論　文

A Functional Assessment of the Irish English Vowel System

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要　旨

本論文は，アイルランド英語の母音体系を機能的負荷の点から分析し，その結果を考察する。機能的負荷（FL）の枠組みを用いて，コーパスにおける生起頻度の点から言語的特徴を量的に明らかにすることができる。つまり FL により，言語の構造面の記述に対して，言語の運用面に関する記述を加えることができる。本論文で示す結果により，アイルランド英語の話しことばについて，International Corpus of English (ICE)-Ireland (Kallen & Kirk, 2008) から得た生起頻度に基づき，母音の相対的な関与を量的に示すことができる。FL に基づく格付けにより，母音間で創り出される対照的な存在あるいは語彙ビルディング・ブロックとして生じる体系的関係を明らかにできる。本分析により，FL に基づく格付けに依拠した調音的ジェスチャーと母音目録と拡散理論における特徴を包括的に記述できる。

キーワード：functional load / 機能的負荷，vowel systems / 母音体系，global Englishes / グローバル英語，vowel dispersion theory / 母音目録と拡散理論

1　Introduction

This paper presents a description of the Irish English (IE) vowel system from a usage-based perspective by means of functional load (FL) analysis. The English language has been present in Ireland for over 800 years. Currently, English and Irish are both official languages. English is the primary language of society and government. The Irish language is spoken by about 40% of the population. Other languages used by a significant number of the residents are French, German, Polish, Romanian, and Lithuanian (Government of Ireland, 2017).

The historical trajectory of Irish English and current status have been well documented (Cambria, 2014; Hickey, 2007; Hickey & Ronan, 2016; Kirk, 2011). Cambria (2014, p. 20) observes that IE is generally not included among post-colonial frameworks and proposes that the reason for this is because Ireland is often regarded as a place from which people left on their way to colonize other parts of the world rather than a place that was "subjected to colonialism and its practices colonizers arrived to for that specific purpose". The case is made that IE "embodies the prolonged contact between colonizer and colonized" (Cambria, 2014, p. 31) and that the emergence of the variety followed similar processes related to identity formation as those proposed by Schneider's (2007) Dynamic Model (DM). The DM provides a framework with which to discuss identity formation in language contact situations resulting in the emergence of language varieties. Within the Dynamic Model, identity construction is viewed as a process that changes over time along with the functions and attitudes associated with the language(s) of the local population and the language brought by settlers. IE is classified as a fully differentiated variety. This is the final phase attained when ties and influence of external forces are no longer at play and the nation begins a process of internal demarcation based on regional, economic, and social parameters.

Scholars agree that a language shift from Irish to English, took place between the early 17th century and the late 19th century (Hickey, 2004). The complex sociopolitical factors involved have been widely discussed in the literature and are beyond the scope of this paper. What should be kept in mind is that the nature of IE is attributed to the fact that it was learned from colingual speakers in a transitory period of bilingualism (Kirk, 2011). IE was born out of contact over hundreds of years between the Irish language and several contact varieties of English spoken by people who lived in Ireland.

IE is a well-documented English variety. Volumes have been written about how the variety has evolved, about different periods of its development, about its grammatical organization, about its phonological system, and about its dialect differentiation. The *Ireland* section in reference guide on varieties of English compiled by Hickey (2013), for example, lists more than fifty titles that deal with the historical development and linguistic features of IE and its dialects.

Usage-based literature is nascent and evolving. This is not to say that remarkable work has not been carried out already. For example, Kirk and colleagues have undertaken a series of analyses of ICE-Ireland in order to characterize lexico-grammatical features and pragmatic negotiation strategies of Standard Irish English (Kirk, 2011, p. 33). These researchers have observed both exo- and endo-normative forces combine to create this variety. The "Irishness" of the variety has been attributed to some transfer from dialect features of England and Scotland, code-switching between English and Irish as well as lexical choices reflecting local concerns.

FL analyses of the vowel system of IE are currently unavailable in the literature despite the fact that FL has long been considered an integral part of the description of any phonological system along with the inventory of phonemes, phonemic variants, distinctive features, and phoneme combinations (King, 1967). To date, empirically-based FL analyses have been carried out on only two English varieties, British RP (Oh, Coupé, Marsico, & Pellegrino, 2015) and General American (Gilner & Morales, 2010). The present investigation uses corpus data from ICE-Ireland to compute FL measures and provide a usage-driven characterization of the IE vowel system.

The paper proceeds by first describing the phonological model used for these analyses, then the data set and methodology before presenting the results of analyses.

2 Categorical phonological description of the supraregional variety of Irish English

Hickey (2018) describes the sociophonetic landscape of English in present-day Ireland in terms of five main varieties: Rural Northern, Popular Dublin, Fashionable Dublin, Rural South-West/West, and Supraregional Southern. A model of the supraregional variety was used for the present investigation. It is the least regionally bound and most widely intelligible (Hickey, 2003). This variety is tacitly acknowledged as the national standard and speakers add indexical information such as stylistic choices and local identifiers by modifying the features of a "default speech style" which reflects non-regional sound patterns and phraseology (Hickey, 2003, p. 353).

Hickey (2004) describes the supraregional variety as composed of fifteen monophthongs and five closing phonemes. Figure 1 reflects the distribution in the vowel space.

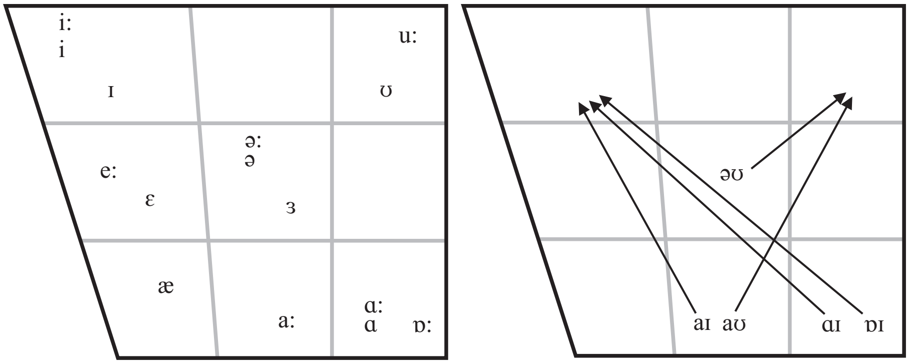

Figure 1. Irish English vowel charts

In light of this categorical description, the system appears to favor articulations made with the tongue in the lower region of the vowel space. Five monophthongs and four diphthongs are produced with articulations in this area. The system is also populated by several phonemes which are articulated in the anterior region of the mouth. Six monophthongs and the closing position of three complex phonemes make use of this area of the vowel space. A middle, centralized tongue position is used to articulate three monophthongs and the initial segment of one diphthong.

These gestural configurations can be further characterized in terms of the following distribution of features. The monophthongs show a distributed stratification in terms of tongue height. The features [high], [mid], and [low] are each associated with several simple phonemes. The feature [high] is also associated with all diphthongs. The five diphthongs in this system involve an upward movement of the tongue and close with an articulation in the upper region of the oral cavity. The feature [mid] is associated with six phonemes, five simple and one complex. The feature [low] characterizes nine phonemes. Five of these are monophthongs and three of them are diphthongs. One of the diphthongs is also associated with the feature [round]. The feature [front] is associated with nine phonemes. The six monophthongs associated with this feature are distributed vertically in the mouth, making use of the full range of the oral cavity. In the case of the diphthongs, this feature tends to be associated with closing segments. The feature [central] characterizes seven phonemes, four monophthongs and three diphthongs. The feature [back] is associated with seven phonemes in this system, five simple and two complex. Among the monophthongs, there is a concentration in the lower region of the oral cavity. Two of the diphthongs close with the tongue retracted toward the posterior region of the mouth. Five phonemes in this system are characterized as [tense]. The feature [long] is associated with seven monophthongal phonemes.

The vowel dispersion framework provides further parameters with which to consider this categorical perspective of the IE vowel inventory. Global occupational tendencies can be described as densely populating the periphery of the vowel space. Most quadrants have multiple co-occupants. The left and right sides of the upper zone are relatively symmetrical. Anchor points are established on both sides by relatively energetic occupants which pull the vowel space outward. The intermediate zone displays a noticeable gap due to an absence of occupants in the right side periphery. The right side of the lower zone is more densely populated than the left side. The co-occupants of the lower right quadrant are distinguished by secondary dimensions of lengthening and rounding. The combination of these articulations establishes an anchor point in the extreme of the perimeter. There are three non-peripheral vowels in this system and they are all concentrated in the central region of the vowel space. The non-peripheral sounds in the interior also exploit the secondary dimension of lengthening. Schwa is included among these occupants.

3 Methodology

3.1 Data

The data set was comprised of the transcribed forms of the dominant vocabulary (DOVO) in the spoken component of ICE-Ireland. The DOVO was elicited following the methodology described in Gilner (2016). The size of corpus and the number of transcribed wordforms analyzed are shown in Table 1. Coverage values indicate the percent of all the running words that were transcribed.

Table 1. Irish English data set

	Corpus size	Transcribed wordforms	Coverage
ICE-Ireland (Spoken)	617,153	540,008	87.50%

Transcriptions were produced based on the phoneme inventory and lexical set correspondences provided by Hickey (2004). As is established practice in FL studies, phonological representations of citation forms were used for the analyses undertaken by this investigation. It merits mention that Surendran and Niyogi (2006) demonstrated an 82% correlation between FL measures obtained from corpora of phonetically-transcribed and phonologically-transcribed forms.

3.2 Functional load calculations

Following Hockett (1966), contemporary information-theoretic approaches to FL analysis view language (L) as a finite set of a certain size (N_L) which is made up of sequences of words (w) and calculate the amount of information of language (L) in terms of Shannon entropy H(L). Equation 1 shows the entropy H(L) calculated over its lexicon.

$$\mathrm{H(L)} = -\sum_{i=1}^{N_L} p_{w_i} * \log_2(p_{w_i})$$

Equation 1. Amount of information or entropy in language L

Equation 1 calculates the probability of word-forms (p_{wi}) as a factor of the frequency of occurrence of a word in a corpus. The entropy measure *H(L)* is used to represent the initial state of the system (Shannon & Weaver, 1949).

$$FL_{\varphi,\psi} = \frac{H(L) - H(L^*_{\varphi\psi})}{H(L)}$$

Equation 2. Functional load of the contrast between two phonemes φ and ψ

Equation 2 shows the FL of a contrast between two phonemes φ and ψ. $FL_{\varphi,\psi}$ is defined as the relative difference in the entropy between to states of the system $H(L)$ and $H(L^*_{\varphi\psi})$, often normalized as shown in Equation 2 (Surendran & Niyogi, 2003). Note that $H(L^*_{\varphi\psi})$ is calculated by coalescing the frequencies of all mergers involving phonemes φ and ψ.

$$FL'_{\varphi} = \frac{1}{2}\sum_{\psi} FL_{\varphi,\psi}$$

Equation 3. Functional load of a phoneme φ

The FL of an individual phoneme is calculated by adding all the mergers it participates in (as shown in Equation 3), with the normalization factor ½ to ensure that the FL of mergers are not counted twice since φ, ψ = ψ, φ (Oh, Pellegrino, Coupé, & Marsico, 2013; Surendran & Niyogi, 2003).

3.3 Complementary measures

The results of this investigation also include the following two measures: dominant relative normalization (DRN) and least-dominant relative normalization (LDRN). The first measure, DRN, is found in various forms in the literature (Brown, 1988; Catford, 1987; Gilner & Morales, 2010; Herdan, 1958) and expresses the FL of each member as a fraction of the member with the highest FL. The second measure, LDRN, expresses the FL of each member as a magnitude of the member with the lowest FL. Both DRN and LDRN express equivalent ratios and are thus also equivalent to the measure of normalization based on the whole that is most commonly used (i.e., percentages). The difference is that DRN and LDRN provide a means by which to assess the measures in relation to each other rather than as a fraction of the whole.

a) $$N_\varphi = \frac{X_\varphi}{\sum_{i \in S} X_i} = \frac{DRN_\varphi}{\sum_{i \in S} DRN_i} = \frac{LDRN_\varphi}{\sum_{i \in S} LDRN_i}$$

b) $$DRN_\varphi = \frac{X_\varphi}{X_M} = \frac{N_\varphi}{N_M} = \frac{LDRN_\varphi}{LDRN_M}$$

c) $$LDRN_\varphi = \frac{X_\varphi}{X_m} = \frac{N_\varphi}{N_m} = \frac{DRN_\varphi}{DRN_m}$$

Equation 4. Equivalent relationships between normalization (percentage), DRN, and LDRN

As shown by Equation 4a, 4b, and 4c, given a set N of values X, the N, DRN, and LDRN of an element φ all express equivalent ratios, each relative to a different measure, namely, the whole ($\Sigma_{i \in S} X_i$), the largest value (X_M), and the smallest value (X_m), respectively.

This supplementary manner of presentation expresses proportional relationships relative to a given member and is therefore particularly suitable for FL analyses which seek to quantify the relative amount of work done by members of a class and thereby reveal the systemic synergy of usage-driven patterns of organization (Pellegrino, Chitoran, Marsico, & Coupé, 2009). DRN and LDRN measures contribute to the construction of a referential framework for describing the system and its dynamic behavior, what Pellegrino et al. (2009) refer to as the macroscopic level of complex patterns.

4 Results and discussion

4.1 Systemic ranking of members

The FL ranking for the IE vowel system is presented in Table 2, from largest to smallest FL value. The column labeled 'Rank' is associated with the member in the column labeled 'Phoneme'. The column labeled 'FL' indicates the relative amount of work that each phoneme carries based on the entropy-based measures previously described. The columns labeled 'DRN' and 'LDRN' present FL values in terms of top-down and bottom-up normalization.

Table 2. FL ranking of the vowel inventory of the Irish English model

Rank	Phonemes	FL	DRN	LDRN
1	eː	0.0109	1.0000	102.44
2	ɪ	0.0097	0.8882	90.98
3	ɒː	0.0070	0.6475	66.32
4	ɑɪ	0.0052	0.4745	48.60
5	æ	0.0050	0.4633	47.46
6	əʊ	0.0045	0.4164	42.66
7	aʊ	0.0045	0.4162	42.64
8	i	0.0042	0.3832	39.26
9	ə	0.0040	0.3667	37.57
10	uː	0.0039	0.3591	36.78
11	ɛ	0.0038	0.3529	36.15
12	aɪ	0.0036	0.3335	34.16
13	iː	0.0026	0.2361	24.18
14	ɜ	0.0022	0.2058	21.08
15	aː	0.0020	0.1803	18.47
16	ɑː	0.0013	0.1205	12.34
17	ʊ	0.0008	0.0779	7.98
18	əː	0.0008	0.0773	7.92
19	ɑ	0.0001	0.0110	1.13
20	ɒɪ	0.0001	0.0098	1.00

FL values range from 0.0109 to 0.0001, indicating that the 1st ranked member does more than 100 times more work than the lowest ranked one, precisely 102.44 times more according to LDRN values. FL data reveal an uneven distribution in relative amount of work. The majority of work is carried by the members ranked 1st and 2nd with relevant but lesser contributions made by the members ranked 3rd and 4th. FL values decrease steadily at a more moderate rate from the 5th ranked member on. DRN values indicate that the 3rd ranked member does 64.75% the amount of work of the 1st ranked one and almost 15% less than the 2nd ranked member. The 4th ranked member is the highest ranking diphthong and does less than half the amount of work of the 1st ranked member, 47.45%, and about 17.30% less than the 3rd ranked member. This curve of distribution is made apparent by Figure 2.

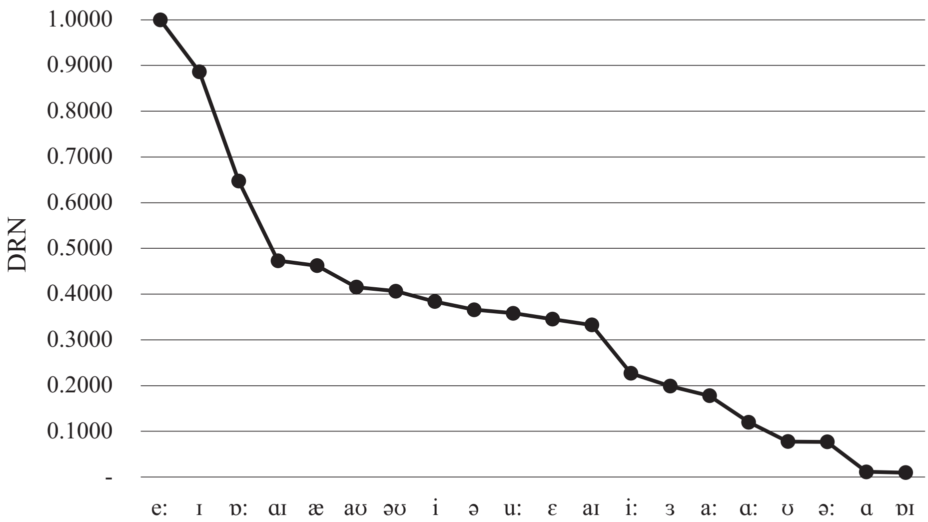

Figure 2. FL distribution curve of Irish English vowel system

The FL data make certain articulatory preferences evident. The 1st ranked phoneme /e:/ privileges energetic articulations produced in the anterior, intermediate region of the mouth. The relevance of anterior-based articulations is reinforced by the 2nd ranked phoneme /ɪ/. The 2nd and 3rd ranked members occupy diametrically opposed quadrants in the vowel space. The latter of which, /ɒ:/, reinforces the function of lengthened articulations in this system along with the association between posterior-based articulations and lip rounding. The two phonemes /ɑɪ/ - /æ/ that follow in the ranking reinforce the relevance of a lowered tongue position in both anterior- and posterior-based articulations. The diphthongs /aʊ/ - /əʊ/ that cluster together in 6th and 7th position are quite similar in terms of articulatory gestures, differing largely in degree of tongue elevation in their initiating positions. Several phonemes ranked 9th through 11th obtain similar FL values. Articulation of these sounds reinforces the role of tongue elevation and retraction in distinguishing members from each other. The phonemes /i/ - /u:/ demarcate extreme points in the upper anterior and upper posterior of the vowel space. The phonemes /ə/ and /ɛ/ further delineate centralized articulations and evidence the function of tongue retraction in keeping sounds distinct.

In terms of vowel dispersion frameworks, results indicate that the perimeter is generally established by the monophthongs at the top of the ranking. The 1st ranked member establishes the intermediate-left anchor point of the perimeter and the 2nd ranked member the upper-left anchor. The 3rd ranked member establishes the lower-right anchor point and the 5th ranked member the lower-left. The upper-right anchor point is established by the member ranked 10th (out of 20).

This distributed activation of members indicates that the perceived symmetries of the categorical description of this system provided in Table 1 in Section 2 are not maintained in usage. Figure 3 displays the monophthong members that obtained DRN values >= 0.1000 as presented in Table 2. The circle around each member is proportional to its relative amount work so that the phoneme /e:/ (DRN=1.0000) is the largest, the circle surrounding phoneme /ɪ/ is approximately 88% smaller (DRN=0.8882), and so on.

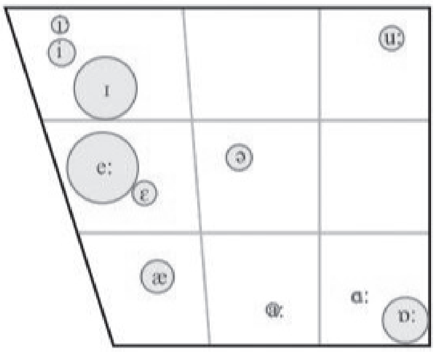

Figure 3. Vowel dispersion in light of FL

Perhaps most noticeable is how usage confines the range of phonemes that contribute most greatly to the relative amount of work. Recall that distribution of the system in the vowel space provided in Section 2 based on a categorical perspective showed that monophthong members are broadly dispersed throughout the vowel space. The upper-anterior, mid-central, and lower-posterior quadrants are each occupied by three members, giving the perception of a balanced stratification of gestural configurations moving from high-front to low-back in the vowel space. The mid-front and upper-posterior are each occupied by two members and the low-front and low-central quadrants are occupied by single members.

Results of the usage-driven FL analyses show a markedly uneven activation in light of relative amount of work. In usage, a single member among co-occupants obtains noticeably greater FL values, indicating a much higher rate of occurrence: the most active member of the high-front quadrant does three times more work than its next most active co-occupant; the most active member in the mid-front quadrant does twice the amount of work of its co-occupant; and, the highest ranking low-back quadrant co-occupant does almost six times that of its next most active co-occupant. In other words, the dispersal tendencies portrayed by categorical description are not found when a usage-driven perspective is adopted.

4.2 Contrastive pairings (CPs)

Examination of instantiated contrastive pairings presents an opportunity to add resolution to FL rankings of phonemes by scrutinizing how they interact at a more basic level, namely, the phonemic contrasts they form. The analyses that follow examine that impact the specific contrastive pairings have on usage and the extent to which FL provides an informative measure.

Table 3 provides descriptive data based on an analysis of all the contrastive pairings

Table 3. Descriptive data on contrastive pairings instantiated by the Irish English dataset

Total number of CPs	109
Average CPs per phoneme	10.8
Maximum CPs per phoneme	17
Minimum CPs per phoneme	3
Top 5 CPs / total FL	34.34%
Top 15 CPs / total FL	50.46%
Remaining 94 CPs	49.54%

instantiated in the IE data set. This data was obtained by first identifying all of the vowel minimal pairs and then grouping them by contrastive pairing (CP).

Results indicate that a total of 109 types of CPs were instantiated. On average, members of the IE model form 10 or 11 CPs. The most active member /eː/ engages in contrastive relationships with 17 other members. The least active member /ə/ recruits three other members. It is interesting to note that despite this relatively inactivity in CP formation, this member ranks 9th overall according to FL values, indicating that the few CPs it forms are established among words with very high rates of occurrence. Also noteworthy is the remarkable disparity between the relative amount of work carried by upper- and lower-ranking CPs. The five pairings that obtain the highest FL values account for almost one-third, precisely 34.34%, of the all the work carried out by this system. Furthermore, the 15 most active pairings account for just more than half, specifically 50.46%, and they do more work than the remaining 94 CPs combined.

Since examination of all 109 CPs is beyond the scope of this paper, the discussion that follows will be limited to the 15 pairings that obtain the highest FL values. These pairings are presented in Table 4. Some usage-driven preferences are apparent from this

Table 4. Top 15 contrastive pairings in the Irish English data set

Rank	CP	FL	DRN	LDRN
1	eː - ɑɪ	0.05228	1.00000	1,346.56
2	ɪ - æ	0.05156	0.98611	1,327.86
3	eː - ə	0.03695	0.70669	951.60
4	ɪ - ɒː	0.03335	0.63793	859.02
5	uː - ə	0.02401	0.45916	618.29
6	i - aɪ	0.01859	0.35555	478.77
7	ɪ - aʊ	0.01505	0.28787	387.63
8	ɪ - ɛ	0.01393	0.26637	358.68
9	i - eː	0.01333	0.25497	343.34
10	əʊ - aʊ	0.01293	0.24737	333.09
11	ɒː - ɑː	0.01276	0.24407	328.66
12	i - uː	0.01237	0.23657	318.56
13	eː - aɪ	0.01207	0.23086	310.87
14	ɪ - aː	0.01205	0.23052	310.40
15	i - əʊ	0.01179	0.22549	303.63

data. For example, a remarkable unevenness in relative amount of work is observed. LDRN values show that the two highest ranked pairings do more than 1,300 times the amount of work that the lowest ranked pairing does. A closer look at the lower ranks reveals that the these top two pairings do about 100 times the amount of work than the pairing ranked 92nd and 10 times the amount of work than the pairing ranked 37th. The 3rd ranked pairing does about 60% less work than those ranked 1st and 2nd and a steady decrease in contribution is observed as the ranking progresses.

Moreover, certain members are consistently among these pairings. The phoneme /eː/ is involved in four of the 15, including two of the top 5. The phoneme /ɪ/ is involved in five of the 15, including the one ranked 2nd. The phoneme /i/ is involved in four of the 15. Low and posterior-based vowel qualities are involved in nine of the 15; in five cases, these vowel qualities initiate a diphthong.

Describing the CPs in terms of articulatory dimensions reveals that the open/close dimension is associated with each of these pairings and is usually coupled with the front/back dimension. In all but two cases, the contrasting pair of phonemes are distinguished by changes in tongue height. The exceptions are the pairings ranked 3rd and 11th in which cases the phonemes are distinguished primarily by degree of tongue protraction.

More nuance can be added to this description in terms of how the phonemes that form the pairs are distributed in the vowel space. The 1st ranked pairing activates rather dispersed quadrants in the vowel space, the phoneme /eː/ occupies the mid-front while the diphthong initiates in the low-back and terminates in the high-front quadrant. The 2nd ranked pairing concentrates articulations in the anterior quadrants, isolating distinguishing articulatory gestures to degree of tongue elevation. The 3rd ranked pairing conversely makes use of tongue protraction primarily while maintaining an intermediate tongue height. Among the top 5 pairings then, these two of these pairings could be described as relatively less distinct compared with 1st ranked and 4th ranked pairings.

It is noteworthy that there is no overlap in the types of CPs formed by the more active members /eː/ and /ɪ/. These two phonemes occupy adjacent quadrants in the anterior of the vowel space. The most active pairings formed by the mid-front phoneme involve an anterior-closing diphthong and the mid-central-reduced monophthong while the most active pairings formed by the high-front phoneme involve the low-front member and the rounded co-occupant of the low-back quadrant.

5 Closing remarks

FL analyses have revealed certain patterns of usage worth reflecting on. Results of the systemic FL ranking provided in Table 2 have revealed the dominant role of the members /eː/ - /ɪ/ - /ɒː/. The relative dominance of certain members of this system was further pursued in terms of vowel quadrant activation and these results added evidence to a systemic preference for anterior-based articulations. Results from analysis of CPs indicates a dominance of relatively few phonemic contrasts. The top 15 CPs accounted for a similar amount of work as the remaining 94. Further scrutiny of the more active pairings has indicated that the IE vowel system relies on certain few members to distinguish lexical items, specifically the phonemes /eː/ - /ɪ/ - /i/. Low-back and low-central vowel qualities have also been found to participate in a relatively large number of the top 15 phonemic contrasts. Another noteworthy finding is that there is little overlap between the members recruited in CPs by the most active phonemes /eː/ and /ɪ/.

In terms of vowel dispersion, FL quantification has shown that among the quadrants with multiple occupants, one of the members obtains noticeably greater FL values. In the case of the mid-front quadrant and low-back quadrants, the more energetic member is dominant. Among the occupants of the high-front and mid-central quadrants the least energetic member is dominant. In sum, we can say with confidence that usage-driven analysis has produced precise data with which to add granularity to descriptions of IE phonology. The relative dominance of these sounds and their corresponding articulatory gestures makes it tempting to speculate about system-specific attunement of processing and perception mechanisms.

In closing, as Maddieson (2011) points out, both categorical and usage-based perspectives have contributions to make to phonological description and theory. Analytical traditions in phonetic and phonological analysis have been based on a categorical perspective which have resulted in the compilation of phonemic inventories from an ever-increasing number of languages. Examination of components within and across languages has encouraged speculation and theorization regarding structural patterns as well as speech processing (e.g., Lindblom & Maddieson, 1988; Schwartz, Basirat, Ménard, & Sato, 2012). At the same time, usage-based approaches offer perspectives in line with experiential and statistical models of learning. These perspectives propose that language users form mental representations of phonological categories from analysis of actually encountered instances of usage and that representations influence speech perception and processing. These notions find support in the vast psycholinguistic literature on frequency effects in lexical access. The FL analyses of Irish English provided in this paper indicate that usage-driven quantification augments categorical descriptions, revealing patterns of usage that are otherwise not evident from a purely structuralist viewpoint and, consequently, constitute a potential contribution to relevant data to the overall concerns of theories of language and the mind.

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