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A Contrastive Perspective on English and Dutch Front Monophthongs

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Abstract

This paper explores the front pure vowels of Dutch and English from a contrastive standpoint. It aims to quantitatively discover the degree to which Dutch and English front monophthong systems are different from each other. Applying the same type of quantitative-contrastive phonemic analysis we presented in our earlier works of 2015 and 2019, we claim that the front monophthong systems of English and Dutch are considerably different (81.82%) from each other and that the acquisition workload is heavier (83.33:80) for English speaking learners of Dutch as a foreign language than it is for Dutch speaking learners of English. In contrast, learners of English will need to generate a greater degree (83.33:80) of substratum counter-influence than learners of Dutch in order to achieve an acceptable level of accuracy in the articulation of their target phonemes. Although both groups of learners retain one vowel sound that occurs as phonetically identical phoneme (16.67:20), the final indication is that the English front monophthong system is likely to pose a greater challenge for its learners.

Keywords: Dutch, front monophthong, contrastive, mispronunciation, substratum counter-influence

English and Dutch are two West-Germanic languages that share the same glossogenetic roots and, therefore, have comparable features and similarities between them in various dimensions including phonology. Even though the present-day English and Dutch apparently display almost entirely different sets of speech sounds underscoring their unique phonemic properties, there are similarities, such as presence of the high front monophthongs as well as noticeable differences, such as presence and absence of the low front monophthongs in English and Dutch. While it is true that English is understood and spoken by more than 90% of the Dutch speaking population in the Netherlands and the popularity of English is on the rise (Cenoz & Jessner, 2000), the choice of Dutch in the present research is prompted by our interest in the languages. The differences between the two languages may be studied because they can provide the learners of these languages with useful insights that may be used to predict the areas of difficulty in the acquisition of sounds of the target languages and suggest possible ways and solutions to overcome the learner problems relating to the acquisition of phonological competence. Collins and Mees (2003b) and Adank (2003) acknowledge the fact that, in phonology, contrastivity is a valid phenomenon because it tells us what works as a speed-breaker or obstruction to recalling and especially physically reproducing speech sounds of a

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language. Contrastive phonology is thus an essential aspect of linguistic knowledge about learning a foreign language.

The Minimal Unit of Lexical Representation

Baković (2014), Calabrese (1988), Chomsky and Halle (1968), Mielke (2008) and Stevens (2002) inspire us to believe that the speech sounds are phenomena that comprise groups of distinctive features coordinated in time, and therefore, according to Fowler et al. (2016), enable "speakers to produce phonetic segments as individual or as coupled gestures of the vocal tract" (p. 126). It is, however, true that the construct of phoneme exists within the entity of the mind. The unit is perceived as a concept which can be realized as or turned into an audible phenomenon with physical characteristics whose existence can be examined by a linguist. In writing, as it is pointed out in Haque (2015), a vowel refers to either a grapheme or a visual graph – a sign meant for retinal experience, but it also refers to a waveform that, once generated, can travel through the air and enter the human sound receptors in order to eventually produce an auricular effect or experience. Collins and Mees (2003b) point out that language learners often fail to perceive the difference between a grapheme and a phoneme and take one concept for the other, and since there are five vowel graphemes in both English and Dutch, a learner, especially at the elementary level, is often misled to assume that there are five vowel sounds in English as well as in Dutch. In fact, Collins and Mees (2003b) confirm that in Dutch, there are sixteen vowel sounds as against twenty in the English language.

Lekova (2010) points out that the motion and the movement of the tongue are crucial in the correct pronunciation of a speech sound. As the most versatile vocal organ, the tongue is able to move three dimensionally but an inappropriate movement of the tongue due to the learner's mother tongue habit as well as misconception about a speech sound are primarily responsible for mispronunciation. Therefore, it is important for the learner to be aware of these two factors.

Contrast Awareness and Pronunciation

Mispronunciation and miscommunication are often interrelated and the former causes the latter. The difference between the vowel phonemes in the words "heating" and "hitting" in a sentence such as *Heating/Hitting the container can damage the content in it* can be an instance of how a message can be grossly misunderstood. Kenworthy (1987) observes that while it is true that the ability to develop one's phonological competence to perfection in a foreign language may be a choice, it is almost certain that the lack of awareness or ability relating to conceptualization of individual sound segments or phonemes in a foreign language can often produce misunderstanding and miscommunication between the speaker and the hearer in speech events. Plakans (1997) and Gravois (2005) argue that the second language learner must learn and use the phonemes of the foreign language correctly to be able to appropriately communicate socially as well as occupationally.

Sparks and Ganschow (2001) and Carroll (1962) indicate that empirical studies conclusively prove that language learners' phonological competence correlates to their

phonetic coding ability which is an aspect of their linguistic aptitude. Language learners can articulate a well-formed phone of their target language if the underlying phoneme is internalized correctly since the correct pronunciation primarily depends on the correct concept of a speech sound. On the other hand, mispronunciation occurs when there is an error at the phonemic or conceptual level, although other reasons, such as, those involving the vocal organs may also play a role (Lekova 2010). Therefore, it is very important that learners of a foreign language such as English learn about the phonemes of English as part of their effort to develop speaking skills. It is also equally important for the learner to be able to recognize the traces and characteristics of mother tongue phonemes so that they can learn to avoid substratum influence in speech (Haque & Uddin, 2019). Nunan (1996) argues that in the process of avoiding or overcoming mispronunciations, the learners must resort to a painful period of 'unlearning' (p. 57). Learners often fail to attain an acceptable level of accuracy because this dimension is ignored during the learning process due to either ignorance or difficulty.

The issue of interference has remained relevant to the study of foreign language acquisition throughout the past decades. Lekova (2010) defined possible phonetic interferences as "the improper pronunciation of phonetic sounds in the second language caused by the existence of different phonetic structures from the point of view of the mother tongue" (p. 321). Therefore, if necessary, as Brown (2000), James (1994), and Hai and Ball (1961) acknowledge, the learner has to neutralize L1 interference or generate what we want to call *substratum counterinfluence* to neutralize the mother tongue interference to ensure correct pronunciation of the words in the foreign language. An attempt at this process involves the learner's conscious effort to overcome L1 habit and influence that can disturb correct realization of a phoneme in L2. To illustrate the point, we can consider the occurrence of high front /I/ in English and high mid [ɪ̞] (a lowered /I/) in narrow transcription in Dutch as they are pointed out by Collins and Mees (2003b). Even though phonetically the sounds share a number of features, unless the learners are aware that the two sounds are not exactly identical as far as the movement and the position of the tongue are concerned, they will not be able to pronounce their target sound accurately. Lekova (2010) and Haque (2015) claim that the correct pronunciation in such cases comes from contrast awareness as well as the ability to suppress the substratum or L1 habit and interference. This makes it necessary for us to opt for contrastive analyses of the English and Dutch phonological properties to provide learning as well as teaching with additional phonemic insight necessary for the learners as well as the teacher or facilitators.

English and Dutch Front Monophthongs: Contrast and Implications

The quantitative-contrastive analysis developed and applied by Haque (2015) and Haque and Uddin (2019) as well as Haque and Jannat (2022) can be used to discover the degree of dissimilarity between English and Dutch front pure vowels and may give some indications about the levels of learner stress, acquisition workload, and substratum counter-influence needed to successfully proceed toward the acquisition of the sounds under discussion in the two languages for the learners.

Collins and Mees (2003b) and Adank (2003) suggest that Dutch is glossogenetically related and linguistically close to English and a fair amount of Dutch lexis displays instances of etymological cognates with English, rendering similar phonology as well as orthography. The Dutch vowel system, as shown by Collins and Mees (2003b), contains a total of sixteen phonemes as against twenty in the English system. Out of the twenty phonemes in English, five are described as front monophthongs. In Dutch, such monophthongs are six in number. There are three short and three long front monophthongs in Dutch. The orthographic and the phonological vowels symbolized in terms of the IPA (International Phonetic Alphabet) for the modern Dutch language may be shown in the following manner (Collins & Mees, 2003b):

Table 1: Dutch monophthongs

/ɑ/	**/aː/**	**/ɛ/**	**/ə/**	**/eː/**	**/I/ [ɪ̟]**	**/iː/**	**/ɔ̟/**	**/oː/**	**/uː/**	**/øː/**	**/ɤ̟/**	**/y(ː)/**
a		**e**			**i**		**o**		**u**			
Back	Back	Front	Central	Front	Front	Front	Back	Back	Back	Central	Front	Front
Unrounded	Unrounded	Unrounded	Unrounded	Unrounded	Unrounded	Unrounded	Rounded	Rounded	Rounded	Rounded	Rounded	Rounded

The front monophthongs in Dutch (Collins & Mees, 2003b) are as follows:

Table 2: Dutch front monophthongs

/ ɛ /	**/eː/**	**/I/ [ɪ̟]**	**/iː/**	**/ɤ̟/**	**/y(ː)/**
e		**i**		**u**	
Front	Front	Front	Front	Front	Front
Unrounded	Unrounded	Unrounded	Unrounded	Rounded	Rounded
Low-mid	High	High-mid	High	High	High
Lax	Tense	Lax	Tense	Lax	Tense
Short	Long	Short	Long	Short	Long
Checked	Free	Checked	Free	Checked	Free

The following table shows a contrast between Dutch and English vowels:

Table 3: Dutch and English monophthongs

Vowels	**Dutch**	**English**
Monophthong	13	12
Diphthong	03	08
Vowels shown in the alphabets	05	05
Total number of vowels	16	20

In contrast, the monophthongs in the English language are twelve in number, and they are as follows:

Table 4: English monophthongs

/e/	/I/	/i:/	/ ʊ /	/u:/	/ə/	/æ/	/ ʌ /	/ ɑ:/	/ ɜ:/	/ ɒ /	/ ɔ:/
e	**i**		**u**		**a**					**o**	
Front	Front	Front	Back	Back	Central	Front	Front	Back	Central	Back	Back
Unrounded	Unrounded	Unrounded	Rounded	Rounded	Rounded	Unrounded	Unrounded	Unrounded	Rounded	Rounded	Rounded

The front monophthongs in English (Collins & Mees, 2003a) are as follows:

Table 5: English front monophthongs

/e/	/I/	/i:/	/æ/	/ʌ/
e	**i**	**i**	**a**	**a**
Front	Front	Front	Front	Front
Unrounded	Unrounded	Unrounded	Unrounded	Unrounded
Mid	High	High	Low	Low
Short	Short	Long	Short	Short
Lax	Lax	Tense	Lax	Lax
Checked	Checked	Free	Checked	Checked

The illustrative diagram of the interior of the oral tract can be used to display the points of origin of the pure vowels of the English language (Collins & Mees, 2003a):

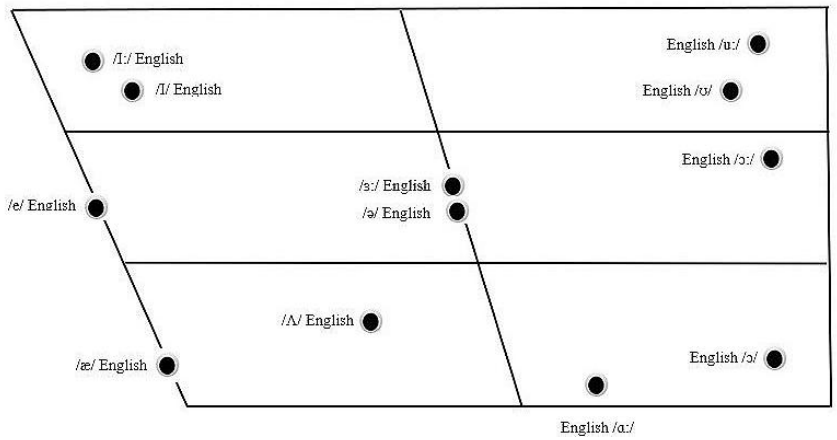

Figure 1: Points of origin of the English monophthongs

Following Verhoeven (2005), we may construct a schematic diagram of the inside of the oral tract to present the points of origin of the monophthongs of Dutch:

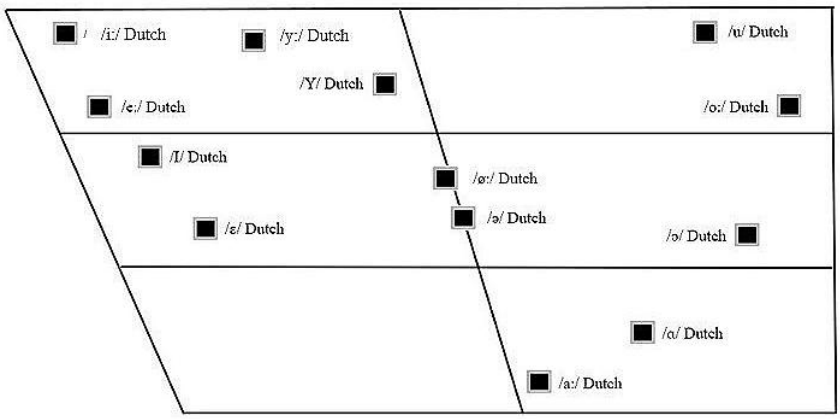

Figure 2: Points of origin of the Dutch monophthongs

Therefore, following Collins and Mees (2003a), Collins and Mees (2003b) and Verhoeven (2005), the schematic diagram of the oral tract below shows a zonal contrast between English and Dutch front monophthongs:

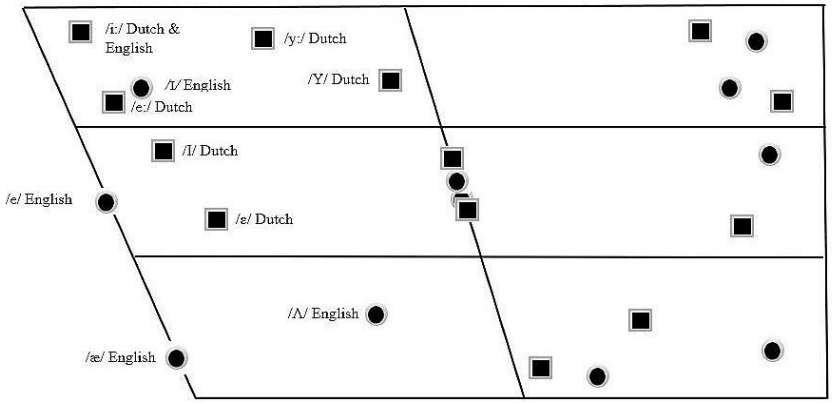

Figure 3: Points of origin of the English and Dutch front monophthongs

Using the above diagram, the front pure monophthongs of English and Dutch can be classified and contrasted in the following table:

Table 6: Dutch and English front monophthongs

Front monophthongs	**Dutch (6)**	**English (5)**
/e/ e.g., in English *hen*	Absent	Mid, front, lax, weak, short
/ɪ/ e.g., in English *hit*	Absent	High, front, lax, weak, short
/i:/ e.g., in English *deep*	High, front, tense, strong, long	High, front, tense, strong, long
/æ/ e.g., in English *hat*	Absent	Low, front, lax, weak, short
/ ʌ / e.g., in English *run*	Absent	Low, front, lax, weak, short
/I/ e.g., in Dutch lid (member)	Mid, front, lax, weak, short	Absent
/ɛ/ e.g., in Dutch *bler (yell)*	Mid, front, lax, weak, short	Absent
/e:/ e.g., in Dutch *beet (north)*	High, front, tense, strong, long	Absent
/ʏ/ e.g., in Dutch fut (energy)	High, front, lax, weak, short	Absent
/y(:)/ e.g., in Dutch duur (expensive)	High, front, tense, strong, long	Absent

Front pure vowels in the two languages with total or nearly complete interface is two in all:

Table 7: Dutch and English interfacing monophthongs

Vowel sound	**Features**
English & Dutch /i:/	High, front, tense, strong, long

Following the contrastive method developed and used by Haque (2015), Haque and Uddin (2019) as well as Haque and Jannat (2022), a differential account of the English and Dutch front monophthongs can now be established.

In this approach, we first identify the total number of vowel sounds in a particular category (e.g., high-front) in each language, then proceed to identify the interfacing sounds in the languages. The data are then used to calculate the interface percentage. For instance, if, between languages A and B, language A has X number of Q subcategory of phonemes and, in contrast, language B has Y number of the same (Q) subcategory of phonemes with, suppose, Z number of interfacing sounds between them, then the interface percentage for AB(Q) will be I=100[Z/(X+Y)]. Therefore, the contrast or divergence (D) will be (100-I) %. Depending on the languages, a contrast (D%) can be hypothetically anywhere between 0.01% and 100% for any particular subcategory of speech sound. When the subcategory findings are integrated, a more complete scenario of the contrast is likely to surface that can be, we believe, exploited to figure out some other pertinent issues e.g., learner stress, acquisition workload etc.

English and Dutch monophthongs: The basic contrast

There are four *high front monophthongs* (HFM) in Dutch compared to two in English. The high front vowels with complete interface are one in number. The following is a contrast in both the languages:

Table 8: Dutch and English HFM interface

Dutch	English	Interfacing phonemes	HFM interface
04	02	02	33.33%

Therefore,

Interface = 33.33%

HFM Divergence = 66.67%

Thus, it can be noted that in both the languages, high short and high long pure vowels are present including the identical phoneme /i:/ as they exist in both the languages. Therefore, there is 66.67% similarity in the languages as far as high front monophthongs are concerned.

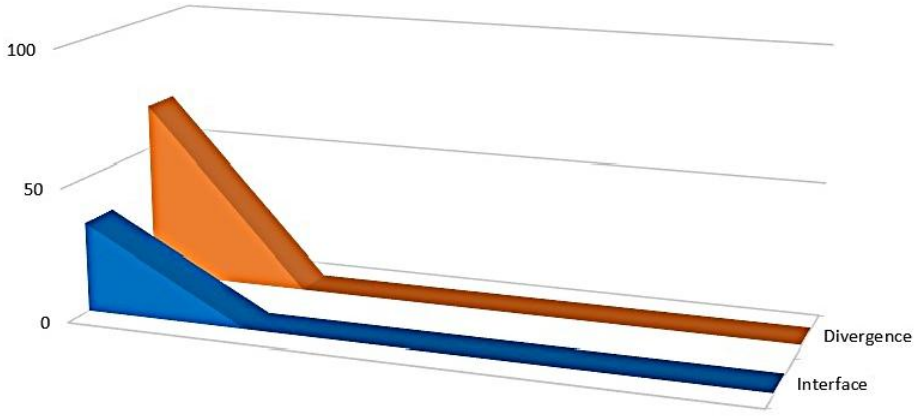

Figure 4: English and Dutch HFM systems are more similar than different

The implication of this difference for the learners of Dutch and English can be summarized as follows:

Table 9: Probable acquisition workload based on contrast

Learner	Acquisition L2 HFM	Transfer L1 HFM
English speaking learner of Dutch	3 /e:/ /ʏ / /y(:)/	1 /i:/
Dutch speaking learner of English	1 /I/	1 /i:/

Therefore, the English speaking learner of Dutch (ELD) has three high front monophthongs to learn from the Dutch phonology, whereas the Dutch speaking learner of English (DLE) has only one sound to learn from this category. DLE and ELD have one sound to transfer and use in their target language.

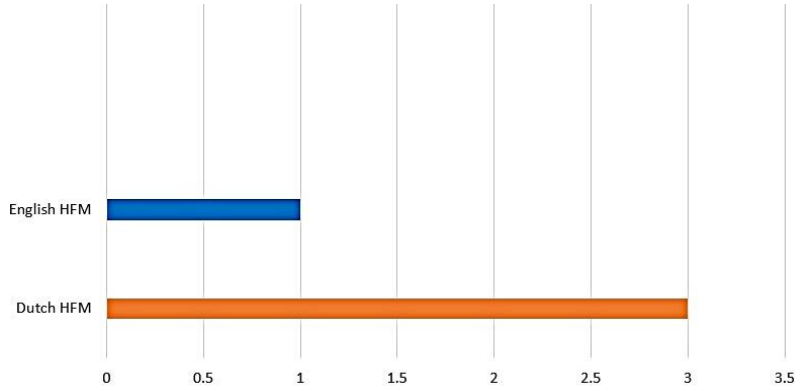

Figure 5: The Dutch vowel system appears to be 300% richer than the English system for high front monophthongs

There are two *mid front monophthongs* (MFM) in Dutch as opposed to one in English, and the mid front vowels have zero interface.

For mid front vowels in particular, the following is the case:

Table 10: Dutch and English MFM interface

Dutch	**English**	**Interfacing phonemes**	**MFM interface**
02	01	00	00%

Therefore,

Interface = 00%

MFM Divergence = 100%

Hence, it can be observed that in terms of mid front monophthongs, there are only short monophthongs present. No identical sounds can be detected in both the languages as far as mid front monophthongs are concerned; therefore, the sounds are highly dissimilar in this category.

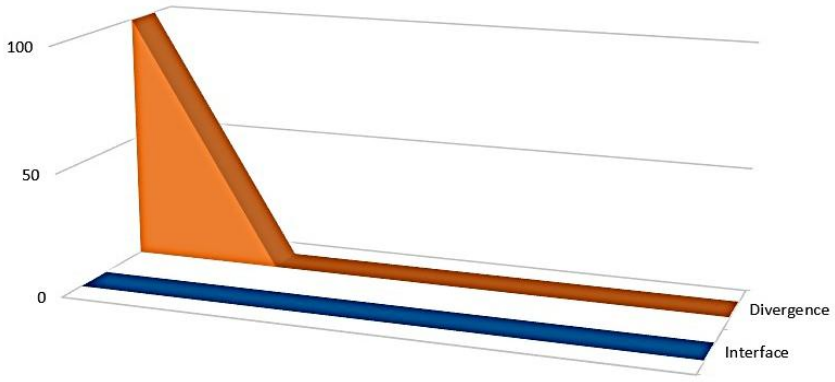

Figure 6: Dutch and English MFM systems are in complete divergence

The implications of this difference for the learners of Dutch and English can be summarized as follows:

Table 11: Probable MFM acquisition workload based on contrast

Learner	**Acquisition L2 MFM**	**Transfer L1 MFM**
English speaking learner of Dutch	2 /I/ /ɛ/	0
Dutch speaking learner of English	1 /e/	0

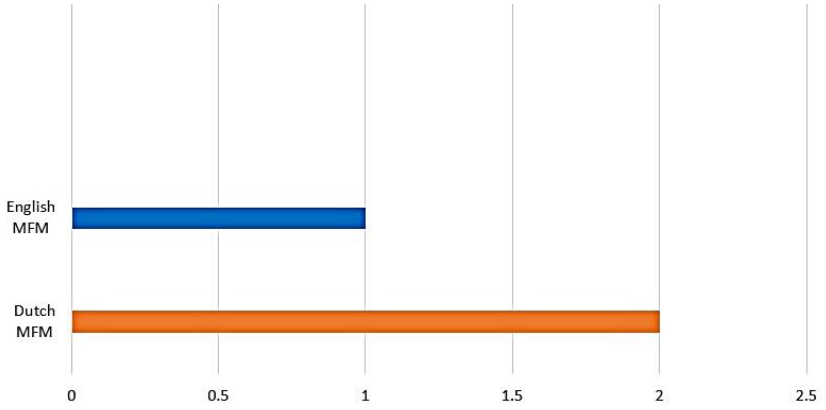

Figure 7: The Dutch vowel system appears to be 200% richer than the English counterpart for mid front monophthongs

Therefore, the English-speaking learner of Dutch will need to acquire two sounds while the Dutch speaking learner of English will need to acquire just one from their target phonology. Since there is no common sound in both languages in this category, DLE and ELD will not have any sound to transfer and use in their target language.

There are two *low front monophthongs* (LFM) in English as opposed to zero in Dutch. The low front monophthongs of the two languages, therefore, have zero interface.

For low front monophthongs, the contrast is as follows:

Table 12: Dutch and English LFM interface

Dutch	**English**	**Interfacing phonemes**	**LFM interface**
00	02	00	00%

Therefore,

Interface = 00%

LFM Divergence = 100%

Therefore, for low front monophthongs, we find that there are only two low front monophthongs in the English language and none at all in Dutch. Hence, Dutch speaking

learner of English will have to learn two sounds from this category of the English phonology.

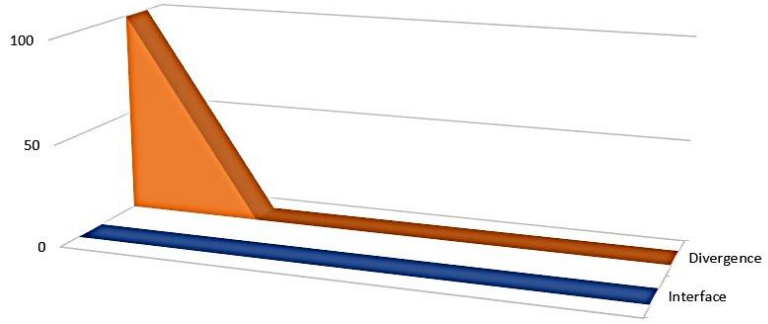

Figure 8: Dutch and English are in complete divergence for LFM

The implications of the variations for the learners of Dutch and English can be summarized as follows:

Table 13: Probable LFM acquisition workload based on contrast

Learner	**Acquisition L2 LFM**	**Transfer L1 LFM**
English speaking learner of Dutch	0	0
Dutch speaking learner of English	2 /æ/ / ʌ /	0

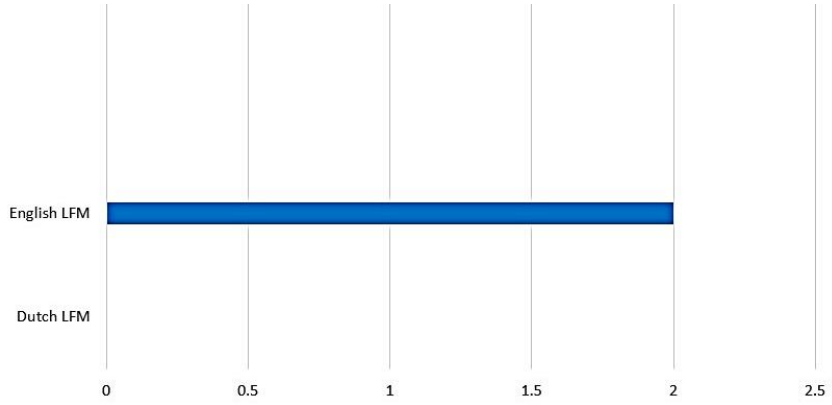

Figure 9: English appears to be 200% richer than Dutch in terms of low front monophthongs

Therefore, DLE will have to acquire two sounds of low front monophthongs that exist in the English phonology and ELD will have none to acquire as there are no low front monophthongs in the Dutch phonology system. This indicates that no sounds can be transferred as a result of having zero interface.

We find that there are a total of six front monophthongs in Dutch as opposed to five in English. The above analysis appears to indicate that compared to English the Dutch language is more dependent on high front (three against one in English) and mid front (two against one in English) monophthongs, and on the other hand, compared to Dutch the English language is more dependent on the low front monophthongs (two against zero in Dutch).

In the final analysis, the total number of interfacing front monophthongs in Dutch and English as already mentioned above is one and it is as follows:

Table 14: Dutch and English interfacing monophthongs

Front monophthongs	**Features**
English & Dutch /i:/	High, front, tense, strong, long

For the complete set of front monophthongs in Dutch and English, the contrast is as follows:

Table 15: Dutch and English FM interface

Dutch	**English**	**Interfacing phonemes**	**FM interface**
06	05	02	18.182%

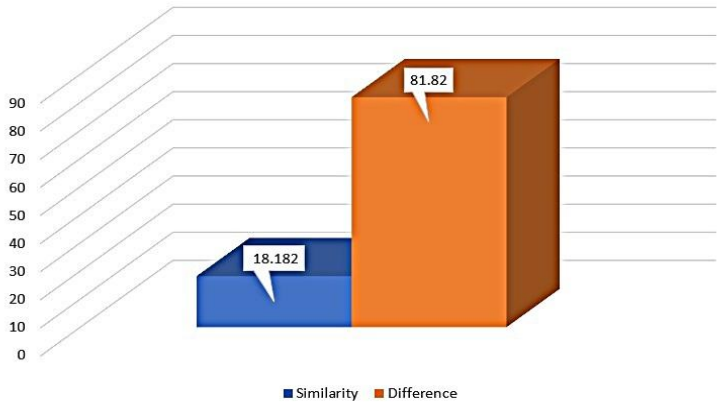

Figure 10: Dutch and English front monophthong systems have more differences than similarities

Therefore,

Interface = 18.182%

FM divergence = 81.82%

It can be now suggested that Dutch and English are very different from each other as far as the front monophthongs are concerned, and that makes it a challenge for ELD and DLE to acquire Dutch and English, respectively. The implications of the phonetic differences for the learners of Dutch and English can be summarized as follows:

Table 16: Basic implications of the contrastive analysis

Sound type	Learner	Retention/ Transfer (L1)	Acquisition/ Learning (L2)	Substratum counterinfluence (L1)
Front Monophthong	English learner of Dutch as a foreign language	1 /i:/ **20% L1**	5 /e:/ /ʏ/ /y(:)/ /I/ [ɪ̟] /ɛ/ **83.33% L2**	4 /ɪ/ /e/ /Λ/ /æ/ **80% L1**
	Dutch learner of English as a foreign language	1 /i:/ **16.67% L1**	4 /ɪ/ /e/ /Λ/ /æ/ **80% L2**	5 /e:/ /ʏ/ /y(:)/ /I/ [ɪ̟] /ɛ/ **83.33% L1**

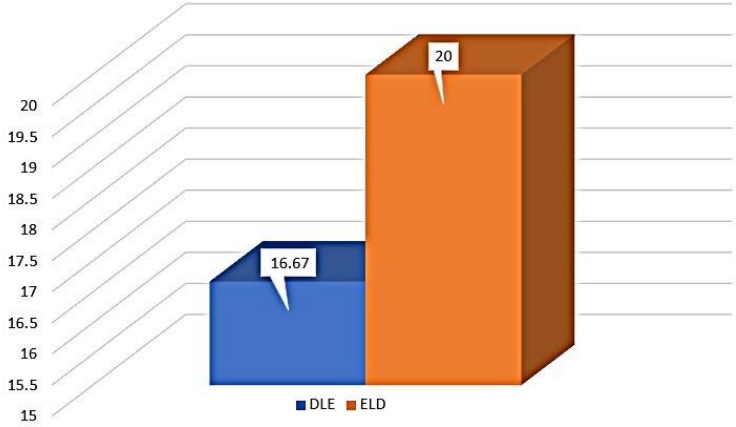

Figure 11: Retention of mother tongue sounds makes learning less stressful for ELD (20:16:67)

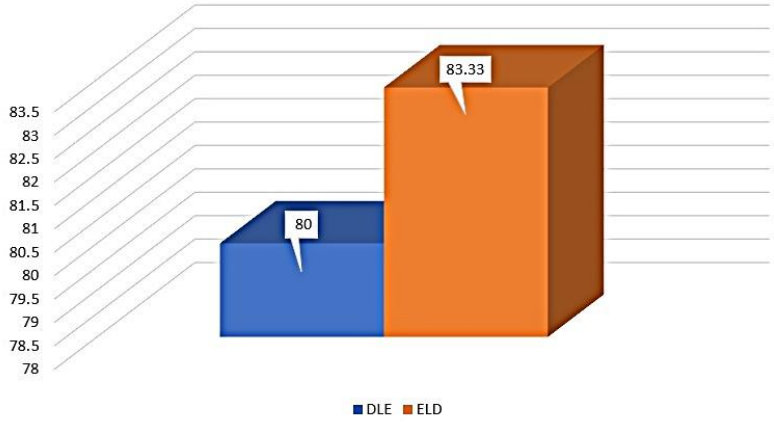

Figure 12: The ELD faces greater workload in learning (83.33:80)

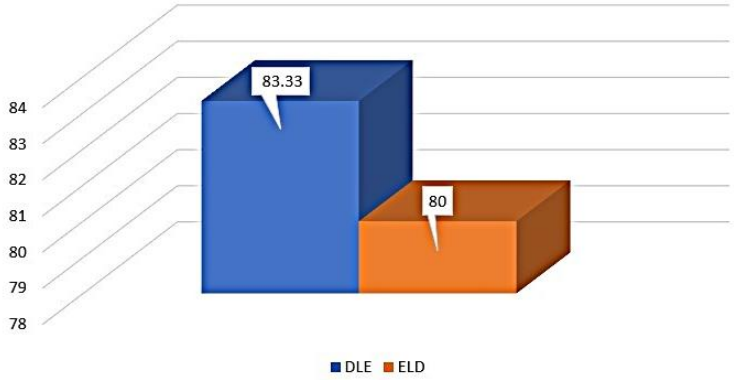

Figure 13: The DLE will contemplate and ensure a greater degree of substratum counterinfluence for accuracy (83.33:80)

In the final analysis, we can tentatively accept the fact that English speaking learners of Dutch have more front monophthongs to acquire and consequently, due to elevated workload, are likely invest more time in the exposure to and learning of the target language system than Dutch speaking learners of English would need to do. On the other hand, Dutch speaking learners of English must learn to initiate a greater degree of substratum counterinfluence than the English speaking learner of Dutch, but overall, for the front monophthongs, English speaking learners clearly face greater challenges in learning Dutch even though both groups of learners will retain one sound that occurs as a virtually identical phoneme.

To conclude, we can now state that English and Dutch front monophthong systems are considerably different (81.82%) from each other, and assume that English speaking learners of Dutch have a greater acquisition workload (83.33:80) to deal with compared to Dutch speaking learners of English.

On the other hand, while it is true that both groups of learners are at ease with the retention and transfer of just one high-front pure vowel sound /i:/, the ratio is not equally favorable for the Dutch speaking learners of English (16.67:20), and it in fact makes Dutch speaking learners of English experience comparatively high stress (83.33:80) due to the elevated need for substratum counter-influence. This, however, is not exactly the same with the English speaking learners of Dutch, and for that matter, the present researchers believe that Dutch speaking learners of English in general will probably experience a slightly greater degree of articulatory stress and challenge compared to the English speaking learners of Dutch as they endeavor toward attaining the phonological perfection in their target system since the observations of Postman and Underwood (1973), Anderson (2003), Lakova (2010) and Haque and Uddin (2019) suggest that acquisition of foreign sounds is often less stressful than completely neutralizing the substratum influence and interference. However, all the above are tentative conclusions and further research will be necessary to validate the claims.

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