

Social and regional variation and intrusive /r/¹

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1. Introduction

The vast majority of traditional phonological accounts of /r/-sandhi (Jones, 1964; Gimson, 1980; Kahn, 1976; Wells, 1982; Broadbent, 1991; Harris, 1994; McMahon, 2000) do not take into consideration the variable nature of intrusive /r/ and discuss it as a categorical phenomenon which does not vary in non-rhotic varieties of English. While these phonological analyses (i.e., deletion, insertion, or insertion-plus-deletion) fail to resolve the issue of variation concerning /r/-sandhi usage, a growing number of empirical studies have given proof of various factors that condition variability in /r/-insertion (Foulkes, 1998; Watt & Milroy, 1999; Tollfree, 1999; Hay & Sudbury, 2005; Hay & Maclagan, 2006; Hannisdal, 2006; Mompeán-Gonzalez & Mompeán-Guillamón, 2007, 2009; Barras, 2010; Tan, 2011). Even though theoretical descriptions still outnumber empirical and sociophonetic approaches to intrusive /r/, recent research findings have contributed a great deal to developing a deeper understanding of the complexities of /r/-intrusion.

Due to its large-scale variability, however, there is no unanimity of opinion among experts on this phenomenon, which inevitably raises many important questions to be answered. In particular, there is still considerable uncertainty regarding the various constraints that may affect the realisation of intrusive /r/, and it is also unclear to what extent /r/-insertion reflects social stratification, stylistic or regional variation. For instance, the dialectal distribution of intrusive /r/ has always required careful scrutiny due to the scarcity of information available on this subject. Therefore, the primary purpose of this thesis is to explore the distribution of intrusive /r/ across non-rhotic varieties of English and examine certain factors which might correlate with the use of /r/-intrusion.

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In order to investigate different aspects of its variability, the present paper considers the role of internal (e.g., morpheme boundary, vowel quality, identity of the suffix) and external linguistic factors (e.g., social class, gender, speech style) leading to variation in the production of intrusive /r/ by reviewing empirical studies. To take one example, the quality of the preceding vowel is often considered to have an effect on rates of /r/-intrusion and, consequently, whether back or central vowels attract more insertion is a matter for debate. It is worth noting that the presence of another /r/ like in *Barbara is*, or the presence of stressed syllables can also be regarded as further conditioners on the frequency of /r/-insertion (Hannisdal, 2006; Mompeán-Gonzalez & Mompeán-Guillamón 2009).

Before discussing such problems in detail, it is essential to take a look at the descriptive accounts of intrusive /r/. Thus, chapter 2 gives some background information as regards the phenomenon of /r/-sandhi and presents an overview of the theoretical literature.

By drawing on findings from empirical studies, in chapter 3, non-rhotic dialects and accents of English are described where both linguistic and non-linguistic factors are likely to influence the occurrence of intrusive /r/. With this in mind, I attempt to synthesise existing empirical evidence on intrusive /r/ usage; therefore, this thesis also seeks to provide a coherent framework for a better understanding of the variable patterning of /r/-intrusion. Finally, the last chapter summarises the main points of the present thesis.

2. Descriptive accounts of intrusive /r/

2.1. Introduction

This chapter begins by defining key terms and concepts used throughout the present thesis. First, I give a definition of /r/-sandhi along with an explanation of what is generally meant by /r/-ful and /r/-less dialects. Given the fact that a great deal of empirical research has concentrated on the investigation of traditional claims made in theoretical analyses (e.g., /r/-intrusion is overtly stigmatized by native speakers), it is important to have a sound understanding of general statements concerning intrusive /r/. Thus, in the pages that follow the discussion of basic terminology, I provide an overview of how descriptive accounts treat intrusive /r/.

2.2. The division of dialects

Present day varieties of English are traditionally classified into two different types on the basis of the distribution of /r/. Dialects where an /r/ is realised in all phonological

environments fall under the general heading of rhotic or /r/-ful dialects, namely General American, Scottish, Irish, Canadian English as well as the south-west region of the UK² (commonly known as the West Country). Non-rhotic or /r/-less dialects in most of England, Australia, New Zealand, Wales, South Africa and certain parts of New England do not allow the /r/ to occur in preconsonantal position (*warm*) and before a pause (*bar*). The most famous non-rhotic accent is undoubtedly 'Received Pronunciation (RP)' which has been traditionally associated with educated speakers of the upper echelons. Although dialects of English are mainly divided into two major categories: rhotic and non-rhotic; there exists a third dialect type called semi-rhotic³ which is neither consistently rhotic, nor consistently non-rhotic (Wells, 1982). For instance, Jamaican English retains the pronunciation of /r/ in word-final contexts (*war*), but deletes it preconsonantly (*ward*).

When describing phonological contexts in non-rhotic speech, an important thing to note is that the term 'postvocalic' is frequently applied in reference to the position of /r/ within a word. Giegerich (1992: 62) claims, however, that this term is not precise enough because 'postvocalic' does not exclude words such as *hurry*, *herring* or *Tory*, where the phoneme /r/ stands in intervocalic position and thus /r/-deletion never happens. In order to avoid ambiguity, Giegerich (1992) incorporates syllable structure into his own explanation of rhoticity and proposes a new definition that classifies accents depending on the realisation of coda-/r/. To be more specific, it is the non-rhotic varieties of English which do not permit /r/ in syllable codas (i.e., in words such as *beer* or *port*).

2.3. Linking /r/

Non-rhotic accents have experienced a slow-paced sound change⁴ which resulted in the loss of historical coda /r/, whereas rhotic accents have shown resistance to this change. Non-rhotic

² For a more complete list of rhotic and non-rhotic accents, see Wells, 1982:220.

³ North Yorkshire English is often labelled as semi-rhotic, but here the distribution of /r/ is distinct from that of Jamaican English. French (1988) analysed audio recordings of inhabitants of Settrington to find out more about semi-rhoticity in North East Yorkshire, and he also examined the variable realisation of word-final /r/. See the results of his study in Auer, P. & Luzio, A. (1988). *Variation and Convergence: Studies in Social Dialectology*.

⁴ There has been little agreement on the exact ordering, dating and interconnectedness of the historical processes leading to the loss of rhoticity. Wells (1982) argues that Pre-R Breaking, Pre-R Lengthening and R-Dropping have accounted for the rise of non-rhoticity. McMahon (2000) concurs with Wells that the above mentioned processes are three distinct phenomena.

speakers only pronounce the /r/ when it is found before a vowel, as in *racoon*, or intervocally in *various*. While coda /r/ is never realised in non-rhotic varieties (including both word-final and preconsonantal positions), a word-final /r/ as in *wear* does surface when a vowel-initial word or a suffix is attached to it, *wear and tear* and *wear+able* respectively. This is conventionally referred to as linking /r/⁵ which may occur in connected speech, provided that no pause intervenes.

Considering the different behaviour of /r/ in *wear/wear and tear*, it can be concluded that there appears an /r/~∅ alternation in pronunciation between words according to the phonological environment. Prevocally, /r/ is pronounced, but it is silent (realised as zero) word-finally. Bear in mind that one of the distinguishing features of non-rhotic dialects of English is the above mentioned linking /r/ alternation.

The table below illustrates this alternation:

(1) /r/~∅ alternation

	Vowels			
	/ɑ:/	/ɔ:/	/ə/ ⁶	/ɜ:/
_r#	guitar[∅]	floor[∅]	stammer[∅]	transfer[∅]
_r#V	guita[r] in	floo[r] of	stamme[r] out	transfe[r] all
_r#C	guitar[∅] pick	floor[∅] tiles	stammer[∅] when	transfer[∅] student
_VrV	guita[r]ist	floor[r]ing	stamme[r]er	transfer[r]able

It should be remarked that word-internal linking /r/⁷ (e.g. *transfer+able*) is obligatory in RP, but word-finally it is not produced categorically since its occurrence never follows an entirely consistent pattern. As a case in point, Jones (1960) says that the application of linking /r/ tends

⁵ Lewis (1975) points out that linking /r/ is carefully avoided after honorific titles such as *Doctor, Sir, Mr etc.*

⁶ Centring or centering diphthongs (those ending in schwa) as well as triphthongs also belong here, i.e. /ɪə/ as in *gear*, /ʊə/ as in *cure*, /eə/ as in *snare*, /aɪə/ and /aʊə/ as in *dire* and *shower*, and /ɔɪə/ in *choir*. Gimson (1980) draws attention to the fact that the diphthong /ʊə/ is often monophthongised by RP speakers, thus turning *poor* /pʊə/ into a long monophthong /pɔ:/. For additional information on monophthongisation and the phenomenon of 'smoothing', see Wells (1982).

⁷ Although it is beyond the scope of this thesis to discuss possible constraints on the usage of linking /r/, there is a considerable amount of variation among speakers as regards its occurrence in connected speech (Hannisdal 2006; Bauer & Warren, 2004; Hay & Sudbury, 2005).

to be highly idiosyncratic for speakers. Although the rule may operate across sentences, it must be stressed that there are further factors apart from pause that can inhibit its application. Nespor & Vogel (2007: 240) discuss 'pragmatic and phonological conditions' that must be satisfied for linking /r/ to apply. For example, the sentences must semantically and syntactically relate to each other (i.e., existence of logical connection between them) and more importantly, may not be uttered by two different speakers (Nespor & Vogel, 2007).

2.4. Intrusive /r/

The disappearance of coda /r/ as expressed in syllabic terms, however, has brought about another significant change in /r/-less dialects as far as the underlying representation⁸ of word-final /r/ is concerned. Consider for example the pronunciation of two different words, namely *floor* and *flaw*. Since non-rhotic speakers no longer produced the item *floor* as */flɔ:r/ in preconsonantal positions, it has become homophonous with *flaw* /flɔ:/. *Even though these words differ in spelling, being identical in pronunciation due to the loss of coda /r/ has erased the distinction between them.*

As a consequence, words having historical final /r/ (e.g. *floor*) and words never having /r/ but ending in the same vowel (*flaw*) have been confused by speakers of non-rhotic accents and thus an 'intruding' /r/ has been inserted resulting in forms, such as a *flaw*[r] in /flɔ:rɪn/ reasoning. This phenomenon is widely known as intrusive /r/, and it can either occur after a morpheme boundary (word-internally), as in *straw*[r]y, or appear after a word-boundary (word-finally), i.e., *awe*[r] and *respect*. From the data in the following table, it is apparent that the distribution of intrusive /r/ is restricted to the same phonological contexts as linking /r/. To put it another way, the set of vowels triggering linking and intrusive /r/ are the non-high vowels (i.e., /ɑ:/, /ɔ:/, /ə/, /ɜ:/). The domain where both linking and intrusive /r/ operate is the utterance (U), which is identified as the topmost phonological phrase level (Nespor & Vogel, 1986).

⁸ In generative phonology, two levels of representation are to be distinguished. The underlying or phonological representation (UR) illustrates a native speaker's knowledge about the abstract phonological system of his/her language (Kenstowicz & Kisseberth, 1979).

(2) Intrusive /r/ environments

	Vowels			
	/ɑ:/	/ɔ:/	/ə/	/ɜ:/
_r#	ska[ø]	gnaw[ø]	Zappa[ø]	Depardieu[ø]
_r#V	ska[r] and reggae	gnaw[r] at	Zappa[r] albums	Depardieu[r] is
_r#C	ska[ø] beat	gnaw[ø] through	Zappa[ø] plays	Depardieu[ø] will
_VrV	ska[r]ish	gnaw[r]ing	Zappa[r]esque	Depardieu[r]ian ⁹

In connection with schwa, it should be mentioned that an increasing body of recent literature has challenged its phonemic status in the vowel inventory (Giegerich, 1992, 1999; Heselwood, 2006). Due to the phonetic similarity existing between approximant /r/ and schwa (McMahon, 2000), Heselwood (2006) claims that final /ə/ is not a phoneme of RP but an allophone of /r/. He argues, in part, on the grounds that they are in complementary distribution, that is to say, /r/ and /ə/ can only occur in mutually exclusive environments (cf. commA~letteR merger). Similarly to Heselwood, Giegerich (1992) also relies on the phenomena of linking **and** intrusive /r/ as a way of proving that schwa cannot be stored underlyingly as a non-high vowel.

To account for the motivation behind /r/-intrusion, or why non-rhotic speakers insert an /r/ when there is no /r/ in the spelling, it has often been assumed that the phenomenon of intrusive /r/ can be interpreted as an overgeneralisation or the lexical extension of the surface alternation of linking /r/ to words ending in the same set of vowels. By accepting the former theory, the motivation behind intrusive /r/ is explained in terms of a process of analogy (Gick, 1999; Durand, 1997; Sóskuthy, 2009).

Intrusive /r/ even applies to loanwords borrowed from other languages, consider *bourgeois[r]* (ideology) from French, *sonata[r]* (of Beethoven) from Italian, or the Sanskrit *bandana[r]*(available). When pronouncing foreign names, Maidment (2012) gives an example of how BBC News political correspondent Nick Robinson refers to the current French president as */frɒnswɑːrɒlənd/* (François Hollande). Furthermore, acronyms such as *NASA[r]*

⁹ Note that there are only a handful and rather weird-sounding examples for word-internal r-intrusion. Examples usually attested in empirical studies will be discussed at greater length in chapter 3. The following words are generally used as examples in textbooks: *draw[r]ing*, *saw[ing]*, *withdraw[r]al*, *banana[r]y*, *Kafka[r]esque*, *Shaw[r]ism*, *magenta[r]ish* (McMahon 1994:41).

(engineers), or PETA[r] (activists) also trigger intrusive /r/ (Wells 1982; McMahon 2000). According to Jespersen (1909), intrusive /r/ has been so deeply entrenched in English speech that native speakers actively produce it when learning foreign languages. Wells (1982: 226) also remarks the presence of /r/-intrusion in French, German and Latin phrases uttered by English people. The following examples serve to illustrate this:

- (3) German:
Ich habe[r] einen Hund; Ich bin ja[r] auch fertig
- (4) Latin:
hosanna[r] in excelsis; dona[r] eis requiem
- (5) French:
J'étais déjà[r] ici
- (6) Welsh:
Fe wela[r] i rywbeth

(examples from Wells, 1982: 226)

It has been shown previously that the appearance of intrusive /r/ is confined to a limited set of vowels, i.e. non-high; however, /r/-intrusion also takes place whenever an unstressed final vowel is reduced to schwa in regional non-standard varieties of English. Evidence from a Norwich study¹⁰ carried out by Trudgill (1974:162) seems to support this, for instance 'give it to[əɹ] Anne', 'lot of[əɹ] old', 'quarter to[əɹ] eight' (mainly used by working-class people). Another environment for the potential appearance of intrusive /r/ is well attested in Cockney¹¹ where *h*-dropping occurs even in stressed content words (e.g., *happy*) and thus makes the environment suitable for /r/-insertion (e.g., *Sarah[r] (h)appened* to be in London). Carr (2004:74) mentions that in London English¹² speech, 'Ida Handel' might sound like 'Ida

¹⁰ Trudgill (1974) reported that the presence of /r/ in the word *extra* blocked the production of intrusive /r/ in Norwich. Although his findings revealed no variation at all in /r/-intrusion, it would be a mistake to conclude that invariability found in Norwich holds true for other accents as well. Foulkes (1997) proved that significant social patterning can be observed in Newcastle English.

¹¹ Interestingly enough, the first mention of the phenomenon of r-insertion (*Belindar*, *Dorindar* for Belinda and Dorinda respectively) can be found in Sheridan's *A Course of Lectures on Elocution* (1762:47) who describes it as a 'vice in cockney pronunciation'.

¹² Carr adopts the term 'London English' to refer to the traditional working class speech of the East End of London generally known as *Cockney*.

Randall'. Moreover, a highly characteristic feature of a Cockney accent is the different realisation of the MOUTH vowel as [ɔ̃ə] or [æ:], which also feeds r-intrusion, i.e., *how[r] often, now[r] and again* (Wells, 1994).

There seems to be a discrepancy between the Eastern Massachusetts dialect and RP in the distribution of intrusive /r/. McCarthy (1991, 1993) argues that the rule of /r/-intrusion becomes inoperative whenever a function word appears. Thus, the following function words or rather contractions are never followed by intrusive /r/: *shoul**da* (should have), *coul**da* (could have), *migh**ta* (might have), *gon**na* (going to), *wan**na* or *wan**tsta* (want to), *haf**ta* or *haf**ta* (have/has to), *sup**posta* (supposed to), *us**eta* (used to) (examples from McCarthy 1993:173). That being the case, *wanna eat* can be correctly interpreted since it is never realised as *wan**da*[r]*eat* (McCarthy, 1993).

Contrary to McCarthy, Wells (1982) highlights that the contracted function words such as *gon**na*, *wan**na* and *ough**ta* are treated differently in SSBE, that is to say, /r/-intrusion applies after them. It would be interesting to know whether SSBE speakers produce such forms in colloquial speech and vice versa, how intrusive /r/ is distributed in Eastern Massachusetts English. Unfortunately, no studies have investigated the correlation between r-intrusion and function words and thus it remains a source of uncertainty.

Before turning to the discussion of theoretical claims on /r/-intrusion, there are a number of points I wish to summarize. First, /r/-sandhi along with /r/-liaison are general terms that are used to collectively refer to linking /r/ and intrusive /r/. Second, as both processes attract the same set of vowels and phonetically are hardly distinguishable (i.e., the degree of consonantal constriction rarely differs between them), linking and intrusive /r/ cannot be treated as two distinct phenomena in pronunciation. Therefore, spelling is the one and only way to differentiate a linking /r/ from an intrusive one. Considering the reformulation of the definition on /r/-sandhi presented above, it can be claimed that when the appearance of /r/ has a historical basis (i.e., word-final /r/ has always been present as in *sore*), it is called linking /r/; in all other cases an etymological intrusive /r/ is being dealt with (*saw*[r] *edge*).

Based on the 'four-R systems' proposed by Harris (1994:232), dialects of English can be classified into four different systems as regards the presence or absence of linking/intrusive /r/. The table below shows the classification:

- (7) The four-R systems

	System A	System B	System C	System D
Type:	Rhotic	Non-rhotic	Non-rhotic	Non-rhotic
Geographical location:	Canada, Ireland, Scotland, most of the US, parts of the Caribbean	Standard Southern British English ('pure' British accent described in Gimsonian textbooks)	most of England, certain parts of the eastern and southern US, southern hemisphere	'conservative dialects spoken in the Upper South of the US' (p. 232) 'deep vernacular' (p. 293) areas
Linking /r/	NO	YES	YES	NO
Intrusive /r/	NO	NO	YES	NO
Comments:	/r/ is realised as a flap or approximant	intrusive /r/ of System C may be attested in today's SSBE	basic non-rhotic system in England	/r/ has the same distribution as /h/

As regards System B, there seems to be some doubt about the non-existence of /r/-intrusion in this system. For this reason, an alternative classification which does not distinguish System B from System C may be equally acceptable where intrusive /r/ is said to be variable. Given the four different systems, we can take a look at the phonological contexts as well. Note that each system has its own distributional pattern and thus restricts the occurrence of /r/ to different positions (data from Harris, 1994).

L= Linking; I= Intrusive

(8) Summary of the distribution of /r/ and r-sandhi across the four systems

	Examples	A	B	C	D
Rc	beard, cart, source	+	-	-	-
#rV	red, rack, rude	+	+	+	+
rV	very, carry, dairy	+	+	+	-
r#C	bear to, poor man (L)	+	-	-	-
r#C	sofa by, idea to (I)	-	-	-	-
rll	bear, star, poor	+	-	-	-
r#V	bear up, poor Eve, bearing (L)	+	+	+	-
r#V	sofa and, idea of, drawing (I)	-	-	+	-
r+V	starry (L)	+	+	+	-
r+V	withdraw+al (I)	-	-	+	-

(based on Harris, 1994)

2.5 Theoretical claims

There is a general phonological restriction on intrusive /r/, namely, it can only appear after words ending in non-high vowels (at least, in standard varieties of English). However, there has been a lack of agreement between theoretical descriptions and research studies as to whether all non-high vowels influence the likelihood of intrusive /r/ to the same extent. Standard phonetic textbooks (Jones, 1964, 1972; Gimson, 1970, 1980) emphasise that rates of /r/-intrusion tend to be significantly higher after /ə/ regardless of educational background. Gimson (1970:209) also discusses the common usage of forms like *Russia[r]* and *China* /rʌʃər ən'tʃaɪnə/ in RP and claims that speakers are likely to be more conscious of inserting such unhistorical /r/s after /ɔ:/ and /ɑ:/ due to the rare occurrence of words ending in these vowels.

While Gimson notes that /r/-intrusion after /ɔ:/ regularly attracts criticism, he remarks on the stigma attached to it. He suggests that if the spelling had been modified to fit historical sound changes in pronunciation (consider the loss of historical /r/ in *shore* for example),

speakers would not have found intrusive /r/ highly objectionable in educated speech (Gimson, 1980). In fact, it is reasonable to suppose that the term '*intrusive*' might serve to or even warn speakers to avoid the pronunciation of such /r/s.

When discussing the insertion of a similarly inetymological /w/ in the phrase *go[w] on*¹³, Lewis (2010) deliberately uses the term '*epenthetic*' not to imply a negative evaluation concerning speech habits. The idea of using *epenthetic*, instead of the general term '*intrusive*', as a way of referring to the addition of a consonant which is not in the spelling is also encouraged by Kraut (2010) since this word does not carry negative connotations at all.

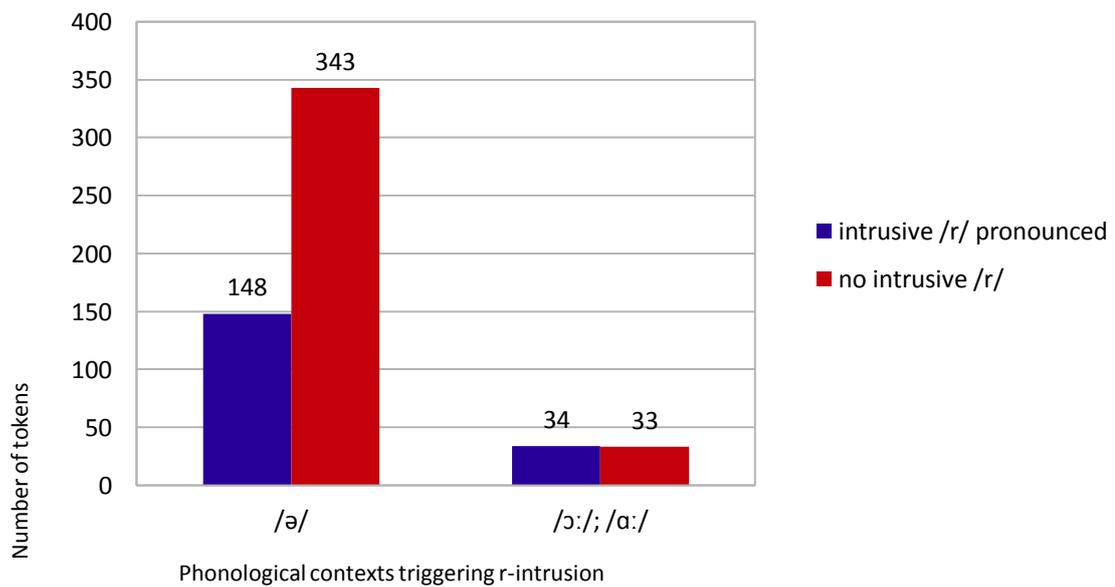
Returning to the role of non-high vowels in the incidence of intrusive /r/, Crystal (1984:42) suggests that /r/-intrusion is particularly noticeable after /ɔ:/ given the openness of the vowel and thus in most cases, it is advisable to pronounce *law and order* without /r/-insertion. When tracing the development of /r/-sandhi, Wells (1982, 1994) states that intrusive /r/ emerged significantly later after /ɔ:/, which may also be accounted for by the general avoidance (and condemnation) of /r/-intrusion in this environment. While both Gimson and Crystal share the same view that intrusive /r/ is often condemned after /ɔ:/, they attribute it to different facts. Crystal names the quality of the vowel, but Gimson refers to the low frequency of words ending in /ɔ:/ that can make /r/-intrusion particularly salient and disgraceful after this context.

As opposed to the above descriptive accounts, Hannisdal's research results (2006) demonstrate that levels of intrusive /r/ are considerably higher after /ɔ:/ and /ɑ:/ in RP. Despite the fact that the corpus, which was compiled from audio recordings of news broadcasts, contains fewer sites where /r/ may intrude after /ɔ:/ and /ɑ:/, it can be concluded that neither /ɔ:/, nor /ɑ:/ restrain newsreaders from producing intrusive /r/s.

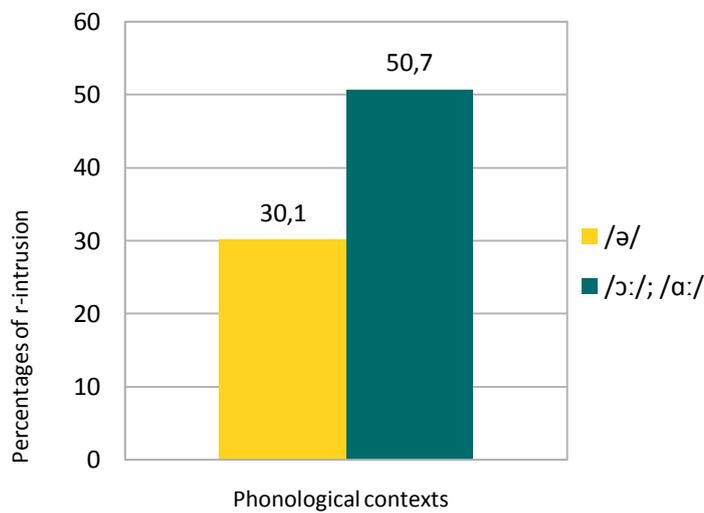
The diagram below indicates how rates of /r/-intrusion change according to the relevant phonological environment. Given the small set of examples in the corpus where intrusive /r/ occurs after /ɑ:/ (only 4 words were identified yet all of them triggered r-insertion), Hannisdal does not treat instances of r-insertion after /ɑ:/ separately from that of /ɔ:/. Therefore, I shall use one column to represent results concerning /r/-intrusion after /ɔ:/ and /ɑ:/.

¹³ Different sounds are used in non-rhotic varieties of English to solve the problem of hiatus. /r/ is used after non-high vowels, whereas the glides /w/ and /j/ are inserted after the high back and high front vowels, respectively. For detailed information on hiatus-solving techniques, see e.g. Stene 1954; Britain & Fox 2009; Mompeán & Gómez 2011.

(9) Influence of the quality of the preceding vowel on the likelihood of r-intrusion



In the second diagram, the figures for actual r-intrusion are expressed in percentage terms as well in order to highlight frequency differences between the two groups of vowels, /ə/ and /ɔ:/; /ɑ:/



/ɑ:/ respectively.

(10) Occurrence of intrusive /r/ in percentages

(data coming from Hannisdal 2006:176)

Altogether, the spoken corpus contained 491 potential /r/-intrusion sites for /ə/ where 148 tokens were realised with /r/-insertion. This adds up to 30.1 %. As to /r/-intrusion after /ɔ:/ and

/ɑː/, 34 cases out of 67 tokens reveal the use of intrusive /r/, which corresponds to 50.7 %. Thus, the results of Hannisdal's research challenge general assertions about the production of /r/-intrusion, that it is strongly disfavoured by speakers after /ɔː/ and naturally preferred after /ə/. These findings accord with earlier claims made by Brown¹⁴ (1988) who stated that the vowel /ɔː/ triggers more /r/-insertion than the other two non-high vowels.

The overt stigmatisation of intrusive /r/ has always been a recurring issue of descriptions on /r/-sandhi. To give an example, Crystal (1984) discusses how the widespread use of intrusive /r/ by BBC announcers has provoked hostile reactions from the general audience of the broadcasting corporation. As an illustration, he quotes the following letter from an angry writer who cannot hide his exasperation at presenters' slovenly habits of speech:

“When I (now aged 75) was educated, this was considered a serious mispronunciation. ...I have been keeping an ear on Radio 4 participants, and have been astonished and -let me admit - horrified at the extreme prevalence of this error among today's talkers. In a couple of hours' listening on Radio 4, I hear maybe 20 intrusives - eight in one *Kaleidoscope*¹⁵ alone!” (Crystal, 1984, p. 36)

However, bear in mind that the above letter of complaint comes from an aged man whose pronunciation is very likely to be labelled old-fashioned by a present-day English speaker. In addition, such an ideological speech model is practically non-existent today, and changes that have occurred in RP must be acknowledged by conservative speakers as well¹⁶. For instance, Hannisdal (2006: 172) reports that 90% of the newscasters (BBC World, Sky News and ITV News) participating in her research produce intrusive /r/ which might indicate the naturalness of r-intrusion even for RP speakers. Despite the small data set where intrusive /r/ may occur, Hannisdal (2006) calls attention to the fact that this /r/-insertion process is performed unconsciously as far as native speakers are concerned.

Therefore, it is often claimed in the literature that most British people are indeed struggling to cope with the elimination of intrusive /r/s from their speech (e.g. Gimson, 1980;

¹⁴ Brown (1988) points out that words ending in /ɔː/, such as *law*, *raw*, *awe*, or *saw*, are frequently used in English and mentions this as a valid reason for why /r/-intrusion operates at the highest level after /ɔː/.

¹⁵ In order to avoid confusion, *Kaleidoscope* does not refer to the word where an intrusive /r/ was produced. It was the name of the radio programme which was broadcast on BBC Radio 4.

¹⁶ RP speakers have incorporated certain 'pronunciation innovations' coming from non-standard accents into their speech, i.e. r-intrusion, t-glottaling, /l/ vocalisation, yod coalescence (Wells, 1994).

Wells, 1982; Hughes & Trudgill, 1996). As Crystal (1984: 42) points out, speakers rarely succeed in completely abandoning 'intruding' /r/s. Depending on the rate of speech, they might even suppress the use of linking /r/ which has always been justified by the spelling and accidentally end up speaking affectedly. Although elocutionists and language purists such as Sheridan or Turner would still abhor the pronunciation of *law and order* as /lɔːr ən ɔːdə/, it is clear that a smaller number of people find intrusive /r/ coarse or vulgar these days.

3. Regional variation

3.1 Introduction

Existing knowledge of variation in /r/-sandhi is primarily based upon empirical studies which have investigated the role of linguistic and non-linguistic factors on the production of linking/intrusive /r/. Before I provide an in-depth review of research findings, it is worth stressing that all of these studies have refuted former claims that these phenomena are categorically present at word-boundaries. While it is widely discussed that /r/-intrusion may be suppressed on the part of RP speakers due to its potential stigmatisation, little attention has been paid so far to other varieties of English that also have linking/intrusive /r/. Thus, the purpose of this chapter is to give a summary of how the use of intrusive /r/ patterns in different English accents and dialects. Special focus will be given to a group of factors (e.g., vowel quality, social class, to mention but a few) influencing intrusive /r/ production.

3.2 New Zealand English

Potential linguistic and social constraints on the use of intrusive /r/ in New Zealand English were examined by Hay & Maclagan (2006). They carried out a reading and production study involving 16 university students (4 males, 12 females) in order to test their hypothesis that the occurrence of intrusive /r/ in non-rhotic New Zealand English might behave as a '*sociolinguistic variable*' (Hay & Maclagan, 2006:44). The participants could exhibit /r/-insertion in 48 sentences which were formulated to represent all the phonological environments in which intrusive /r/ might possibly occur.

It is essential to note that the phonological conditions on the appearance of intrusive /r/ seem to be different in New Zealand English as the diphthong /au/ is also acting as a potential environment for /r/-insertion besides non-high vowels (Hay, 2001). Before discussing the experiment data, some points need to be clarified as regards the phonetic realisation of /au/ in this dialect. In general, New Zealand English is said to be a homogeneous variety of English

with relatively little regional variation. However, variation in pronunciation between different age groups has been observed as 'advanced' pronunciations of the closing diphthongs have been adopted by younger speakers. In particular, the MOUTH vowel has undergone a so-called 'diphthong shift' which means that the first element of the diphthong /au/ has gradually moved towards [æ], whereas the second element has almost weakened to schwa due to 'glide weakening', i.e., [æʊ] → [æə]¹⁷ (Gordon, 2004).

But advanced speakers opting for the incoming, linguistically innovative variants may turn [æ] into [ɛ], hence realising the MOUTH vowel as [ɛə]. Gordon (2004:28) claims that 'while MOUTH moves towards FOOT for the women, it shows very little closing movement for the men'. Thus, its realisation ranges from the 'conservative' [æʊ] to [æə] or even to the 'advanced' [ɛə] (p. 28). Note that in New Zealand English, /r/-intrusion also occurs after /au/ if the second element does not approximate the central position of schwa (Hay & Warren, 2002). In the present study, Hay & Maclagan (2006:63) reported two instances where the target word was pronounced with a triphthong [æʊə], and also drew attention to the fact that /au/ was never monophthongised to /a:/ by their participants.

To investigate possible /r/-intrusion after /au/, one of the base words that was chosen to elicit intrusive /r/ was the base *plough* to which different affixes (-y, -ese) and word boundaries (-ing) were attached in the target sentences, i.e., *The farmer is out plough-ing in the field* or *The plough manufacturing company plans to completely plough-ify farms in New Zealand* (Hay & Maclagan, 2006, p.70).

When it comes to interpreting the results, Hay & Maclagan (2006) documented 5 different factors that exerted some influence on the production of intrusive /r/, namely *gender, age, class, the base words* and *the identity of the affix*. Based on their study, it can be concluded that the rate of /r/-intrusion is more frequent in male than in female speakers. This gender difference is more apparent after /au/. However, due to the relatively low number of male participants, it remains to be seen whether accurate predictions can be made on the basis of one's gender about the likelihood of /r/-insertion (Hay & Maclagan, 2006). As a consequence, one of the weaknesses of this research is the failure to demonstrate the effect of gender on /r/-sandhi production.

¹⁷ While [æə] may trigger /r/-intrusion both in New Zealand English and in Cockney as well, it should be emphasized that only Cockney speakers monophthongise [æə] to [æ:] and pronounce it with an intrusive /r/ (Wells, 1982).

Further observations of their experiment revealed that the presence or absence of intrusive /r/ was affected by the identity of the affix in a way that there was a sharp increase in the occurrence of /r/-insertion after the strong boundary affixes (*claw#ing*, *oprah#ish* for example). The following table ranks the affixes in descending order.

(11) Rate of r-intrusion according to the type of suffix

Affix			
- ing >	- ish, -ize, -y >	- ify >	- ism, -ese
			
highest	rate of /r/-intrusion		lowest

As far as the role of social class is concerned, of the six base words *ma*, *bra* and *plough* showed a direct correlation between the participant's social status and their level of /r/-intrusion, since speakers belonging to lower social classes produced considerably more intrusive /r/s. In addition, Hay & Maclagan (2006) found evidence to support their overall hypothesis according to which the degree of consonantal constriction of intrusive /r/ should reveal social variation, too. This theory was successfully verified by the fact that a significant decrease was noticed in constriction degree in those participants who were coming from high-class backgrounds (p. 55). Moreover, these speakers hardly ever inserted /r/ after /au/ which might be attributed to the possible stigmatisation of /r/-insertion by upper-class people.

However, the findings require further investigation in order to identify whether the use of intrusive /r/ after /au/ is a linguistic peculiarity of New Zealand English, or rather its changing phonetic realisation is responsible for /r/-insertion in this particular dialect. While the study clearly demonstrates both social and phonetic variation in the pronunciation of intrusive /r/, Hay & Maclagan made no attempt to measure the effects of speech style and rate, speech consciousness or possible self-monitoring on the likelihood of the insertion of /r/.

Finally, it is important to remember that the words chosen to test intrusive /r/ usage are a bit unrealistic and weird due to the attachment of various affixes to the base words (for example, *ma-ify*, *plough-ese*, *bra-y*, or *sofa-ize*). Consequently, natural conversation patterns may be better for analysing connected-speech processes as they contain typical features of spoken English. It would be interesting to see whether commonly used words that occur in day-to-day communication (e.g., *idea*, *pizza*, *spa*, *draw*, or *banana*) show the same social and phonetic patterning.

3.2.1. The emergence of /r/-sandhi in New Zealand English

The linguistic behaviour of partially rhotic speakers has also been subject to investigation since results emerging from these studies might help to disclose the relationship between the loss of rhoticity and the emergence of /r/-sandhi. A corpus-oriented study about /r/-sandhi in New Zealand English was performed by Hay & Sudbury (2005). They conducted a detailed analysis of 65 recorded interviews made with first-generation New Zealanders in the mid-nineteenth century when this dialect of English was partially rhotic. Since present New Zealand English exhibits non-rhoticity, the main purpose of the research was to synthesize data from the available audio recordings and to find information about how linking and intrusive /r/ emerged in this dialect in the nineteenth century. Note that this was the first study to confirm the hypothesis that the parallels between these two phenomena could not be merely coincidental. Indeed, these research results gave evidence for a strong causal link between the loss of rhoticity and the emergence of /r/-sandhi. Accordingly, Hay & Sudbury (2005) documented that the more rhotic the speakers were, the less likely they produced intrusive /r/ and linking /r/ at word boundaries.

Concerning variation in /r/-sandhi, Hay & Sudbury (2005:812) observed that speakers tended to produce less linking /r/ in common collocations (e.g., *anywhere else, later on, for instance*) irrespective of gender and age, but the exact opposite held true for the use of intrusive /r/. What is surprising about these results is that commonly used word combinations such as *the idea of* were not pronounced with /r/ in the overall majority of cases (Hay & Sudbury, 2005, p. 815). However, it could be argued that these figures are now outdated and therefore do not represent actual usage of /r/-sandhi since the findings are based on a sample of New Zealand speakers born between 1860 and 1925. Thus, these results must be interpreted with caution, and it is possible to hypothesize that *idea* does attract /r/-intrusion in present-day New Zealand English. Hay & Sudbury (2005: 813) are the first to give concrete proof of the 'co-existence' of partial rhoticity and intrusive /r/ production, that is to say, partially rhotic speakers may as well use /r/-insertion in traditional sandhi contexts¹⁸.

¹⁸ Barras (2010) offers findings inconsistent with standard phonological accounts. He reports that there are rhotic speakers in his research who produce intrusive /r/s in traditional /r/-sandhi environments (i.e., after non-high vowels). By doing so, Barras goes beyond what the related literature on /r/-sandhi seems to suggest and challenges the widely-accepted notion that the appearance of intrusive /r/ must be phonologically restricted to non-rhotic varieties of English. He argues that the presence of rhoticity does not rule out the production of intrusive /r/, hence it is equally possible for rhotic speakers to have intrusive /r/s without being hyper-rhotic

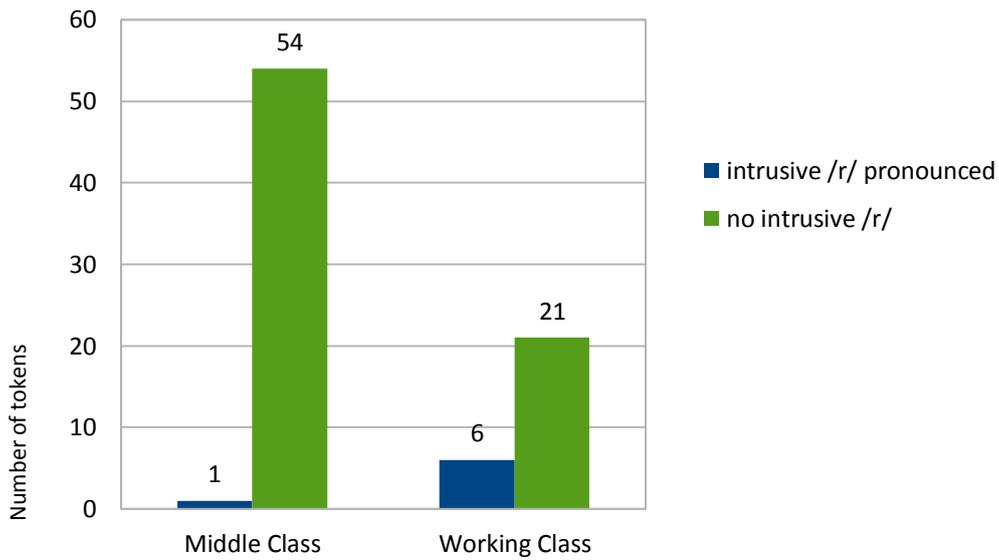
3.3 Newcastle upon Tyne and Derby

While it is true that a relatively low priority has so far been assigned to the empirical investigation of regional accents, extensive studies on Newcastle upon Tyne and Derby have thrown new light on our understanding of the sociolinguistic patterning of /r/-sandhi in English. Foulkes (1997) analysed recorded conversations between Newcastle and Derby speakers where interruptions were kept to a minimum to enable maximum participation from the informants and at the same time, encourage a free flow of ideas. Besides, word-list reading was also involved in this fieldwork in order to elicit intrusive /r/ in careful speech style since the degree of speech formality might influence the production of /r/-sandhi.

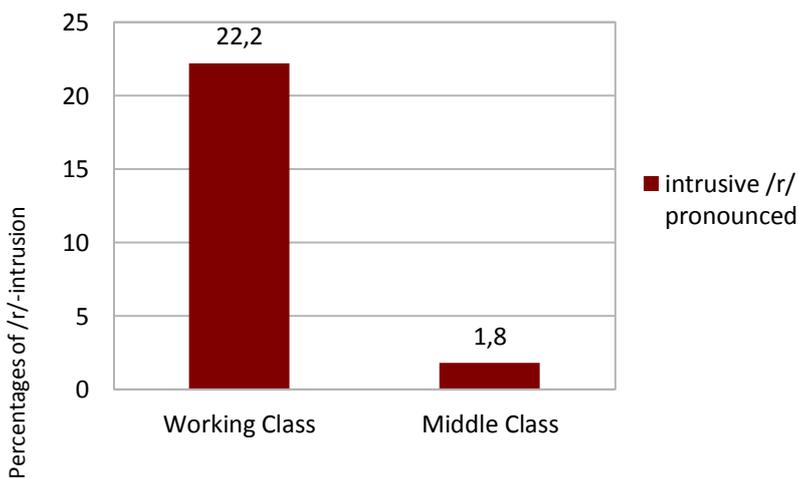
Thus, this corpus covered a representative sample of working and middle class speakers from both cities which could adequately reflect potential social variation and similarly, it was also appropriate for an analysis of stylistic variation as different speech styles were incorporated into the data set (i.e., natural conversation and carefully monitored reading tasks). On the evidence of the results, a clear-cut distinction can be drawn between Newcastle and Derby English speakers in terms of /r/-sandhi usage. First of all, there is a definite lack of sociolinguistic conditioners (namely, *age* and *class*) on the occurrence of linking and intrusive /r/ in Derby and therefore the likelihood of these phenomena cannot be predicted by a speaker's age or social status (Foulkes, 1997, p. 81). It should be mentioned that one of the limitations of that study is the absence of explanation for the almost categorical appearance of /r/-sandhi in Derby.

However, one of the most striking features of Foulkes's findings is that in Newcastle English, sociolinguistic restrictions on the pronunciation of linking and intrusive /r/ equally exist. More specifically, in the speech of middle class and older people linking /r/ appears the most frequently while speakers from low working-class backgrounds produce greater degree of /r/-insertion (Foulkes, 1997, p. 82). But it should be kept in mind that the occurrence of intrusive /r/ is far from being prevalent in the working class speaker group.

The diagram below stands for representing the above mentioned results.



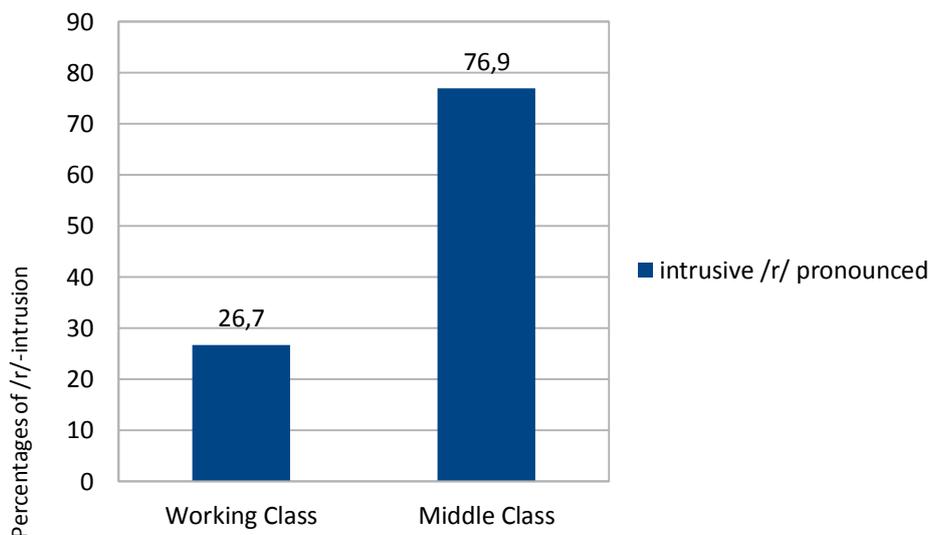
(12) The effect of social class on /r/-intrusion in Newcastle (data from conversations)



(13) Class difference in /r/-intrusion in percentages (data from conversations)

Although Foulkes (1997) reported that intrusive /r/ was almost non-existent in informal conversations recorded between Newcastle middle class speakers (see diagram 12), his further analysis, which was based on data collected from word-list reading, saw a sharp contrast with the above results. Contrary to expectations, an overall increase was observed in the use of intrusive /r/ when participants were required to read aloud a target list of words.

(14) Class difference in /r/-intrusion in percentages (word-list reading)



(all data coming from Foulkes, 1997)

These findings raise intriguing questions and contradict claims that speakers tend to self-consciously monitor their speech towards the standard or 'proper' use of language when there is a certain air of formality and therefore intrusive /r/ is avoided. Note that /r/-insertion has no historical or etymological basis since the spelling does not justify the use of an 'intrusive' /r/ and this might be held responsible for its stigmatisation.

However, this study challenges the notion that this stigma is universal in all non-rhotic accents, and Foulkes (1997) gives plausible explanations of why the rates of /r/-insertion, unexpectedly, rise sharply in reading, most notably in the speech of middle class speakers of Newcastle (see diagram 14). Given the fact that intrusive /r/ has been commonly used by news reporters and radio announcers, hence it follows naturally that Newcastle speakers aim to pronounce the words in reading style according to what is thought to be correct, 'prestigious' and accepted (Foulkes, 1997, p. 83). It can be concluded, then, that broadcast speech provides a language model for Newcastle people to imitate, and as a consequence, Newcastle participants might try to slightly modify their regional accent by using highly 'non-local' features in formal contexts (p. 84).

This study also considered the question of whether orthographic knowledge affected variability existing in the likelihood of /r/-intrusion. First, Foulkes (1997: 87) reported that intrusive /r/ was the most likely to occur after rare proper nouns, including *Granada* or *Costa Blanca* and after items such as *the County Borough(r) of Derby*. Furthermore, phrases like *yeah(r) he could do* also attracted /r/-insertion, but to a lesser extent.

It has been proposed that uncertainty about the spelling of words of foreign origin might exist and consequently, this lack of orthographic knowledge would play some role in the speakers' production of intrusive /r/. While this evidence seems to lend plausibility to the hypothesis that knowledge of spelling acts as a potential factor influencing the frequency of /r/-insertion, this hypothesis was clearly refuted by the results of Foulkes (1997: 87) which demonstrated that speakers inserted an /r/ after their own names, or when the word's orthographic form was made readily available to them (for instance, a travel brochure indicating the correct spelling of *Costa Blanca*). Unfortunately, this corpus is not large enough to provide representative data regarding whether or not the presence of another /r/ has an effect on the occurrence of /r/-insertion. Foulkes (1997: 94) called attention to a clearly recognised phonological change concerning the underlying representation of the phoneme /r/ by claiming that the “historical division between r-ful and r-less words has been erased” by younger people.

3.4 Received Pronunciation & BBC English

Mompeán et al. (2009) examined the issue of variation in /r/-sandhi usage and presented an overview of a set of potentially relevant factors affecting the occurrence of linking and intrusive /r/ in Received Pronunciation (RP). The main focus of this study was to document new evidence about how the production of /r/-sandhi in RP might be constrained by a wide variety of sociolinguistic and/or phonetic factors, the presence of another /r/ in the spelling (e.g., *criteria(r)* of) or the identity of the preceding vowel for example. In addition, the study also aimed to identify the extent to which bound morphemes, compounds and collocations might contribute to variability in the use of linking and intrusive /r/. Other constraints, e.g., 'token frequency of use of expressions', that might have a great deal of influence over sandhi usage were also distinguished in the study and defined as usage-based factors (Mompeán et al., 2009, p. 738).

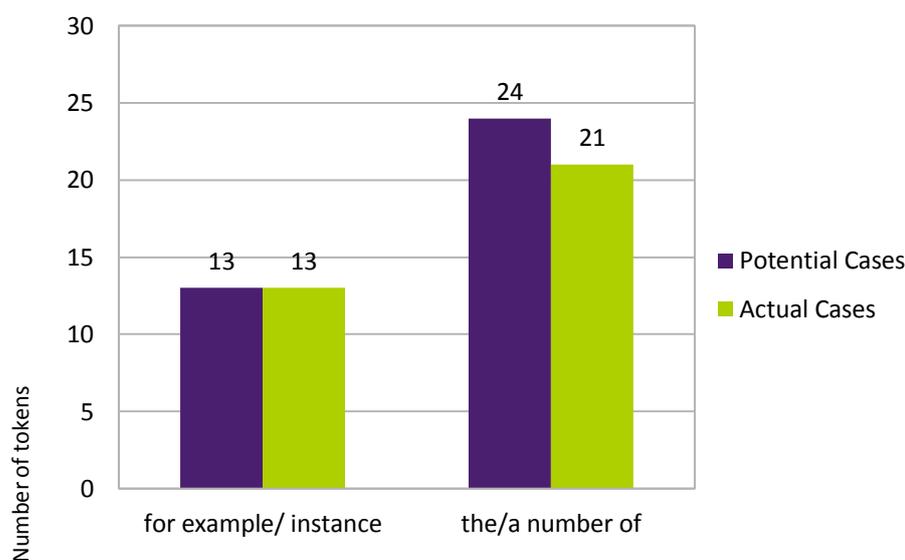
Three BBC news archives (namely, *World Service*, *Learning English*, *Words in the News*) were selected to form the basis for the corpus consisting of 263 texts read by 129 BBC broadcasters speaking RP or 'BBC English' (Mompeán et al., 2009, p. 742). The degree of social and educational homogeneity within these speakers can hardly be questioned, therefore potential correlation between /r/-sandhi production and class lies beyond the scope of this study. Instead of this, the role of gender was addressed since one major area of uncertainty about variation in /r/-sandhi is the exact interplay of gender with /r/-intrusion. Contrary to

theoretical predictions, the results failed to notice a marked difference in actual /r/-insertion between males and females; therefore the study confirmed previous findings of Hannisdal (2006: 173) who found no stark gender contrast among BBC newsreaders.

As far as the phonological contexts are concerned, the present study did not provide support for higher rates of /r/-intrusion after back vowels (Mompeán et al., 2009: 757); however, it yielded some important results concerning the likelihood of word-internal /r/-insertion. Specifically, the word *withdraw+al* triggered intrusive /r/ for all participants (p. 761). Furthermore, despite the fact that empirical research tends to regard linking /r/ word-finally as variable, Mompeán et al. (2009: 764) reported that linking /r/ was 'categorical or nearly categorical' for RP presenters.

Consider the diagram below for the appearance of linking /r/ in two word-final positions where 129 speakers were investigated, i.e., *for example/instance* and *the/a number of* respectively.

(15) Linking /r/ word-finally



(data from Mompeán et al., 2006: 765)

It can be deduced from the above presented data that linking /r/ is frequently produced in collocations. Although the corpus was designed with the aim of assessing the occurrence of both linking and intrusive /r/ in collocations, these data apply only to linking /r/ due to the lack of examples for /r/-intrusion.

Taken together, this study indicated that intrusive /r/ production did not interact with speaker's gender, and the process of /r/-insertion was not infrequent in word-internal positions

(e.g., *withdrawal*) among RP newscasters. However, one of the major limitations of the study is the inadequate examination of the frequency of intrusive /r/ in compounds and collocations.

3.5. Dialectal distribution of /r/-sandhi

Given the large-scale variation of /r/-sandhi, the following table compare and contrast varieties of English on the basis of the behaviour of linking and intrusive /r/.

(16) Regional variation in /r/-sandhi

(data from Foulkes & Docherty 1999; Broadbent, 1991; and Kortmann & Upton, 2008)

Accent/dialect	Author(s)	Linking /r/	Intrusive /r/	Observations
Tyneside	Watt & Milroy	YES	YES	Social patterning: Linking: older MC - 80% young WC - 40% <i>Intrusive</i> : “absent in unmonitored MC speech”, but high in monitored MC reading (31)
Derby and Newcastle	Docherty & Foulkes	YES	YES	Sociolinguistic patterning not significant Linking: “categorical” Intrusive: “norm for all groups” (55%) (51)
Sheffield	Stoddart, Upton & Widdowson	YES	YES	“both linking and intrusive /r/ common for all groups” (76)
Sandwell, West Midlands boroughs	Mathisen	YES	YES	Linking: “categorical” Intrusive: “very frequent in all groups” (111)
Norwich	Trudgill	YES	YES	Intrusive:

				<p>“norm”, “automatic” both at word and morpheme boundaries</p> <p>“occurs invariably” (133)</p> <p>vowel reduction (give it to[r])</p> <p>Anne</p> <p>/r/ is frequently realised as a labiodental approximant /v/</p>
Milton Keynes, Reading, Hull	Williams & Kerswill	YES	YES(?)	<p>Linking and intrusive /r/ are the norm <i>Hull</i> – “intrusive is rare after /ɔ:/” e.g. <i>law and order</i> (147)</p> <p><i>Reading & Milton Keynes</i> – “older speakers are variably rhotic” (147)</p> <p>/r/ is frequently realised as a labiodental approximant /v/</p>
South East London English	Tollfree	YES	YES	<p>“linking and intrusive /r/ almost categorical” (174)</p> <p>“suppression of intrusive /r/ sounds affected” (174) according to the participants</p> <p>R-intrusion also occurs after:</p> <p><i>h-dropping</i>, e.g. the idea[r] he's got</p> <p><i>l-vocalisation</i>, e.g. I'll[r] eat it</p> <p><i>monophthongisation</i> of MOUTH and GOAT, e.g. now[r] I will</p> <p><i>deletion of δ</i>, e.g. older[r] than Dad (174)</p>
Cardiff	Mees & Collins	YES	YES	<p>“regular occurrence of r-liaison” (193)</p>

Received Pronunciation	Upton	YES	YES	r-intrusion is the “norm” word-finally (249) word-internally also frequent (e.g. draw[r]ing) to resolve hiatus
New York, Philadelphia, the Great Lakes (Chicago, Detroit, Buffalo, Cleveland)	Gordon	YES	YES	intrusive /r/ is “especially common” after /ə/, and frequently occurs after /ɔ:/ (74)
Trinidadian and mesolectal Tobagonian	Youssef & James	YES	YES	
Ghanaian English	Huber	NO	NO	In spite of the fact that Ghanaian English is non-rhotic, speakers lack both linking and intrusive /r/
Indian South African	Mesthrie	RARE	RARE	Linking and intrusive /r/ are uncommon, glottal stops are preferred. Although the accent is non-rhotic, “the letter /r/ itself is pronounced as [ɑ:r] with a weak trill” (193)
Colloquial ¹⁹ Singaporean English	Wee	RARE	RARE	usually glottal stops are used instead of intrusive /r/s
Malaysian English	Baskaran	YES	YES	both are attested, but linking /r/ is more frequent than intrusive /r/
West Yorkshire	Broadbent	YES	YES	West Yorkshire speakers do not

¹⁹Standard Singapore English is also non-rhotic, but SSgE speakers use linking and intrusive /r/. Tan (2011) observed that r-intrusion reveals social stratification, i.e. typically occurs in working-class speech.

				suppress the production of intrusive /r/ r-intrusion is not socially stigmatised
New Zealand	Hay & Maclagan	YES	YES	significant social patterning concerning /r/-intrusion WC speakers – higher rates of r-insertion intrusive /r/ acts as a “sociolinguistic variable” (44) gender difference – males using more intrusive /r/s
“BBC English”	Mompeán et al.	YES	YES	no gender difference reported effect of social class cannot be measured overall rates of /r/-sandhi: linking /r/ significantly higher but word-internal intrusive /r/ frequently produced
East Lancashire	Barras	YES	YES	“clear evidence that rhoticity and r-sandhi have an overlapping distribution, both geographically and in terms of the behaviour of individual speakers” (195) hyper-dialectal /r/ are not documented

4. Conclusion

While the phenomenon of intrusive /r/ has puzzled linguists for decades, existing theoretical accounts are predominantly concerned with its underlying representation, that is to say, how it is stored in the mental lexicon of native speakers. When considering the process of /r/-intrusion, there is a general assumption in the literature that it is arbitrary and almost categorically performed in traditional /r/-sandhi positions (i.e., after non-high vowels).

Despite the fact that /r/-intrusion is phonologically conditioned in non-rhotic English dialects, recent research has consistently demonstrated that the likelihood of intrusive /r/ production might be socially and stylistically conditioned as well.

Therefore, it has been shown that the occurrence of intrusive /r/ is, for the most part, affected by a wide range of linguistic and non-linguistic factors in different non-rhotic varieties of English. After having provided some general information concerning /r/-sandhi in chapter 2, I have outlined major issues of descriptive accounts (e.g., rates of /r/-intrusion according to the quality of the preceding vowel). Then, in Chapter 3, I have given a detailed overview of empirical research conducted on /r/-sandhi by focusing on certain linguistic and non-linguistic factors relating to variation in intrusive /r/ production. Apart from main drawbacks associated with corpus-driven approaches (i.e., small data sets), these studies have made noteworthy contributions to our understanding of the social and regional patterning of /r/-intrusion. Given the limits of the present thesis, I have concentrated on describing three dialects/accents of English, namely *New Zealand English*, *Newcastle upon Tyne* and *Derby*, and *Received Pronunciation*. Finally, I concluded this thesis with a table showing the distribution of /r/-sandhi in different varieties of English.

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