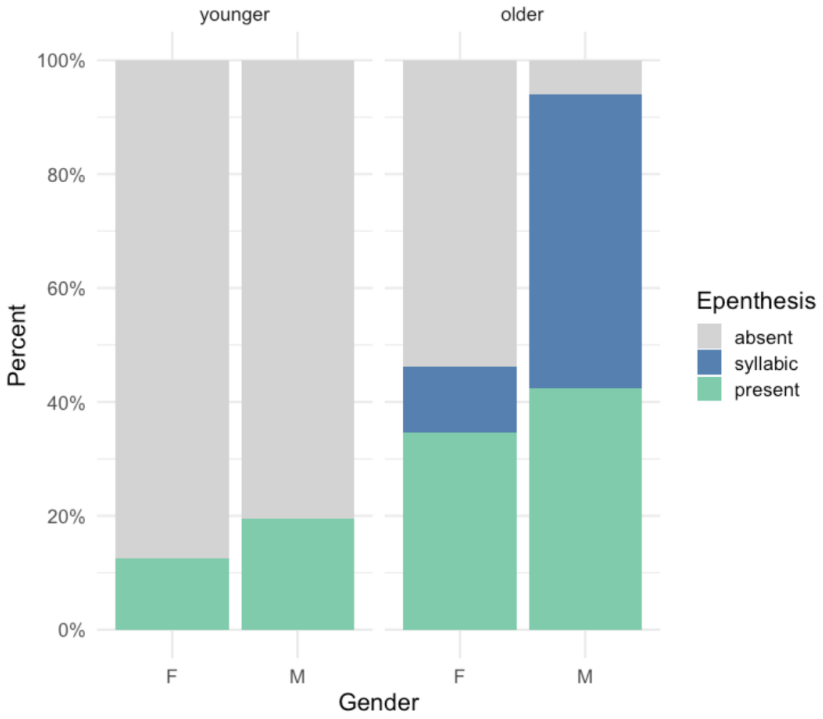
Rates of epenthesis for bilinguals according to cluster type.



Age and gender. Figure 5 displays the distribution of epenthesis among bilingual speakers across age groups and genders. Older bilinguals (38-79 y/o, mean: 58, SD: 16.6) exhibit higher rates than their younger counterparts (20-32 y/o, mean: 26, SD: 4), and men show slightly higher epenthesis rates than women. The older bilinguals notably show a relatively high rate of both schwa epenthesis and syllabic /l/ or /n/. Notably, more than a quarter of older speakers' words involved a syllabic /l/ or /n/, which was absent from the younger group's data. Younger bilingual women have the lowest epenthesis rate of 12% (of all eligible words). In younger bilinguals (F and M) the occurrence of epenthesis is largely accounted for by /lm/ clusters.

FIGURE 5

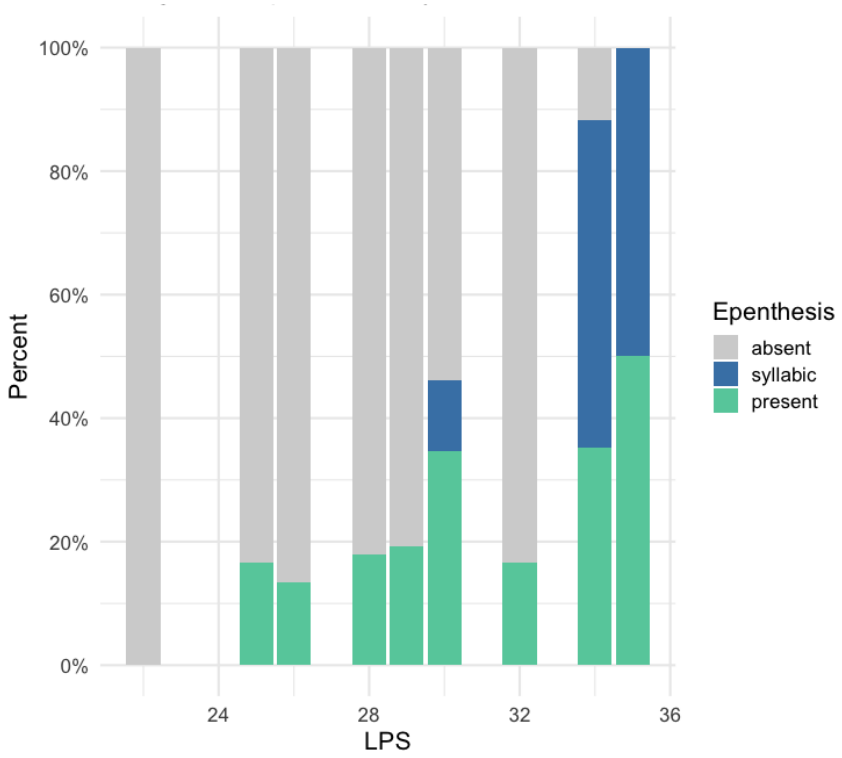
Rates of epenthesis in bilinguals, according to age group and gender.



Linguistic Profile Score. Considering the possible role of Irish in IrE epenthesis among bilinguals, an important question is whether epenthesis rates vary according to speakers' degree of Irish language dominance and usage. If Irish exerts a reinforcing effect (due to epenthesis in Irish consonant clusters), then greater proficiency or dominance might be expected to correlate with greater rates of epenthesis. Figure 6 presents epenthesis rates by Linguistic Profile Score, (see §2 for explanation). Overall, higher LPS values are associated with increased epenthesis rates.

FIGURE 6

Bilinguals: Epenthesis rates by Linguistic Profile Score



GLMM: Bilinguals. The second GLMM investigated the effects of various sociolinguistic factors (LPS, LAS (Local Attachment Score), cluster type, age, gender) on epenthesis rates in bilinguals. Word was specified as a random intercept, while speaker was excluded due to singular fit issues. The model revealed substantial lexical variability in epenthesis rates. Age was a strong positive predictor, with epenthesis becoming significantly more likely among older speakers ($\beta = 2.27$, $z = 3.31$, $p < .001$). Gender also showed a significant effect, with male speakers exhibiting higher rates of epenthesis than female speakers ($\beta = 2.96$, $z = 2.14$, $p = .032$). Cluster type strongly constrained epenthesis: relative to the /lm/ cluster, epenthesis was significantly less likely in /rn/ clusters ($\beta = -7.50$, $z = -1.98$, $p = .048$). In addition, higher LPS values were associated with an increased likelihood of epenthesis ($\beta = 3.75$, $z = 2.43$, $p = .015$), while LAS did not show a reliable effect. The outcomes of the model are reported in Table 6.

TABLE 6

GLMM Results: Sociolinguistic Effects on Epenthesis in Bilingual Speakers

Model formula: epenthesis ~ age + gender + cluster + LPS + LAS + (1 | word)

Notes: Age, LPS, and LAS were z-standardised. Cluster effects are relative to /lm/ clusters; gender is relative to female. Random intercept: word (SD = 3.04). N = 164 observations (16 word types). Model: binomial (logit). AIC = 84.2. Marginal R^2= 0.759; Conditional R^2= 0.937.

Predictor	Estimate (β)	SE	z	p
(Intercept)	1.40	2.40	0.58	.561
Age (z)	2.27	0.69	3.31	< .001
Gender (M)	2.96	1.38	2.14	.032
Cluster: rl	−6.76	3.61	−1.87	.061
Cluster: rm	−5.49	3.47	−1.58	.114
Cluster: rn	−7.50	3.79	−1.98	.048
LPS (z)	3.75	1.54	2.43	.015
LAS (z)	−0.92	0.78	−1.17	.241

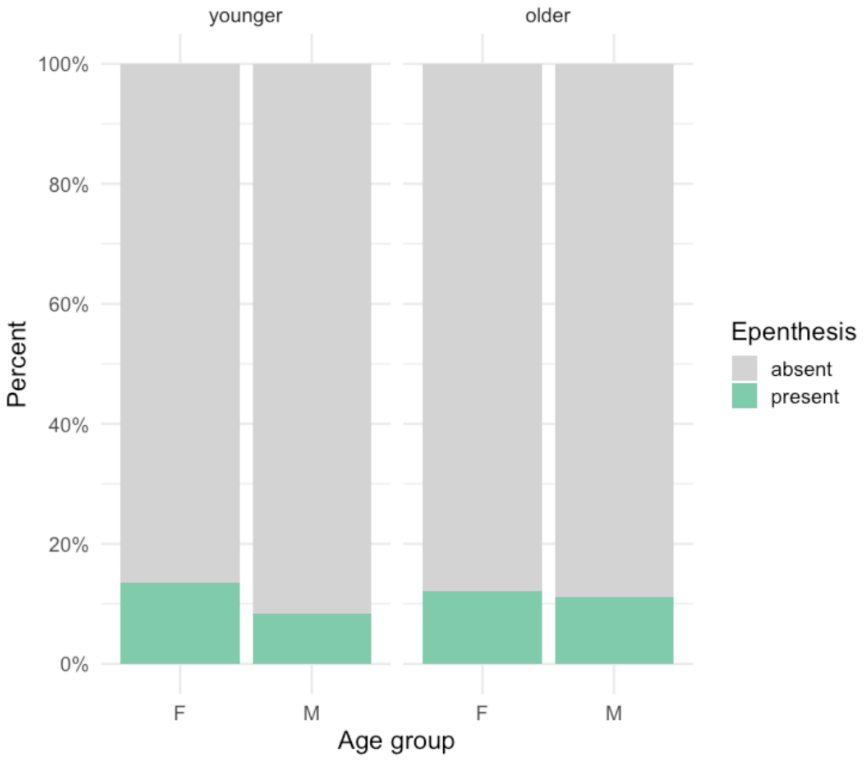
3.1.3. Monolingual speakers

Cluster type. Whereas bilinguals showed epenthesis and/or final syllabic segments for all cluster types, monolinguals had epenthesis only in /lm/ clusters (*film* and *elm*), with 22 of 47 (46%) such clusters showing schwa epenthesis.

Age and Gender. Figure 7 shows /lm/ epenthesis rates in monolinguals by age and gender. Rates are similar across groups (8-15%), contrasting with the bilinguals, who exhibited clear age-based variation.

FIGURE 7

Rates of epenthesis for monolinguals categorised by age and gender.



GLMM: Monolinguals. The GLMM for monolinguals was fitted to predict the presence of epenthesis, with age, gender, LPS, and LAS as fixed effects and random intercepts for speaker and word. Cluster type was excluded, as monolingual participants only produced epenthesis in /lm/ clusters. Epenthesis was extremely rare overall, as reflected in a strongly negative intercept. None of the fixed effects reached significance, indicating that epenthesis in the monolingual data does not systematically vary with age, gender, or the linguistic predictors considered. Substantial variability was observed across words, with additional but smaller variability across speakers, suggesting that epenthesis in this dataset is primarily lexically conditioned rather than socially or linguistically patterned. The output for the monolingual GLMM is summarised in Table 7.

TABLE 7

GLMM Results: Sociolinguistic Effects on Epenthesis in Monolingual Speakers

Model formula: epenthesis ~ age + gender + LPS + LAS + (1 | speaker) + (1 | word)

Notes: Age, LPS, and LAS were z-standardised. Gender effects are reported relative to female speakers. Random intercepts were included for speaker (SD = 0.69) and word (SD = 7.96). $N = 150$ observations (12 speakers, 10 word types). Model: binomial (logit). AIC = 75.1. Marginal $R^2 = 0.004$; Conditional $R^2 = 0.951$.

Predictor	Estimate (β)	SE	z	p
(Intercept)	**−8.96**	3.53	−2.54	**.011**
Age (z)	0.20	0.44	0.46	.644
Gender (Male)	−0.85	0.92	−0.93	.355
LPS (z)	−0.24	0.44	−0.55	.585
LAS (z)	−0.22	0.46	−0.47	.636

3.2. Suprasegmental Results for LSCC Epenthesis

Prosodic analyses were run on a subset of 59 tokens (listed in Table 8) for which we found LSCC epenthesis.

TABLE 8

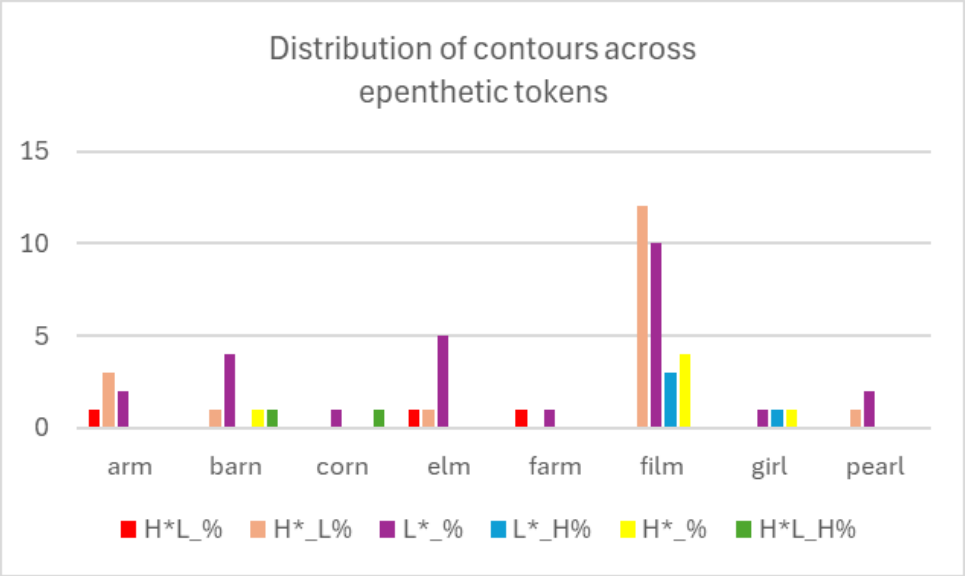
Distribution of 59 epenthetic tokens across 8 words.

Film	Barn	Elm	Arm	Girl	Pearl	Corn	Farm
29	7	7	6	3	3	2	2

Figure 8 (below) shows distribution results for all tokens across six prosodic contours.

FIGURE 8

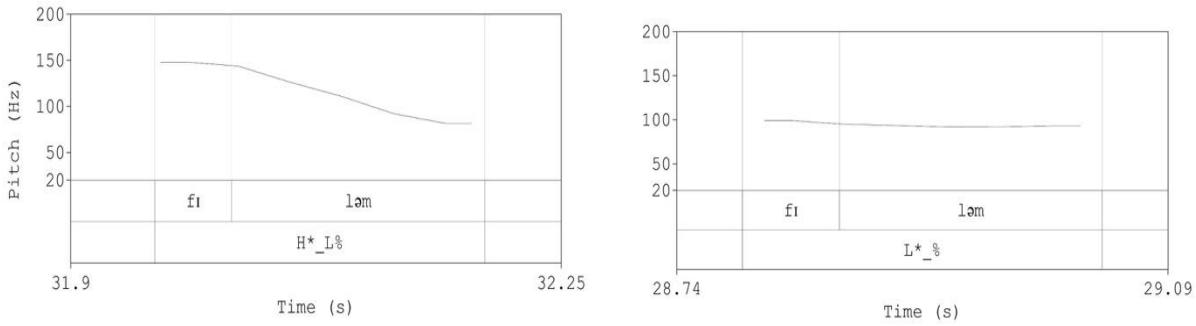
Distribution of contours across 59 epenthetic tokens



The low target tone L*_% is the most frequent contour (26 occurrences, 44%), followed by the Late Fall H*_L% (18 occurrences, 31%). L*_% mainly occurs in *barn*, *elm* and *pearl*, while H*_L% is more common in *arm* and *film*. For *film*, the most frequently epenthesized word, H*_L% appeared in 12 of 29 occurrences, followed by L*_%. Figure 9 displays the two main contours for *film* produced by Participant 6 (M, 67) and Participant 3 (M, 68) respectively. This finding is noteworthy because L*_% and H*_L% contours are observed in a remote Gaeltacht area, contrasting with previous findings that these patterns are mainly encountered in urban centres like Dublin and Galway cities (Bongiorno, 2021; Théveniaut, 2023).

FIGURE 9

Two main contours (Late Fall (left) and Low Target Tone (right)) for* 'film' *(P6 and P3, respectively)

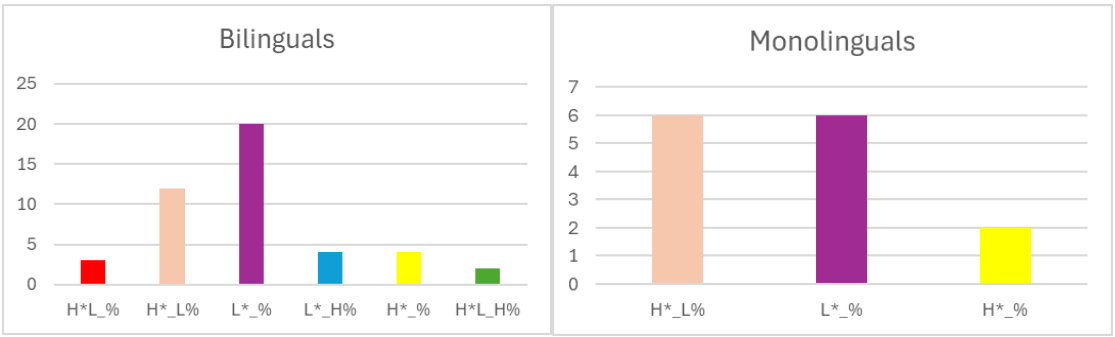


These results do not fully support the hypothesis that these epenthetic words are produced with the same prosodic structure (H*_L%) as other disyllabic words in Connemara English (Théveniaut & Herment, 2024).

Linguistic background. Figure 10 shows the distribution of contours across linguistic background. As mentioned, bilinguals displayed more occurrences of epenthesis (45 tokens) than monolinguals (14).

FIGURE 10

Distribution of contours across linguistic background



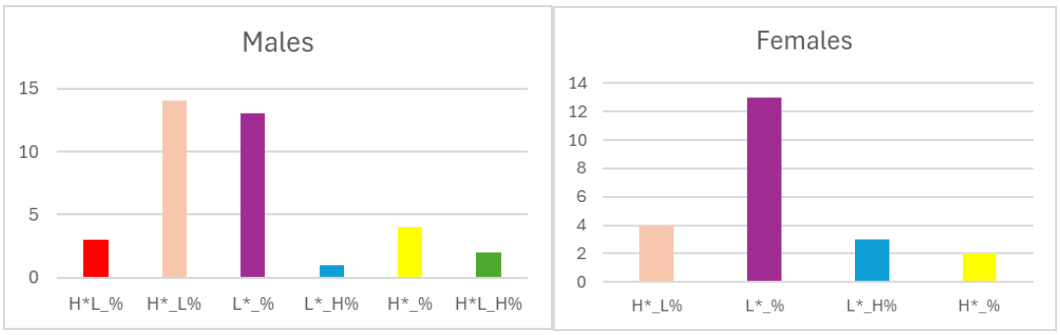
The main contours found for both monolinguals and bilinguals across epenthesis tokens were the late fall H*_L% and the low target tone L*_%. For bilinguals, these accounted for 27% (12) and 44% (20) of all cluster types, while monolinguals showed an even split across the /lm/ cluster only.

Aside from two cases of H*_%, monolinguals produced only the two main contours, mostly on *film*. The other contours of L*_H% (Late Rise), H*L_H% (Fall-Rise) and H*L_% (Simple Fall) are only produced by bilinguals, across all word items. The simple fall H*L_% was only produced by a single bilingual speaker (P6), which contrasts with Théveniaut (2023) who found that Gaeltacht English speakers produced more H*L_% than Galway City monolinguals, and with Dalton (2008), who found it prevalent in South Connemara Irish. Although scarcely present here, this simple fall could be the remnant of a feature specific to Irish speakers, as P6 is one of the oldest bilingual speakers in this study.

Gender. Results by gender reveal a differing trend between males and females (Figure 11). We observed 37 instances of epenthesis among males and 22 among females.

FIGURE 11

Distribution of contours across gender

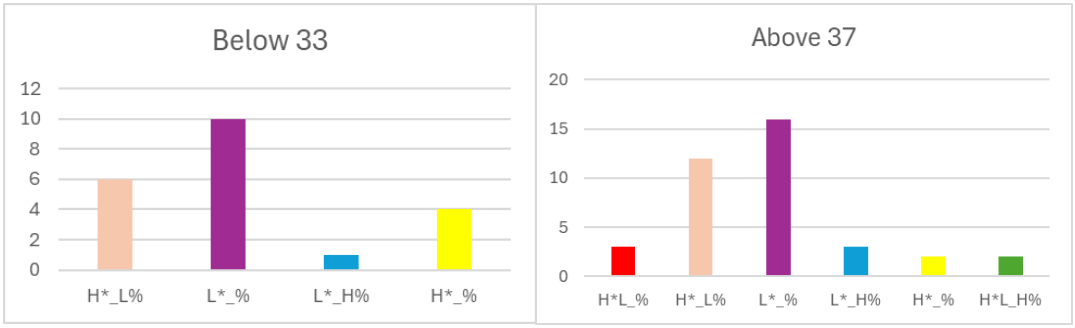


The most frequent contour among females is the low target tone L*_% (59%, 13 occurrences). This result contrasts findings for Galway Gaeltacht English (Théveniaut, 2023) and South Connemara Irish (Dalton, 2008). Apart from this L*_% dominance, females also produce some occurrences of H*_L%, L*_H% and H*_%. Results for males are less clear-cut and display larger variability. The group frequently produce both late falls H*_L% (38%, 14 occurrences) and L*_% (35%, 13 occurrences), which do not match results found among the males recorded in the Galway Gaeltacht (Théveniaut, 2023).

Age. Figure 12 displays the distribution of contours across age groups. We analysed 21 occurrences of epenthesis for younger speakers (below 33 years old) and 38 for older speakers (above 37).

FIGURE 12

Distribution of contours across age



Both age groups have the same distribution of prevailing contours (L*_% followed by H*_L%). Older speakers use L*_% in 42% (16) of the occurrences while younger speakers use it in 48% (10) of their occurrences. The older speakers also display larger variability across contours than the younger do. This contrasts with previous findings for Galway English, where

younger speakers mainly produced L*_% contours and older speakers H*L_% or H*_L% (Théveniaut, 2023).

Summary of suprasegmental results.

Prosodic contours observed on epenthetic words did not consistently compare with/match with the prosodic contours of left-stressed disyllabic words observed in Connemara English. Interestingly, the expected H*_L% prosodic contour was mainly observed on *film*, the most frequently epenthesized word. Results across sociolinguistic profiles indicated greater variability of contours across older bilingual males. While no clear age-group trends emerged, women and bilinguals generally used more L*_% than men and monolinguals. H*L_% contours were rare, appearing mostly in one older bilingual speaker, suggesting that this Irish-like prosodic feature is receding.

4. Discussion

This study investigated segmental and prosodic patterns of LSCC epenthesis in Contact Irish English, addressing the following questions:

> RQ 1: (a) To what extent do bilingual Irish-English speakers produce LSCC epenthesis in their English speech? (b) Do the sociolinguistic factors of age, gender, language dominance and usage and local attachment affect the occurrence of LSCC epenthesis?
>
> RQ 2: (a) Are these epenthetic structures produced with a similar contour to that of other disyllabic words in Connemara English? (b) Do the aforementioned sociolinguistic factors condition prosodic contours across groups?

To address RQ 1(a), LSCC epenthesis rates in bilingual Irish-English speakers were compared to local monolinguals to assess whether patterns reflect wider regional trends or may

indicate L1 Irish influence. Linguistic background significantly affected LSCC epenthesis, with bilinguals showing higher rates than monolinguals. While bilinguals had epenthesis across all clusters, monolinguals had epenthesis in /lm/ clusters only. As multiple accounts report that LSCC epenthesis stems from an Irish source (e.g. Barry, 1982; Hickey, 1986; Ó hÚrdail, 1997; Ó Baoill,1997), the higher epenthesis rates for bilinguals might be expected; CIE is thought to be particularly heavily influenced by Irish. It may be that synchronic transfer effects from Irish explain relatively higher epenthesis rates for bilinguals in the non-/lm/ clusters. In considering the genesis of epenthesis in IrE, however, we must keep in mind Maguire's (2018) point that similar LSCC epenthesis can also be found in various locations in Britain. The higher epenthesis rates for bilinguals may not be due to synchronic transfer but rather they may reflect a conservative variety of IrE – since lost in more urban areas – in which epenthesis may well have originated from sources outside of Irish.

For RQ 1(b) age, Linguistic Profile Score (LPS), and /lm/ clusters emerged as statistically significant predictors of epenthesis for bilinguals. No factors reached significance for monolinguals, who only produced epenthesis on /lm/ clusters. The findings for cluster patterns align with previous research on Galway City English (Sell, 2012) which reported that the /lm/ cluster – the word *film* in particular – showed higher rates of epenthesis than other LSCCs. Hickey (2007) also noted that /lm/ epenthesis is "universal" in Irish English. This points toward possible lexicalisation of epenthesis for *film*, which was additionally the only word epenthesized for most monolingual speakers. Sell (2012) also found that likelihood for epenthetic schwa was significantly lower among younger speakers, indicating possible change in progress. This pattern is supported by our findings for bilingual speakers, for whom age was a significant predictor of epenthesis, with younger speakers epenthesizing less.

To address RQ 2, we prosodically analysed 59 words with LSCC epenthesis. For 2(a) we expected results similar to those previously found for disyllabic words in the Galway

Gaeltacht (Théveniaut & Herment, 2024), with a majority of H*_L% (Late Fall) contours. While some H*_L% contours occurred, L*_% (Low Target Tones) predominated, suggesting epenthetic words could display a distinct contour in most cases. Indeed, the main exception is *film*, for which we found slightly more H*_L% contours than L*_%. It therefore seems that *film* displays a specific prosodic structure, half-way between a disyllabic word (H*_L%) and an epenthetic one (L*%). These results align with the segmental findings that *film* differs from other words for all speakers.

For RQ 2(b) results across sociolinguistic factors showed a larger variability in the use of the 6 different contours among older bilingual men. Although no clear trends were found for age, women favoured L*_% tones, while men used H*_L% and L*_% in similar proportions. Bilinguals also preferred L% tones, whereas monolinguals used L*_% and H*_L% equally. These results showed no clear parallels with previous observations in Galway Gaeltacht English (Théveniaut, 2023). Considering linguistic background, the few H*L_% (Simple Fall) tokens were produced by one of the oldest bilingual speakers. This H*L_% contour, which had been observed for South Connemara Irish (Dalton, 2023), seems to be a remnant of a receding Irish feature, giving way to more urban-like H*_L% or L*_% contours (Bongiorno, 2021; Théveniaut, 2023).

5. Conclusions

This study has sought to advance our understanding of sociophonetic variation in Contact Irish English, documenting the phenomenon of epenthesis in liquid+sonorant clusters (LSCCs). Our results show that bilingual Irish-English speakers epenthesize to a significantly higher degree than local monolinguals English speakers. Those bilinguals who had higher dominance and usage of Irish were additionally shown to have a significantly higher likelihood of epenthesis. A straightforward attribution of these latter epenthesis patterns to a synchronic transfer effect from the bilingual speakers' Irish is difficult however, given that the origins of IrE epenthesis

remain debated (cf. Maguire, 2018). Regardless, it appears that, in the case of LSCC epenthesis, this variety of CIE is conservative toward older IrE forms, which have since faded from urban centres. Our findings also indicate that this kind of epenthesis is receding for bilingual speakers, aligning with previous descriptions of Galway English (Sell, 2012). Previous suggestions that epenthesis in *film* is lexicalised are supported here by the suprasegmental results, with *film* standing out with a regular H*_L% contour for most speakers. Examining LSCC epenthesis from both segmental and prosodic perspectives in Connemara contributes additional empirical data on sociophonetic variation in CIE and documents patterns of variation in a Gaeltacht context. The findings reported here provide a basis for further comparative and perceptual work on epenthesis in Irish English and for future research on contact-induced variation in minority language settings.

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References

Audacity Team. (2022). Audacity (R): Free Audio Editor and Recorder. In (Version 3.1.3) https://audacityteam.org

Bates, Douglas; Mächler, Martin; Bolker, Ben & Walker, Steve. (2015). Fitting Linear Mixed-Effects Models Using lme4. *Journal of Statistical Software*, *67*(1), 1 - 48. https://doi.org/10.18637/jss.v067.i01

Barry, Michael V. (1982). The English Language in Ireland. In Richard W. Bailey & Manfred Gorlach (Eds.), *English as a world language* (pp. 84-133). Michigan: University of Michigan Press.

Boersma, Paul & Weenink, David. (2021). Praat: doing phonetics by computer (Version 6.3.03) http://www.praat.org/

Bongiorno, Julia. (2021). *Étude du système intonatif de l'anglais parlé à Dublin : Focus sur les montées stylistiques* [Doctoral dissertation, Aix-Marseille Université]. https://www.theses.fr/2021AIXM0453

Bolinger, Dwight. (1978). Intonation across languages. In Joseph H. Greenberg (Ed.), *Universals of human language. Volume 2: Phonology* (pp. 471- 524). Stanford: Stanford University Press.

Central Statistics Office. (2022). 'The Irish Language and Education'. https://www.cso.ie/en/csolatestnews/pressreleases/2023pressreleases/pressstatementcensus2022resultsprofile8-theirishlanguageandeducation/

Corrigan, Karen. (2010). *Irish English, volume 1: Northern Ireland*. Edinburgh: Edinburgh University Press.

Dalton, Martha. (2008). *The phonetics and phonology of the intonation of Irish dialects* [Doctoral Dissertation, Trinity College (Dublin, Ireland). Centre for Language and Communication Studies]. http://www.tara.tcd.ie/handle/2262/77940

Filppula, Mark. (1995). The Story of Language Contact and Shift in Ireland: How Unique, How Universal? *TEANGA: The Irish Yearbook of Applied Linguistics*, *15*, 31-48.

Flege, James E.; Schirru, Carlo & MacKay, Ian R. (2003). Interaction between the native and second language phonetic subsystems. *Speech Communication, 40*(4), 467-491.

Gertken, Libby M.; Amengual, Mark & Birdsong, David. (2014). Assessing language dominance with the bilingual language profile. *Measuring L2 proficiency: Perspectives from SLA*, 208, 225.

Harris, John. (1984). Syntactic variation and dialect divergence. *Journal of Linguistics*, *20*(2), 303-327.

Hayes, Bruce & Lahiri, Aditi. (1991). Bengali intonational phonology. *Natural Language & Linguistic Theory*, *9*(1), 47‑96. https://doi.org/10.1007/BF00133326

Henry, Patrick L. (1957). *An Anglo-Irish Dialect of North Roscommon*.

Hickey, Raymond. (1984). Coronal segments in Irish English. *Journal of Linguistics*, *20*(2), 233-250.

Hickey, Raymond. (1986). Possible phonological parallels between Irish and Irish English. *English World-Wide*, *7*(1), 1-21.

Hickey, Raymond. (2007). *Irish English: History and present-day forms*. Cambridge: Cambridge University Press.

Hickey, Raymond. (2017). Britain and Ireland 1. In Raymond Hickey (Ed.), *The Cambridge Handbook of Areal Linguistics* (pp. 270–303). Cambridge: Cambridge University Press.

Kalaldeh, Raya. (2011). *Segmental and intonational analysis of Drogheda English* [Doctoral Dissertation, Trinity College (Dublin, Ireland). Centre for Language and Communication Studies]. http://www.tara.tcd.ie/handle/2262/79062

Lunny, Anthony. (1981). A linguistic interaction: English and Irish in Ballyvourney, West Cork. In Michael Barry (Ed.) *Aspects of English dialects in Ireland,* 118-141.

Maguire, Warren. (2018). The Origins of Epenthesis in Liquid+Sonorant Clusters in Mid-Ulster English. *Transactions of the Philological Society*, *116*(3), 484-508.

Maguire, Warren. (2020). *The Phonological Origins of Mid-Ulster English. Language and Dialect Contact in Ireland*. Edinburgh: Edinburgh University Press.

Ní Chasaide, Ailbhe. (1979). Laterals in Gaoth-Dobhair Irish and Hiberno-English. In Ó Baoill (ed.), *Papers in Celtic phonology. Proceedings of the Celtic Phonology Conference*, 54-78. Coleraine: University of Ulster.

Ní Ghallchóir, Catríona. (1981). Aspects of bilingualism in northwest Donegal. In Michael Barry (Ed.) *Aspects of English Dialects in Ireland*. Belfast: Institute of Irish Studies, Queens University Belfast, 142-170.

Ó Baoill, Donall. P. (1997). The Emerging Irish Phonological Substratum in Irish English. In Jeffrey L. Kallen (Ed.), *Focus on Ireland,* 73-87.

Ó hÚrdail, Roibeárd. (1997). Hiberno-English: Historical Background and Synchronic Features and Variation. In Hildegard Tristram (Ed.), *The Celtic Englishes,*180-199.

O'Cuinneagain, Leah. (2019). *To What Extent Do Irish Fluency and Gender Affect Prevalence of Irish-influenced Phonological Features in Irish English?* [Masters Thesis, University of York].

R Core Team. (2023). R: A Language and Environment for Statistical Computing. In R Foundation for Statistical Computing. https://www.R-project.org/

Sell, Katrin. (2012). Sociolinguistic findings on schwa epenthesis in Galway English. *New Perspectives on Irish English,* 44-47.

Silverman, Kim; Beckman, Mary; Pitrelli, John; Ostendorf, Mari; Wightman, Colin; Price, Patti; Pierrehumbert, Janet; Hirschberg, Julia (1992). ToBI: A standard for labeling English prosody. *Proceedings International Conference of Spoken Language Processing*, *2*: 867–870. https://doi.org/10.21437/ICSLP.1992-260

Tallon, Kate. (2025). *English in the Connemara Gaeltacht: A Sociophonetic Study of Bilingual and Monolingual Speakers* [Doctoral dissertation, Trinity College Dublin].

Theveniaut, Airelle. (2023). *L'intonation de l'anglais du comté de Galway: comparaison est-ouest d'une variété au contact de la langue irlandaise* [Doctoral dissertation, Aix-Marseille Université].

Théveniaut, Airelle & Herment, Sophie. (2024). Falling contours in Galway English. Anglophonia. *French Journal of English Linguistics 35/2023*, Toulouse: Presses Universitaires du Midi.

Tsui, Rachel K.Y., Tong, Xiuli, & Chan, Chuck Siu-ki. (2019). Impact of language dominance on phonetic transfer in Cantonese–English bilingual language switching. *Applied Psycholinguistics*, *40*(1), 29-58.

Wells, John C. (1982). *Accents of English: Volume 2*. Cambridge University Press, Cambridge.

Appendix A. Questions used to calculate Linguistic Profile Score

Linguistic Profile Score			
ASPECT	**QUESTION**	**ANSWER**	**WEIGHTING**
	LINGUISTIC HISTORY		
Childhood home language	What language did you speak growing up at home?	Irish	2
		Mix	1
		English	0
Language of education	Were you educated through Irish?	No	0
		Primary	1
		Secondary	1
		University	1
Acquisition of English	What language did you learn first?	Irish	2
		English	0
		Both (simultaneously)	1
	CURRENT USAGE (DOMINANCE)		
Frequency	How often do you speak Irish?	Daily	3
		Weekly	2
		Monthly	1
		Less often	0
	How often do you speak English?	Daily	0
		Weekly	1
		Less often	2
Use cases	Which language(s) do you use **most** in the following situations?		
	At work	Irish	2
		English	0
		Even mix	1
	With family	Irish	2
		English	0

		Even mix	1
	With friends/ socialising	Irish	2
		English	0
		Even mix	1
	Talking to yourself	Irish	2
		English	0
		Even mix	1
	PROFICIENCY		
Speaking	How well can you speak Irish?	Fluent	4
		Advanced	3
		Conversational	2
		A few phrases	1
	LINGUISTIC ATTITUDE		
Comfort	I feel like myself when I speak Irish	**Scale 1-5**	
		0	0
		1	1
		2	2
		3	3
		4	4
		5	5
	I feel like myself when I speak English		
		Scale 1-5	
		0	5
		1	4
		2	3
		3	2
		4	1
		5	0
			Max = 34

Appendix B. Questions used to calculate Local Attachment Score.

Question	Response	Weighting
How long have you lived in Ceantar na nOileán / Furbo? (Open ended)	<40% of life	0
	40-69% of life	1
	> 70% of life	2
Do you work locally?	No	0
	Yes	1
Do you have other family members in the local area?	No	0
	Yes	1
Do you mainly socialize in the local area?	No	0
	Yes	1
How attached do you feel to your local community?	Not at all	0
	A little	1
	Quite	2
	Very	3
	Extremely	4
		Max = 9