

Intrusive *r* as Articulatorily Natural Resolution for Vowel Hiatus Resolution: Based on the Less-covered Phenomena in Rhoticity

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Shin, Jaeyeon. 2013. Intrusive *r* as Articulatorily Natural Resolution for Vowel Hiatus Resolution: Based on the Less-covered Phenomena in Rhoticity. *SNU Working Papers in English Linguistics and Language 11*, 107-125. The main goal of this paper is to investigate that intrusive *r* in English should rather be analyzed from gestural-based articulatory phonological approach as one of the resolutions for vowel hiatus, synchronic in nature; previous accounts have claimed that *r*-deletion always precedes *r*-intrusion, but the present work disproves the argument by the evidence from some varieties of English which have been little studied in terms of rhoticity, including such well-known dialects as the American Southern accent. This paper is in line with the Gick's (1999) gestural viewpoint on *r*-epenthesis with some modification and thus proposes that intrusive *r* would be an articulatory natural byproduct constrained mainly by the phonetic quality of /ɹ/, applicable to where vowel hiatus occurs. (Seoul National University)

Keywords: intrusive *r*, *r*-intrusion, rhoticity, gestural overlap, vowel hiatus, connected speech

1. Introduction

- (1) I saw it /aɪsɔ:ɹɪt/
 Ma and Pa /mɑ:ɹændpɑ:/
 law and order /lɔ:ɹɛnɔ:ɹdɔ:ɹ/

The presence of non-historical /ɹ/ of the British English where it seems not to belong, as provided in (1), has left the generations of other varieties of English in a great confusion. Many speakers would insert /ɹ/

extensively, for example, even within words, between morpheme boundaries (e.g., *drawing* /dɹɔ:ɪŋ/), and in coinages (e.g., *Kafkaesque* /kafkə:ɪesk/). (Hughes, Trudgill, & Watt, 2005)

This seemingly inexplicable phenomenon has long been puzzled over by linguists, employing a variety of approaches, and agreed to occur only in non-rhotic varieties, as a subphenomenon of non-rhoticity; the varieties of English with the phoneme /ɹ/ not occurring after a word-final vowel are called non-rhotic accents, i.e., postvocalic *r*. (e.g., *far* [fa:]) They usually drop the coda /ɹ/ in a certain position but retain it when it is followed by a word-initial vowel, i.e., linking *r* (e.g., *far away* /fa:ɹəweɪ/). The peculiarity of the unetymological /ɹ/ has thus been analyzed as a consequence from diachronic change by misinterpretation and hypercorrection, analogical with linking *r*. (Wells, 1982; Soskuthy, 2013) Some researchers, (McCarthy, 1993; Oostendorp, 2000) on the other hand, tried to explain it as an epenthesis by means of inverting phonological rule order or constraint ranking, specific to the related non-rhotic accents; they, however, could not properly account for why the epenthetic segment should be /ɹ/, which has been elucidated by Uffmann (2003) and Harris (1994). Some, including Gick, (1999) to be detailed, has handled this phenomenon as a phonetically natural byproduct as parallel as other glide insertions, synchronic in nature.

Some issues, however, still remain untouched in the literature so forth; the previous research, as we will see later in detail, has concentrated on why the insertion occurs, based on well-known non-rhotic accents such as Received Pronunciation (RP) and Northeast American accents including those of New England and New York, presuming that *r*-deletion always precedes *r*-intrusion. So little research has been carried out on non-rhotic varieties with no *r*-intrusion, such as the American Southern accent, African American Vernacular English (AAVE), and some less-covered varieties. Furthermore, some rhotic

accents are recently being reported to show *r*-intrusion although they do not delete the coda /ɹ/; the status of intrusive *r* with regard to non-rhoticity, therefore, should be reexamined. Moreover, there seems to be few studies on why this seemingly extensive and productive phenomenon occurs only after a non-high vowel in connected speech, i.e., the occurrence of intrusive *r* is constrained somehow; this leads us to the hypothesis that intrusive *r* would be under a certain phonological condition.

Hence, the present work attempts to investigate the following research questions:

- i) Is intrusive *r* truly a subphenomenon of non-rhoticity? Can it be analyzed as an independent phonological process?
- ii) Is intrusive *r* constrained by some phonetic or phonological condition?
- iii) If so, under which circumstances does intrusive *r* occur? Which factors affect the insertion of /ɹ/?

The outline of this paper is as follows: Section 2 describes how intrusive *r* has been dealt with in the literature; Section 3 elucidates the account of articulatory phonology and Gick's (1999) gesture-based explanation on *r*-related phenomena, which the present work will follow with modification to a degree. Section 3 demonstrates a variety of less-covered phenomena regarding rhoticity, and brings forth counterarguments on the previous assumption including that of Gick (1999) that intrusive *r* requires non-rhoticity, as a response to the first research question. The discussion on a plausible explanation on intrusive *r* is then provided in Section 4, encompassing a number of distinct phenomena previously demonstrated; modifying the previous account, this section will suggest that the dialect-specific phonetic quality of the phoneme /ɹ/ and the surrounding environment, affecting the formation of articulatory trajectories and thus gestural overlap,

would be the trigger to the occurrence of intrusive *r* as a solution of vowel hiatus (i.e., a sequence of vowels), covering the rest of research questions. Section 5 summarizes the present account on intrusive *r* and remarks on further points to be studied.

2. Previous Accounts on Intrusive *r*

Previous literature has assumed that intrusive *r* occurs as a subphenomenon of non-rhoticity. It has been dealt largely with in terms of these questions: i) Why the insertion occurs, ii) Why /ɹ/ is inserted, iii) whether the intruded /ɹ/ is present in the lexical representation; it is also noticeable that the phenomenon itself seems to be constrained by a certain phonological environment, only after a non-high vowel.

2.1 Analogy: Similarities with Linking *r*

Some of diachronic research has mentioned the phonological constraint on intrusive *r* to little degree. Most of introductory books on phonology, in fact, give intrusive *r* a description as follows; intrusive *r* occurs in rapid speech of non-rhotic varieties with analogy with linking *r*. It could be begun as misinterpretation due to the acoustic or perceptual similarities, leading to the consecutive hypercorrection. Wells (1982) stated that intrusive *r* arises essentially from the natural tendency to give identical treatment to words with identical endings, that is, intrusive *r* is to follow the patterns of linking *r* on the ground of the phonetic similarity of the forms in isolation. This line of studies has continued until a recent date; Soskuthy (2013) claimed that intrusive *r*

be analyzed as an analogical extension of *r*~zero alternation.¹ Based on the assumption that intrusive *r* only appears in non-rhotic dialects, he also presented a quantitative investigation, employing corpus data and computer simulation-based approach.

2.2 Theoretical Manipulation within the Optimality Theory Framework

There have also been attempts to explain why the intrusion itself occurs, by means of theoretical manipulations, namely through rule-based approach² and Optimality Theory (OT); after the rule-based approaches failed to account, the introduction of preliminary OT analysis by McCarthy (1993) was expected to provide a better framework to represent language-specific phenomena; it copes with universal constraints whose ranking is different by language or dialect. It, indeed, seemed to comprehend the difference between non-rhotic and rhotic varieties, applying different ranking on the conflict between CV syllable structure and insertion of the non-historical coda /ɹ/, resulting in intrusive *r* only in non-rhotic varieties. McCarthy (1999) and Oostendorp (2000), then, made remarks on the quality of inserted segment, which should have yet been stipulated arbitrarily within the OT-based accounts; they mentioned the possibility if the /ɹ/ might be phonetically derived.

¹ Soskuthy (2013) uses terms such as *r*-LESS and *r*-FUL to denote words with non-historical *r* and words with historical *r* respectively; intrusive *r* occurs in *r*-LESS words under the analogical influence of *r*-FUL words.

² Vennemann (1972) first account for intrusive *r* by means of rule inversion; the rule of *r*-insertion historically replaced the rule of *r*-deletion, leading to accents with the intrusion. Halle and Idsardi (1999) admitted the coexistence of both rules and brought 'Elsewhere Condition' which Kiparski (1973) suggested, to account for the rule application. However, these rule-based approaches were criticized since they could not distinguish linking *r* and intrusive *r*. (Cho, 2005)

On the subject why it should be /ɹ/, Uffmann (2003) made an important suggestion that *r*-insertion might occur as a strategy avoiding the vowel hiatus (*VV); he stated that either glide or /ɹ/, phonetically least marked on the sonority-based prominence scale, suggested by Prince and Smolensky (1993), would be inserted as the optimal candidate within a sequence of vowels, according to whether it follows a high vowel or a non-high vowel; this argument could describe why /ɹ/ is intruded up to a point but failed to explain the dialectal differences according to rhoticity.

2.3 Floating *r*: Schwa as Historical Counterpart

Some studies paid thorough attention to the underlying status of intrusive *r*; based on the fact that intrusive *r* always follows the strictly limited set of vowels, non-high vowel, which can be reduced into the schwa as suggested by Giegerich (1997), Harris (1994) stated that intrusive *r* is motivated by a disfavoring of final schwa, referring to the alternating pattern between /ə/ and /ɹ/. His ‘floating *r*’ account claims that schwa-final words are in fact *r*-final historically, which means that intrusive *r* is underlyingly present but realized differently by dialect. Nonetheless, this failed to account for why the inserted segment should be /ɹ/.

2.4 Articulatory Phonology

The accounts so far could not satisfy every detail of the phenomenon; Gick’s (1999) gesture-based work on intrusive *r* too follows the same line with those investigating the quality of /ɹ/, but it is also consistent with Harris’s account that the intrusive *r* has its underlying counterpart; unlike Oostendorp (2000) and Lombardi (2002), he did not employ the

mechanism of relative scale among all possible segments, but rather referred to the articulatory features, i.e., gestural scores, of /ɹ/, to search for legitimate connection which enables the /ɹ/ to appear on the surface. For the dialectal difference, he brought the notion of merger, resulting in typological illustration on the relationship between rhoticity and intrusive *r*.

3. Intrusive *r* in Articulatory Phonology

The present paper is in line with articulatory phonology to account for intrusive *r*; this section sketches out the organization of the theory and provides relevant accounts including Gick's (1999) explanation on the *r*-related phenomena; he dealt with intrusive *r* and internal-*r*-epenthesis separately with different points of view.

3.1 Articulatory Phonology (Browman & Goldstein, 1990)

Established by Browman and Goldstein (1990), the framework of articulatory phonology investigates the articulatory organization, presuming that the articulation itself, with inherently multidimensional nature, can account for the complexity of a number of phonological phenomena. That is to say, the constraints derived from physical articulatory systems affect somehow onto much of phonological organization.

The fundamental unit of articulatory phonology is termed a gesture, referring to coordinated articulatory movements. When we utter a phonological sequence, each phonological segment accompanies a discrete gesture, i.e., articulatory movement inside the vocal tract, which generates a set of underlying gestures, i.e., articulatory trajectories;

gestures are to be analyzed in terms of dynamic description, separating the articulatory tier from the segment tier for articulatory independence. The gestures, then, inherit the spatio-temporal feature of the utterances, i.e., trajectories in sequence, occasionally resulting in overlap in time. This account implies that much of coarticulation and allophonic variation which had trouble being examined can be resolved as an automatic consequence of gestural overlaps, also shaped and modified by the inherent structure; this framework brings about a powerful but highly constrained resolution that complicated phonological phenomena are phonetically motivated in nature.

Articulatory phonology can make some generalizations on casual speech, which cannot be explained well in terms of other phonological theories; casual, or connected, speech is defined as subset of fast speech in which reductions typically occur to a certain extent. (Browman & Goldstein, 1990) In other words, gestures formed from the lexical representation appear in connected speech, although the explicit representation seems to undergo some elision, insertion, or substitution at times, attributed to the alternation of gestures in magnitude (i.e., Final Reduction) and in timing (i.e., Position-specific Gestural Timing, or overlap); the segments associated with the gestures might be produced with less constriction and the relative timing of composite segments might vary, resulting in surface complexity.

3.2 Suggestions on Intrusive *r* in Articulatory Phonology

In this line of research, Gick (1999) elucidates the nature of *r*-insertion; Referring to Browman and Goldstein (1990), he first suggests each gesture (i.e., articulatory tier) associated with each segment in the lexical representation (i.e., segment tier) is normally to accomplish its own task by settling itself on a legitimate variable of articulators (e.g.,

lips, tongue tip, tongue body, etc.) in the task dynamics and binding one another with phasing relation. In casual speech, however, as the phonological sequence is produced with a rapid speed, the spatio-temporal characteristic of the model affects the gestures to be overlapped with each other.

In terms of the gestural quality of /ɹ/, Gick follows the account of McMahon, Foulkes, and Tollfree (1994) that /ɹ/ consists of two gestures: tongue raising gesture and pharyngeal constriction. When the degree of tongue raising decreases in its magnitude in connected speech, the remaining pharyngeal constriction would possibly be perceived as /ə/, which appears to be the form of vocalized *r*. Consequently, the merger of /ɹ/ and /ə/ would occur. Nonetheless, this account is flawed in that the status of /ɹ/ is arbitrary; Gick thus employs the account of Harris (1994) that intrusive *r* emerges from its own underlying representation. Based on this, Gick covers intrusive *r* and internal-*r*-epenthesis (e.g., *Wa[r]shington*) in different ways: for intrusive *r* which occur between vowels, he first assumes that all instances of intrusive *r* should require two subordinate process, that is, *r*-vocalization and linking *r*; he then conducts a few experiments to show that the consonants that can intrude within sequence (/ɹ, l, w/ in the course) have the same patterns of reduction and augmentation by position; He states that every dialect of English has the same reducing patterns of these segments with varying degree to the point where the final reduction leads to complete loss (i.e., vocalized); in other words, Gick treats /ɹ/ in linking *r* and intrusive *r* as same as one of the allophones of /ɹ/ which occurs in the intervocalic position, having the intermediate degree of reduction, as is also evidenced by Tuinman, Mitterer, and Cutler (2011); their account proves that intrusive *r* is shorter than the canonical /ɹ/ in word-initial position. Those containing final vocalized *r* and those containing final non-high vowel then merge occasionally, resulting in some dialects

with the vocalized *r*, i.e., non-rhotic accents. Therefore, he implies that intrusive *r* is a phenomenon where the merge have occurred and the intermediate allophone of /ɹ/ is realized to an extreme degree.

For the internal-*r*-epenthesis, on the other hand, Gick employs the notion of gestural overlap, i.e., the overlapped part on a certain articulatory trajectory unintentionally produces a sound which is easy to be perceived as a variant of /ɹ/. He refers to the dialects which contain this type of epenthesis as hyper-rhotic, in contrast to those with intrusive *r* as non-rhotic, and differentiates this phenomenon in that the epenthesis does not require a following vowel.

Prior to Gick's work, however, some research has investigated intrusive *r* in a similar way that Gick accounted for the internal epenthesis, which the present work also follows; Gnanadesikan (1997) mentioned that intrusive *r* might be the pharyngealized glide agreeing with the features of the adjacent pharyngeal vowel /ɑ/, phonetically driven, as parallel as the glides /j, w/ occur in the same position with non-low back and front counterparts respectively. That is, he focused on the preceding vowel, non-high, to trigger the intrusive *r* as glide against vowel hiatus. More recently, Zygis (2010) also ascribes the *r*-insertion to phonetic motivation as well as grammatical and prosodic requirements; if the anterior raising gesture of /ɹ/ were removed, the remaining tongue configuration would resemble the articulation of schwa as an allophone of /ɹ/, that is, producing an *r*-like pharyngeal constriction on the trajectory in the position of schwa.

4. Less-covered Phenomena in Rhoticity

In order to disapprove of the basic assumption that *r*-insertion would be a subphenomenon of non-rhoticity, raised as the first research question

as well, this section will offer a few data related to rhoticity in less-covered varieties. Moreover, we build a ground for the modification on Gick's account that intrusive *r* should rather be analyzed as a phonetically natural byproduct derived from gestural overlap, not a surface realization of the counterpart in the segment tier.

4.1 Non-rhotic Varieties with No Intrusive *r*

First to note is, there are some non-rhotic varieties with no *r*-intrusion but *r*-deletion only, including such well-known dialect as the American Southern accent. As mentioned in Gick (1999), the Southern accent is famous for dropping their /ɹ/ extremely; even though non-rhoticity seems to be rapidly receding in the regions, older generations still would not pronounce /ɹ/ whenever it follows vowel even if it functions as an onset of the next syllable (e.g., *very* [vɛ.ɹɪ]). This phenomenon is further corroborated by the AAVE; a number of AAVE speakers are reported to drop all *rs* after a vowel. If the assumption works here, there should also be a legitimate explanation about why intrusive *r* does not occur in a certain accents; Gick (1999) accounts for this by whether the speakers perceive the final vowel as /ɹ/ or /ə/ but it seems not empirically supported.

Some dialects in Africa also show a similar phenomenon, including the South African English. (Bowerman, 2004) It features non-rhoticity but permits no intrusive *r* but linking *r* only. (e.g., *for a while* with /ɹ/ but *law and order* with no /ɹ/ [lɔ:nɔ:də]) At times, vowel deletion or glottal epenthesis is employed as a strategy against the vowel hiatus. This clearly proves against the implication of Gick's that linking *r* and intrusive *r* are basically identical as an intervocalic allophone that occurs depending on the degree of reduction by dialect; he also suggests this dialect to be the consequence which has not undergone

merger, which is hardly verifiable.

Under the influence of this language, which is dominant in the continent, some of the dialects are reported to show peculiarity on *r*-related phenomena as well; L1 Rhodesian English spoken in Zimbabwe, suggested by Fitzmaurice (2010), shares some phonological and grammatical features with its regional, indigenous, varieties including Southern African English. It is one of the non-rhotic varieties but shows few instances of linking *r* and intrusive *r*, rather substituted by the use of glottal stop /ʔ/. These occasions should be reexamined thoroughly.

4.2 Rhotic Varieties with Intrusive *r*

Even if we admit that intrusive *r* might be an optional phonological process operated by some other device, there still remains a problem to the literature; there have been some recent reports on rhotic varieties that show intrusive *r*, including the Southern mountain speech. This clearly indicates that *r*-intrusion does not always have to be preceded by the vocalized /ɪ/; it should rather be a phonological phenomenon independent of non-rhoticity; in other words, intrusive *r* could be better explained from the purely phonetic, articulatory, point of view. Suggested by Barras (2011), East Lancashire Speech also features intrusive *r* as well, despite its rhoticity. He further remarks that the spread of rhoticity conflicts with the features previously believed as subordinate to non-rhoticity, resulting in those varieties exhibiting intrusive *r* regardless of rhoticity.

5. Discussions

As shown above, some varieties of English pose a serious question onto

the literature so forth; with regard to the Southern accent, Gick (1999) presumes that the postvocalic *r* and final schwa are merged and the resulting final vowel is interpreted as an underlying vowel, removing the chance of any intrusion to occur, i.e., the absence of underlying consonant is ascribed to the phenomenon; if it were interpreted as an underlying /ɪ/, the dialect should show linking *r* and intrusive *r* as an intervocalic allophone. This means intrusive *r* requires *r*-vocalization, as other research has claimed, which cannot account for the rhotic varieties with *r*-intrusion suggested so far. In addition, the notion of merger is not empirically evidenced; the account that historical /ɪ/ is absent only in a certain accents are also not able to be examined. It seems that Gick's account on dialectal differences fails to follow the gestural viewpoints, rather focusing on abstract stipulation.

The present work modifies the account to a little extent, proposing the dialectal difference on intrusive *r* as a consequence of gestural overlap involving different phonetic quality of the phoneme /ɪ/, from the purely articulatory point of view; intrusive *r* is not derived from its underlying counterpart but rather phonetically driven as a gliding segment within vowel hiatus.

In general, the phoneme /ɪ/ in English is assumed to be the alveolar central approximant, which accompanies palatal gesture and pharyngeal constriction, i.e., it is pronounced in the back position, compared to other consonants. As in the case of internal-*r*-epenthesis in Gick's, thus, we can hypothesize a certain articulatory trajectories for a certain sequence can form a gliding sound that is likely to be perceived as /ɪ/. What to note on the Southern accent is, however, that it is well-known to have the tap sound /ɾ/ as its rhotic sound, not the approximant /ɪ/; though the extent of its use is being rapidly receded, traditional speakers of the Southern accent still pronounce /ɪ/ as tap, which causes the tongue to touch the alveolar ridge, resulting in some constriction, in

contrast with the approximant with no constriction within the vocal tract, closer to the characteristics of vowels, i.e., schwa. This different articulatory quality of /ɹ/ would then affect the formation of articulatory trajectories for the same sequence, and contribute to the following consequence: the trajectory with the tap involved would not produce as same gestural overlap as the one with the approximant. According to the previous research including Gick's, the intruded /ɹ/ is not so much different as the other allophones of /ɹ/ in terms of its quality; what matters is the degree of final reduction by position. Therefore, we can build a new explanation that the phonetic quality of /ɹ/ would determine the intrusive *r* to occur in a certain dialects.

The South African English provided above also supports the claim; the phoneme /ɹ/ in this language is realized mainly as the tap, the trill, or the retroflex sound (Bowerman, 2004); intrusive *r* does not take place, whereas only linking *r* appears, which represents that intrusive *r* seems to be more constrained by the other factors, i.e., physical condition, than linking *r*; linking *r*, of course, has its lexical counterpart. Accordingly, rhotic varieties with the realization of /ɹ/ as /r/ or /r/ are not affected by the gestural overlap; the lexical segment has its own gesture to appear on the surface as linking *r*. On the contrary, intrusive *r* is produced from a certain gestural overlap involving vowel-like gestures, and this paper will regard it as one of the strategies for vowel hiatus; for instance, the South African English cannot employ intrusive *r* against vowel hiatus, universally avoided, so it deletes one of the vowels or employs the glottal stop as a glide instead (Bowerman, 2004); the glottal stop also retains the gesture of pharyngeal constriction as /ɹ/ but its characteristics are even closer to vowel than liquids so that it is more likely to occur throughout the languages.

On the other hand, it is also worth paying attention to the restrictive phonological environments of intrusive *r*: after non-high vowels with

little exception. Gick in fact admitted that the internal-*r*-epenthesis typically occurs after a non-high vowel so we can set a hypothesis that this set of non-high vowels would contribute to the occurrence of whole of *r*-insertion somehow to a certain degree, thus enabling Gick's account of gestural overlap to comprehend intrusive *r* as well. Previously, in addition, intrusive *r* has already been argued to be a glide segment for a non-high vowel, as /j, w/ break the vowel sequence with a preceding high vowel, which backs up our proposal.

It is also noticeable that intrusive *r* occurs only in connected speech. Rules on fast speech such as flapping of /t/ (Kaisse 1985) are said to be applied optionally. Even though articulatory phonology assumes that physical conditions determine much of phonological phenomena, intrusive *r* is certain to be under the influence of the area of connected speech and it should also be analyzed as optional phonological process; the optional characteristic of the phenomenon leads to the proposal of this paper that it functions as one of the resolutions for vowel hiatus among other similar insertions such as those of the /j, w/ and /ʔ/. With regard to this point, New Zealand English has recently been reported as follows; a phrase such as *far off* may be realized with linking *r*, vocalized *r*, or other epenthetic segments such as the glottal stop or schwa. In other words, when the gestures form a certain articulatory trajectories that would produce an *r*-like sound, the similar segments in terms of gestures can also appear, accounting for the glottal epenthesis in the South African English as well. This variability of epenthesis might also be attributed to the dialectal contact but Barras (2013) suggests it is also phonologically driven. He states that due to the spread of American mass media, a number of dialects and accents seem to undergo the increasing level of rhoticity mainly among young speakers. However, the fact that the intrusive *r* in those varieties are still restricted to a certain phonological domain, i.e., after a non-high

vowel in the connected speech, seems to support the account that the intrusive *r* is more likely to be selected as one of the phonologically natural process to avoid the hiatus.

6. Proposal and Further Studies

The present work has first proved against the previous accounts on intrusive *r* that it is a sort of subphenomenon of non-rhoticity, suggesting some instances from the less-covered varieties of English: non-rhotic accents with no intrusive *r* and rhotic accents with intrusive *r*. Consequently, we could see that this phenomenon should rather be analyzed independently of the vocalization of /ɹ/; intrusive *r* is an articulatory natural consequence from a certain gestural overlap in the course of connected speech. The occurrence of the insertion is mainly determined by the articulatory quality of /ɹ/ by dialect and the surrounding environment, i.e., after a non-high vowel. What to note is that it is an optional phonological process that allows other segments sharing the similar characteristics to replace it; when intrusive *r* cannot occur due to its different quality, other intrusive segments that can also fit in the gestural overlap might appear. Moreover, the distinction between rhoticity and non-rhoticity for a certain accent recently becomes vague due to the spread of rhoticity also supports the present account in that intrusive *r* is more likely a new strategy to avoid vowel hiatus, phonological in nature. This proposal is not completely new but more likely to comprehend some of the previous research as well; it is, above all, in line with Gick's (1999)'s account on internal epenthesis by means of gestural overlap. Furthermore, it also follows Uffmann's insight on intrusive *r* as a resolution for vowel hiatus.

To clarify, further studies should be conducted to prove this account

with empirical evidence; legitimate experiments and modeling should be carried out to verify the hypothesis that different phonetic qualities of /ɹ/ determine the occurrence of intrusive *r*. In addition, this proposal should be dealt with under the theory of lexical phonology; lexical phonology deals with phonological phenomena referring to morphological or grammatical information. If the present work holds true, the status of intrusive *r* within the range of lexical phonology could be addressed.

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