

Phonological Epenthesis

Asist. Lect. Dhuha Fadhil Abaas

Islamic University, Babylon Campus

Duha.fadhil@iunajaf.edu.iq

Abstract

The present study is concerned with identifying the phonological phenomenon of epenthesis in English and other languages. Phonological epenthesis is a universal phenomenon since language itself is universal. Thus, this means the insertion of sound which is usually a vowel without changing the meaning. This phenomenon becomes clear through different examples from English and other languages. This research sheds light on this phenomenon to indicate that speakers insert such vowels or consonants in the rapid casual speech to make speech easier and effortless. The insertion is either between consonant clusters and this will be called vowel epenthesis or between vowel sequences which will be called consonant epenthesis.

Key words: Consonant cluster , Phonological processes , Epenthesis .

Section One

1.1 Introduction

The production of clusters is generally speaking a complex procedure. It requires rapid movement of the vocal apparatus to ensure smooth transitions from one consonant to another .For the every young child, sequences of consonant may be too difficult to pronounce in rapid succession. Typically a sound may be to break up consonant clusters or vowel sequence. Because of its importance for fluent speaking, epenthesis is studied as an aspect of phonological processes .

1.2 The problem

The non- native speakers of language encounter difficulties in the process of specific consonant cluster of foreign language because they lack such sequence in their native language .Therefor ,the problem of the present paper of epenthesis is :

1-What is a phonological epenthesis ?

2-Why is it used?

3-How is it perceived?

4-Is epenthesis a universal phenomenon?

1.3 Hypothesis

This study hypothesized that:

1-In English and other languages epenthesis is one of the phonological process which indicates the insertion of a sound without changing the meaning .

2-Epenthesis used to break up certain consonant cluster or vowel sequences which phonotactics of other language lack.

3-It is perceived orally ,it may perceived in writing ,also .

4-Epenthesis is a universal phenomenon ,for it applies in language such as ,Arabic, English. Japanese ,Hebrew and other languages .

1.4 Objectives of the study

1-To identify the way in which epenthesis is work throughout pointing certain consonant cluster or vowel sequences .

2-To identify that this phenomenon is not an error in speaking certain language ,rather it is a universal phonological process to make speaking smoothly .

1.5 Procedures

In carrying on the present study ,the following steps will be followed :

1-Presenting a general survey of consonant clusters and some phonological processes in relation with epenthesis .

2-Elaborating on the phonological phenomenon of epenthesis with respect to its definition.

3-Showing the study of epenthesis with clear examples from different languages .

4-Introducing a conclusion arrived at in this study.

1.6 Significance of the study

The significance of the present study lies in the important of the spoken language since language is basically oral .The present study shed light on the phonological process of epenthesis in English and other languages in general to show speakers insert certain vowel or consonant to break up the difficulty of speech .This study focuses on the phonological process which is "epenthesis" complex syllable margin are avoided by epenthesis ,generally in language ,which means that a consonants against complex margins dominates a constraint against epenthesis .

This section is intended to provide a theoretical background of the present study .It surveys the meaning of the phonological process in general and the meaning of "phonological epenthesis "in specific. It also, provides a general understanding to the concept "consonant cluster" which leads to understanding why such phenomenon "epenthesis" happens.

2-1 Consonant cluster

It is important at the outset to explicitly clarify the meaning of consonant cluster which has been interrupted differently in different investigators .In this study ,the term is used to denote a sequence of more than one consonant which is restricted to one syllable or as "Abercrombie "says it is a sequence spreads over two syllables .then it is no longer a cluster ,but rather a sequence of abutting consonant (Abercombei ,1967:76). So, to illustrate the sequence "tr "in (contract)represent a sequence of a cluster (Crystal, 2009: 312).

In linguistics ,consonant cluster (cc) is a group of two or more consonant sounds that come before an onset ,after, a coda, or between what is called medial vowels . It simply known a duster, ,these occur naturally in written and spoken English though sometimes may be altered phonetically (Roach, 2009: 22).

Michael Pearce illustrates in his book "The Routledge Dictionary of English language studies" that the common three –item initial consonant cluster in the following words a /spl/spilt, /spr/spring ,/ spj/ spum, /str/strip/,/stj/stew, /skl/ sclerotic,/skr/screen, /skw/ squad, /skj/skua, whereas every word must start with / s/ be followed by a voiceless stop like (p)or(t)and a liquid or glide like /i/or / w/. Consonant clusters that end words may contain up to four items, though they are often truncated in connected speech if the consonant cluster is too long ,as the word (glimpsed) being acceptably written as (glimpsst). Consonants cluster is a group of consonants without an interning vowel ,e.g.: the consonant cluster "br" (English Dictionary).

The oxford English dictionary defines a cluster as a collection of things of the same kind ,as fruits or flowers growing closely together .

In some languages (including English) we can find several phonemes in a sequence with no vowel sound between them. For example, the word stray /streɪ/ begin with three consonant ,and within the same syllable are often called consonant clusters .It is not usual to refer to sequences of vowels as vowels clusters (Roach, 2009:16)

This process is called consonant cluster simplification or reduction sometimes occur when one consonant or more in a sequence of adjacent consonant is dropped in everyday

Phonological Epenthesis

Asist. Lect. Dhuha Fadhil Abaas

speech, for example, the phrase "pest body" may be pronounced "bes body" and "first time" may be pronounced as "firs time". Onset consonant cluster may occur in two or three initial consonant, while coda consonant clusters can occur in two to four consonant groups (Web source 1).

2.2 Epenthesis and other phonological process

Phonological processes are patterns of sound errors that typically developing children use to simplify speech when they are learning to talk. As a result they simplify complex words in predictable ways until they develop the coordination required to articulate clearly. For example they may reduce consonant cluster to a single consonant like "pane" for "plane" or delete the weak syllable in a word saying "nana" for "banana" (Web Source 2).

Some recent work in phonology phonetics has tended to reaffirm the relevance of larger than segment (non-syntactic-morphological) structural units like the syllable: that is, the phonological representations are more highly structured than has generally been supposed in the immediate past. It has been argued that various prosodic phenomena have as their domain non-arbitrary groupings of segments, including in particular groupings of syllable size (Chen, 1966, Lehiste, 1920). And that morpheme structure conditions and redundancy conditions in general are most naturally interpreted as in large part conditions on syllable structure. There have been a number of structures particularly of phonological process such as (assimilation, elision, metathesis) (René Kager, Joe Pater, Wim Zonneveld – 2004: 359).

The differences between phonological deletion and epenthesis reside not in the representation, but in the form of the constraints that select whether zero manifests in the derived or underived form. The phonetic treatments of the epenthesis elision and metathesis proposed above may all be regarded as instances of a more general phenomenon of non-significant variability in phonology (Coleman: 18)

underived forms	epenthesis
derived forms	deletion

2.3.1 Epenthesis

When a speaker inserts a redundant sound in a sequence of phonemes, that process is known as epenthesis. Redundant in this context means that the additional sound is unnecessary, in that it adds nothing to information contained in the other sounds. It happens most often when a word of one language is adopted into another language whose rules of phonotactics do not allow a particular sequence of sounds, or when a speaker is speaking a foreign language which is phonotactically different (Roach, 2009: 22).

The history of English provides example of epenthesis like the development of amity in to empty ,with epenthetic p ,and of loaner in tio thunder ,eith epenthetic d .Non stsndard pronunciations include "athelate" for athlete and" fillum "for "film" with epenthetic vowels (R. L. Trask, A , 1996:354).

Epenthesis is often breaks up a consonant cluster or vowel sequence that is not permitted by the phonetics of a language . Sporadic eases can be less obviously motivated , however , such a warsh "wash" with an extra [r] in some varieties of American English and [Hamtramck] is pronounced as [Hamtramick] as if they were an extra [i] .The Dutch city of Deflt is pronounced as [def-lil] by its inhabitants .Georgian often breaks up its consonant cluster with schwas. (Jeroen Weijer, Tetsuo Nishihara - 2013 :111).

Regular or similar epenthesis commonly occur in languages with affixes .For example ,a reduced vowel /I /or/ /inserted before the English plural suffix - /z/and the past tense suffix -/d/ when the root ends in a similar consonant :glass---glasses /glasiz/ .That is again a synchronic analysis as the form with the vowel is the original form and the vowel was later often lost (Ibid).

Then , phonological epenthesis might be distinguished from phonetics "epenthesis" by the distribution of phonetics characteristics of the schwa . perhaps a fleshed- out version of the phonetics vs. phonological epenthesis –hypotheses would predict that the duration of the schwa should be distributed with a mode at osmic if the epenthesis result from articulatory mistiming ,but with a non-zero mode if the epenthesis is phonological .The phonetics hypothesis needs to be contrasted with the hypothesis that the environment of two voiced absorbents leads tophonological epenthesis while the corresponding un voiced environment does not (Kager, Pater, Zonneveld –,2004: ,359) .

2.3.2 Definition of Epenthesis

Epenthesis is : A term used in phonetics and phonology to refer to a type of insertion ,where an extra sound has been inserted in a word ,often sub classified in to Prosthesis and Anaptyxis. Epenthesis sounds are common in both historical change and in connected speech (e. g. incredible as [ingkredibl] (Crystal:171)

According to the definition of Catamba , phonological epenthesis is seen as the result of providing prosodic structure with no segment to fill it. The phonetic identity to the epenthetic segment being determined by extra systemic rules of phonetic interpretation (Catamba, 2004:379)

Phonological Epenthesis

Asist. Lect. Dhuha Fadhil Abaas

Epenthesis is defined at the free Dictionary as the insertion of a vowel or consonant in to a word to make its pronunciation easier ."The insertion of a vowel in the plural of the word "bush "is epenthesis.

2.3.3 Origin and Etymology of Epenthesis

It is a from late Latin ,from Greek from epentithenai to insert a letter. From epi- + entithenai to put in ,from en-+ tithenai to put more at (Web Source 3).

If you say film as "fill-um" with two syllables ,you can have committed epenthesis .It is not punishable offence ,in fact ,it is not an offence at all. It is simply a natural way to break up awkward cluster of consonants .It is easier for some people to say film as tow syllables instead of one ,just as it is easier for some to insert a, b, sound in to cummerbund, pronunciation that word as "com-ber-bund" (Ibid).

2.3.4 Function of using epenthesis

Epenthesis arises for a variety of reasons .The phonotactic of a given language may discourage vowels in hiatus or consonant clusters and a consonant or vowel may be added to make pronunciation easier . Epenthesis may be represented in writing or be a feature only of the spoken language (Bridget D. Samuels - 2017 : 93).

a)Separating vowels

A consonant may be used or added to separate vowels in hiatus. This is the cause with [[Linking and intrusive R]] ----- "drawing"-----"draw-r-ing".

b)Breaking consonant clusters

A vowel may be placed between consonants to separate them. Hamtramck ----- Hamtramick.

Regular examples in English are /i/ used in forming Latinate words such as equidistant ,and /o/ ,used in forming words on Greek roots or general compounds ,as in speedometer.

c)Bridging consonant clusters

A consonant may be placed between consonants in a consonant cluster where the place of articulation is different .For example ,where one consonant is labal and the other is alveolar.

-something ----somepthing

-a-mrotos----umbrotos

2.3.5 The effect of Epenthesis on

spelling and pronunciation not meaning

Epenthesis occurs frequently , both in legal and in lay language . The addiction of an I before t in specially is an example .The pronunciation of Jewelry as[Jewelery] is a result of

epenthesis ,as the pronunciation [contentuous] for continuous . Other example of epenthesis : The ubiquitous [relitor] for realtor and that favorite pronunciation of sport, announcers [athalete] for athlete . Those insertion of sounds are examples of phonological process that is "epenthesis" which do not change the meaning of a words ,rather it effects the way sounds pronounced in a sequence when certain sound join together (Block ,2004).

Section Three

3-1Types of epenthesis :

In phonology and phonetics ,epenthesis is the insertion of an extra sound in to a word .It is the addition of one or more sounds to a word, especially to the interior of a word. Epenthesis may be divided in to two types : anaptyxis (if the sound added is a vowel)and excrescence (if the sound added is a consonant). Therefore ,epenthesis often breaks up a consonant cluster or vowel sequence. That is not permitted by the phonotactics of a language (Web-Source 5).

3.2 Vowel epenthesis and consonant epenthesis :

3.2.1 Vowel epenthesis

The term "vowel epenthesis" can refer to any process in which a vowel is added to an utterance. However , vowel epenthesis process vary enormously in their characteristics, and many aspects of their typology are still not well understood . Accordingly , the empirical focus of this item is on the heterogeneity of vowel epenthesis processes.

May language exhibit a phonological phenomenon known as vowel epenthesis in an attempt to conform to syllable structure constraints such as no coda , which prohibits coda consonants ,and complex ,which prohibits consonant cluster (prince and Smolensky,1993:92) .This phenomenon is especially prevalent in loanword phonology , where foreign words are adapted to fit the phonological structure of the borrowing language , which have undergo one vowel epenthesis as part of the borrowing process. The historical process of vowel epenthesis itself is interesting enough , but it is more interesting when considered in conjunction with other phonological processes from a synchronic perspective .One such process is that of accent assignment .A standard idea about the interaction between epenthetic vowels and synchronic accent rules will be that words are subject to accent rules only after epenthetic vowel have been inserted . A careful analysis suggest that at least some epenthetic vowels are invisible to some accent rules under certain circumstances, and that some epenthetic vowels behave as if they did not exhibit at all (Weijer, Nishihara , 2013 :179) .

Phonological Epenthesis

Asist. Lect. Dhuha Fadhil Abaas

Vowel epenthesis is a low-level phonetic rule which is used to break up clusters of consonants which are unacceptable in a certain language or variety. There are instances from the varieties of English where a prohibition on sequences of two sonorants in a syllable coda is resolved by vowel epenthesis which leads to re-syllabification.

Film /film/ > /fɪlm/ initial

Arm /arm/ /arəm/ medial

Blue /blu/ /bəlu/ final

According to some linguists "vowel epenthesis" is often motivated by the need to make consonant cluster contrasts more distinct (Pisoni and Editorion, 2005: 180).

3.2.1.1 Vowel placement

The problem of where to place epenthesis vowel arises in loanword phonology in the same way as in native language phonology. Initial cc cluster, or medial ccc clusters, can potentially be split in two ways (Web Source 6).

In some cases the place of epenthesis in loanwords or inter languages appears to follow the same placement pattern as the borrowing language shows in native epenthetic pattern. For example, we saw that Iraqi and Egyptian Arabic differ in how they break up word initial CCC cluster in the native phonology. Iraqi puts the epenthetic vowel after the first consonant, and Egyptian after the second. These dialects differ in exactly the same way in how they epenthesize into CCC clusters in interlanguage phonology as in (ibid):

	Iraqi	Egyptian
Native language	/kitab+tal+/-----kitabit.la	kitabiti.lu
Inter language	children-----chilidren	chidiren

Fleischhaker (2001: 31) presents a typological study of epenthesis in initial cc cluster in loan words and inter language, focusing on the question of whether the vowel precedes the cluster (VCC) or breaks up the cluster (CVC). In many languages, the placement of the vowel.

Depends on what kind of consonants are in the cluster as in the Egyptian Arabic example. In word – initial clusters consisting of a voiceless sibilant plus a stop, it is cross linguistically more common to insert a vowel before the first consonant, while in word – initial clusters of an obstruent and sonorant, it is more common to place the vowel between consonants as in (Ibid):

Egyptian Arabic, epenthesis (Broselow, 1987)

Study -----istudi

Special-----izbaasjal

Ski-----iski

Sweeter-----siwetar

Slid-----silaid

Fleischhacker argues that the reason for this pattern is that epenthetic vowels are inserted where they will cause the least perceptual between the foreign word and the epenthized adaptation.

Epenthesis of schwa in to a cluster creates additional structure , in particular , a weak syllable , e.g: (an open syllable headed by a reduced vowel , perhaps one problematic for metrical foot parsing (Catamba, 2004, 360).

3.2.1.2 Phonetic characteristics of epenthetic vowels

There is evidence that in the same languages ,epenthetic vowels differ articulatory and acoustically from lexical vowels ,and test that probe speaker intuitions may also find differences (Martínez-Gil, and Front, 1997 : 66).

In Lebanese Arabic optionally inserts an epenthetic vowel in certain CCC or CC # clusters as in :/mitl/ -----[mitil] " like". The epenthetic vowel is normally transcribed as /i/. An acoustic phonetic study by Gouskova and Hall (2009) finds that for some speakers , epenthetic [i] is significantly shorter in duration than lexical [i], and has a lower second formant value (Ibid).

Another kind of phonetic difference is reported in scots Gaelic ,where epenthesis occurs in certain cc sequences following a short stressed vowel as in : /tarv/----- [tarav]/tæræv / "bull" . These epenthetic vowels are often longer than lexical vowel in the same position (Ibid).

Another characteristics of epenthetic of phonology offered evidence that epenthetic (schwa)in English differs articulatory from lexical (schwa). Davidson and stone (2005:93) present an ultrasound study of English speakers pronouncing pseudo - Slavic words that began with consonant clusters that are illegal in English such as /zəgɒmu/. However, when the articulation of (schwa) was compared to the lexical schwa of similar words like succumb /səkʌm/. The tongue position offered significantly.

3.2.1.3 Speaker intuition about epenthetic vowel

There are indications that speakers are not always conscious of epenthetic vowels in the same way as lexical vowels .One type of evidence comes from situations where speakers are asked to write their pronunciations phonetically. Pearce (2004:19) asked speakers of

kera (East Chadic , spoken in Chad with no tradition of writing) to choose between two possible spellings for acoustically CVCVCV words, there the middle vowel was analyzed as epenthetic .The speakers choose CVCCV spelling ,suggesting that the middle vowel was not part of their conscious. Segmentation of the word (Web Source 7).

Speakers may be particularly likely to lack awareness of the kind of weak epenthetic vowel. For example , Harms (1976) reports that finish speakers are un ware of an epenthetic schwa that is easily perceived by some non- native speakers . Few studies of vowel epenthesis have probed the intuition of native speakers about the vowels , and it would be useful to have data from more languages on how speakers perceive epenthetic vowels , including how the vowels are written, treated in metrics , and treated in language games (Colina , 2009: 101).

3.2.1.4 Function of vowel epenthesis

In most cases ,the function of vowel epenthesis is to repair an input that does not meet language structural requirements. In particular vowel epenthesis allows the surfacing of consonants that underling appear in phonetically illegal contexts . For example , Lebanese Arabic inserts vowels in to many (CC) coda to break up undesirable coda clusters .Epenthesis is more or less obligatory in coda clusters of an obstruent followed by a sonorant , as in (a) which is obligatory and optional in most other clusters as in (b)

(Browselow, 2000: 313):

a./ism/----/isim/ "name"	b./kibs/---kibis ~kibis "ram"
/ibn/----/ibin/ "son"	/sabt/--sabt ~sabit "Saturday"
	/nafs/----nafs ~nafis " self"

A second common reason for epenthesis is to bring a word up to a certain minimal size .Some languages require each lexical word to have a minimum of two mores or two syllables . Often , roots of smaller size are augmented with an epenthetic vowel (Ibid: 314),as in : (Banda ,spoken in conga):

/be/----ebe (liver)

/ma/----ama (month)

/manda/----amanda (door)

3.2.2 Consonant epenthesis

Consonant epenthesis is different in its motivation . It arises to provide a more consonant syllables . There are some words in English originally which ended in an alveolar nasal or an /s/ and which developed an epenthetic stop after the final segment .The result is that the syllable rhyme of such words shows a steady decrease in sonority from the

nucleus to the right edge. Epenthesis breaks up a vowel sequence that is not permitted by the phonotactics of a language, such as *wash* for "wash" in some varieties of American English (Chen, 1992: 188).

In English, a stop consonant is often added as a transitional sound between the part of a nasal x fricative sequence (Ibid:189):

_"hamster" > /hæmstər/ often pronounced with an added "p" sound [hæmpstə] •

_"wormth" > /wɜrm/ often pronounced with an added "p" sound [wompth] or [womth]

_"fence" > /fɛns/ often pronounced as [fɛnts]

_"else" > /ɛls/ by some speaker pronounced [ɛlts]

An example of English definite article *a*, which becomes *an* before a vowel. In old English, it was *an* in all positions, so diachronic analysis would see the original *n* disappearing except if a following vowel required its preservation: *an* > *a*. However, a synchronic analysis, in keeping with the perception of most native speakers, would equally see it as epenthesis: *a* > *an*. This view treats [n] as an epenthetic sound that breaks up a sequence of two vowels: *a apple* – *an apple*. (Anita K. Berry, 2002: 33).

3.2.2 The place of the epenthetic sound :

1) cluster in syllable - Initial position

rosa ----- *ərosa*

2) In the middle

blue /blu/ ---/bəlʊ/

apple > *an apple*

grow /greu/ ---/gəreu/

play /plei/ ----/pəlei/

brick /brik/ ----/bərɪk/

3- Cluster in syllable final position

As in the above example, epenthesis typically affected clusters that occur in syllable – initial position. Therefore, cluster in syllable – final position can also be affected but this is much more limited ((Browselow, 2000: 313).

Film /film/----/fɪləm/

Milk /milk/----/mɪlək/

3.2.3 Coronal epenthesis

Coronal have been claimed to behave as unmarked consonants in epenthesis. However it is well known that the glottal consonants (h?) are frequently epenthetic, and the empirical basis for the claim about coronal epenthesis has been weak, with only one example commonly cited. I will show that coronal epenthesis can in fact occur as epenthetic segments, but only in specific situations showing the classic signs of constraint conflict. It is argued that these patterns can be accounted for in optimality Theory using fully specified place in the representations and extending Smolensky's (1993) universally ranked "place hierarchy so that the glottal have the last marked place. The result will be that when all other things are equal, glottal will be the ideal epenthetic consonant, but when some higher-ranked requirement makes epenthesizing a glottal impossible (McDonough – 2003: 170)

Section Four

Conclusion

This chapter sums up the theoretical background and the findings of the present study by presenting its conclusion. The present study asserts the fact that all the phonological phenomenon could be universal since language itself is universal, but to discover these phenomenon or processes more investigations are needed.

A better understanding of phonological phenomenon will require work on more than one language. This research concentrated on English epenthesis in particular and some other languages in general. In English, it indicates that this study combine the traditional, structural description of epenthesis process with attention to the acoustic, articulation, and perception of this process, in other words, whether this phenomena is visible to other phonological processes in the same way that lexical vowels or consonants are. It would be interesting to see more systematic comparisons of epenthesis in loanwords vs. native phonology, giving the growing evidence that these processes may work differently. From this research it becomes clear that vowel epenthesis which are inserted to cut off consonant clusters are more widely used than consonant epenthesis which indicates the insertion of a vowel. It is such because consonant clusters are somehow more complicated than vowel

sequences and it needs more efforts. Thus, this phenomenon mainly works to lesson such efforts and make speech easier .

المستخلص

ضحى فاضل عباس ملوح

الجامعة الاسلامية / فرع بابل

Duha.fadhil@iunajaf.edu.iq

الاضافات الصوتية

تهتم الدراسة الحالية بالتعرف على الظاهرة الصوتية للخط الفاصل في اللغة الإنجليزية واللغات الأخرى. الفرضية الصوتية ظاهرة عالمية لأن اللغة نفسها عالمية. وبالتالي ، فإن هذا يعني إدخال الصوت الذي يكون عادة حرف متحرك دون تغيير المعنى. تتضح هذه الظاهرة من خلال أمثلة مختلفة من اللغة الإنجليزية واللغات الأخرى. يلقي هذا البحث الضوء على هذه الظاهرة للإشارة إلى أن المتحدثين يدخلون مثل هذه الحروف المتحركة أو الساكنة في الكلام العرضي السريع لجعل الكلام أو بين متواليات حرف العلة epenthesis أسهل وأيسر. يكون الإدخال إما بين مجموعات ساكن وهذا ما يسمى بحرف العلة epenthesis التي ستسمى

References

- Anita K. Berry , Linguistic perspectives on language and Education Green wood , 2002).
- Chen, M. The Chameleon [-r] Yanggu: Morphological in fixation or phonological epenthesis.(197-198)

Phonological Epenthesis

Asist. Lect. Dhuha Fadhil Abaas

Colman, John. **Phonological Representation: Their Names, Forms and Power.** Cambridge University Press .(183)

Crystal, D. (2008). **A Dictionary of Linguistics and Phonetics.** Oxford: Bakewell Publishing Ltd. 6th edition.

Davidson,L. and Stone, M. **Epenthesis versus Gestural Mistiming in consonant cluster Production: An ultrasound study.** Johns Hopkins University and University of Maryland at Baltimre.(10-13)

Gertrude Block ,Legal, **Writing Advice :Questions and Answer .** Hein,(2004).

Piggott, G.L. **Epenthesis and Syllable Weight.** (283-284).

Roach, P. (2008) (**Glossary – A Little Encyclopedia of Phonetics.**

Robert Remez Editorion (2005) .**The Hand book of speech Reception.**

<http://www.translationdirectory.com/articles/article1902.php>

<https://www.thoughtco.com/epenthesis-word-sounds-1690605>

<https://en.wikipedia.org/wiki/Epenthesis>

<https://www.merriam-webster.com/dictionary/epenthesis>

<https://www.sltinfo.com/phon101-epenthesis/>

<http://www.dictionary.com/browse/epenthesis>

<https://www.cambridge.org/core/journals/phonology/article/coronal-epenthesis-and-markedness/54420DE6FCCD73A9505B555F54ADF3A5>

<https://www.cambridge.org/core/journals/journal-of-linguistics/article/three-theses-concerning-phonological-representations/AA7F99C2AFD4C903B4F08939734B6868>

https://www.uni-due.de/SHE/HE_Change_Phonological.htm

<https://www.youtube.com/watch?v=uoDKORhrNag>

<https://www.thefreedictionary.com/epenthesis>

[/http://www.easybib.com/guides/students/writing-guide/ii-research/a-finding-sources](http://www.easybib.com/guides/students/writing-guide/ii-research/a-finding-sources)

[http://www.academia.edu/2314259/Define Library. Different Type of library. Discuss the gradual development of different type of library in](http://www.academia.edu/2314259/Define_Library._Different_Type_of_library._Discuss_the_gradual_development_of_different_type_of_library_in)

<https://www.thoughtco.com/what-is-consonant-cluster-cc-1689791>

<https://www.speechandlanguagekids.com/phonological-processes>

David Pisoni Robert Remez Editorion (2005) .**The Hand book of speech David Pisoni Reception. _**