

Phonological Interference of Mother Tongue in Vocabulary Acquisition by Libyan Speakers

Hanan Abu Bakr Abdullah Al-Fitouri

Ph Student-Department of English -Faculty of Arts - Damietta University

Abstract

The current study examines some phonological processes influenced by the interference between Tripolian Arabic (TA) and English within the context of Optimality Theory. (OT) (Prince and Smolensky, 1993). Linguistically, OT is a linguistic approach composed of constraints namely markedness and faithfulness. Methodologically, the research follows a descriptive-analytic approach. The study reveals that certain phonemes undergo emphatic spread and feature changes. In terms of emphatic spread, both [+pharyngeals] /s^ʔ/ and /t^ʔ/ are included; nonetheless, feature changes occurrence is associated with fortition and lenition. The study concludes that loanwords' phonological integration occurs as a result of linguistic interference across English (Source Language) and Tripolian Arabic (Target Language).

Keywords: Phonological, Vocabulary Acquisition .

Article history:

Received 6 April 2022

Received in revised form 10 May 2022

Accepted 11 June 2022

التداخل الصوتي للغة الأم في اكتساب بعض المفردات الكلمية لدى المتكلمين اللببيين

حنان أبو بكر عبد الله الفيتوري

طالبة دكتوراه – قسم اللغة الإنجليزية – كلية الآداب – جامعة دمياط.

المستخلص

يتعلق هذا البحث بظاهرتين صوتيتين نتيجة للتداخل اللغوي ما بين اللغة الإنجليزية واللغة اللببية العربية المنطوقة في طرابلس (ليبيا)، من خلال نظرية المفاضلة (برنس وسملونسكي، 1993). وتعد هذه النظرية إحدى النظريات القائمة على بعض القيود تحديداً قيود التمييز وقيود التشابه. أما بالنسبة لقيود التمييز، فإنها تتعلق بالتركيبات اللغوية الصحيحة التي تحدد النطق الصحيح لأي لغة، بينما تتعلق قيود المشابهة بدرجة التطابق بين المدخلات والمخرجات. واعتمد هذا البحث على المنهج الوصفي التحليلي الكيفي. وتوصل البحث إلى أن هناك مفردات صوتية محددة تندرج تحت خاصية التفخيم الصوتي وخاصية التغيرات الذبذبية. بالنسبة للتفخيم الصوتي، فإن صوتي الصاد والطاء هما أبرز الأصوات التي تنتج عن التداخل اللغوي، في حين أن ملامح الذبذبة متعلقة بدرجة اهتزاز الأحيال الصوتية من عدمها. واستنتجت هذه الدراسة أن التداخل اللغوي بين اللغتين يتسبب في إنتاج مثل هذه الظواهر الصوتية بالاعتماد على النظام الاشتقاقي للفعل وللأسم.

الكلمات المفتاحية: التداخل الصوتي ، المفردات الكلمية

تاريخ المقالة:

تاريخ استلام المقالة: 6 أبريل 2022

تاريخ استلام النسخة النهائية: 10 مايو 2022

تاريخ قبول المقالة: 11 يونيو 2022

1. Introduction

A lot of learners of a 2nd language aim at acquiring native's target language (TL) pronunciation which they learn. Owing to the complexity of a phonological acquisition, there is a difficulty in attaining a native-like pronunciation; in other words, the 1st language's phonological system has a lot of structural diversities from the TL's phonological system which makes it different. To illustrate, when 1st language aspects (L1) transfer to the 2nd language (L2) in the process of language learning, there is a development of interlanguage.

Owing to rapid contact across languages, linguistic interference is emergent especially within the phenomenon of borrowing. Borrowing is acknowledged as loanwords' adoption process; in the sense that, a language adopts an item from another language (Cherniak, 2002). In addition, Myers-Scotton (2002) refers to the borrowing process as a linguistic product which is realized between two languages. Nonetheless, Haspelmath and Tamdor (2009) monitor that borrowing is interference process among languages; it leads to loanwords' emergence. Accordingly, the process of borrowing can be described as a linguistic phenomenon of some interference between two languages over a period of time which results in loanwords' emergence and transmission.

2. Statement of the Problem

Loanwords' phonological modification is an explicit phenomenon which is pertinent to all languages. To clarify, all languages include certain phonotactic restrictions which formulate and govern their syllabic structures within their words. Within the process of the borrowing context, the recipient language (RL) dictates loanwords' diverse structures with the aim of conforming to the syllabic structures with reference to partial or total transformations of segments. Owing to similarities across English and TA's phonemes, some phonological processes are included: emphatic spread and some feature changes. The presence of both /s/ and /t/ contributes to the emphatic spread process within the context of their counterparts in the RL /s^ʔ/ and /t^ʔ/.

3. Literature Review and Theoretical Framework

The current section demonstrates a review of the literature pertained to this study and a theoretical framework of distinctive feature theory (DFT) and OT.

Chang (2003) studies English loanwords' phonological adaptation into Burmese in accordance with some conflicting principles of Optimality Theory (OT) which is a linguistic model which is demonstrated by Prince and Smolensky (1993). With reference to the OT, it denotes some conflicting constraints which formulate its components; they are explored in both markedness and faithfulness constraints. In terms of Burmese, it uses some phonological strategies to deal with English loanwords inserted into the Burmese lexicon. Phonologically, Burmese's vowel system is composed of eight monophthongs and four diphthongs. In terms of consonants, Burmese has a complex tri-formula of both stops and affricates. Furthermore, it is featured by the presence of both nasals and glides. In terms of syllabic structures, Burmese is, usually, characterized by the presence of CGVC; further, the letter "G" indicates glides. Nonetheless, English vowel system is composed of twelve monophthongs and eight diphthongs. In terms of consonantal system, English stops, fricatives, complex affricates nasals, and glides. However, English syllabic structures are characterized by the optionality of glides. Data collection takes place in various Burmese places whereby the subjects of the study are Burmese native speakers. In addition, some loanwords are taken from football matches, radio stations, and medical institutions. The study reveals that compensatory substituted sounds are apparent; obstruent codas are replaced by the [+glottal] sounds. The study concludes that anaptyxis is acknowledged as the most influential repair strategy especially in complex onsets. Furthermore, consonantal elision is an essential resolution of de-clustering complex codas to conform to Burmese' final [-CC].

Jarrah (2013) analyzes English loanwords' phonological integration into Madinah Hijazi (MH) Arabic speakers through the framework of Optimality Theory (OT). Hijazi

Arabic has its own phonological system which distinguishes it from English. Phonologically, Hijazi Arabic has some certain syllabic structure typologies: CV, CVC, CV:, CV:C, and CVCC. In contrast, English has open syllables and allows clustering sequence on syllabic margins. The study collects data in Madinah where the study subjects are Arabic native speakers of different ages including students, family members, some colleagues and friends. Consequently, the informants are asked to write English loanwords down on a paper so as to pronounce them. The study reveals some essential strategies: consonants and vowels epenthesis, vowels and consonants substitutions, and vowels shortening and lengthening. The study concludes that the transformation of loanwords' syllabic structures is explored in epenthesis which affects syllabic weight. It, also, leads to transforming the stress position from its original place to follow the MH's stress rules.

4. Distinctive Features Theory (DFT)

The DFT is a phonological model which is associated with the description of segmental features. In addition, it is developed by Chomsky and Halle (1968) in "*The Sound Pattern of English*" known as SPE. According to Hyman (1975), there are some tenets which are pertained to the DFT; in other words, the DFT indicates two contrastive linguistic categories as in /b/ and /p/

Thereby, these phonological processes get their analytic forms according to the DFT's binary systems as (\pm). The sign (+) identifies the feature presence; nevertheless, the sign (-) identifies its absence. Furthermore, the DFT contributes to phonemic identification, vowels and consonants, for speakers (Ziveng, 2009). Exploring the SPE, the DFT is necessary in analyzing the segmental tier to show the phonetic features of segments. In addition, it discusses the major class features, the manner features, the cavity features "the place features", and the laryngeal features as demonstrated in the following figure:

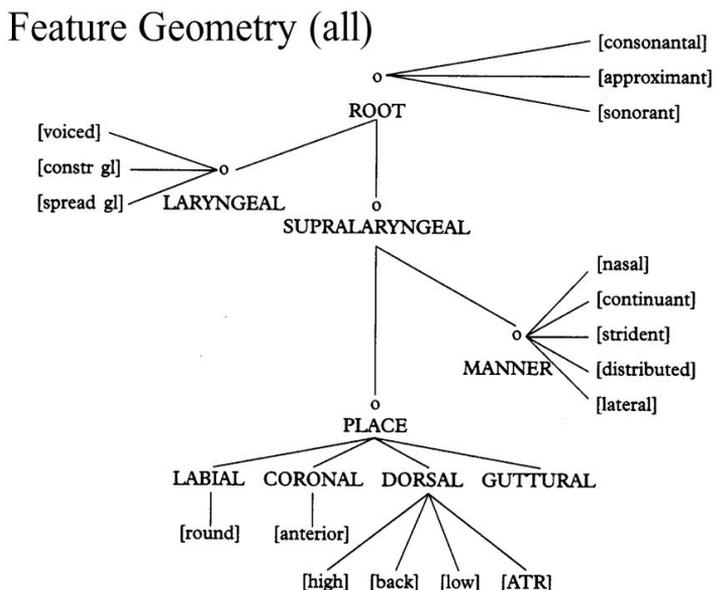


Figure (1) Chomsky and Halle (1968) in “*The Sound Pattern of English*”

4.1 Phonological Rule Presentations

According to the SPE (1968), some phonological rules are to formulate the formal outcomes of some certain morphological processes which are fundamentally rendered in the process of addition (epenthesis) or deletion (syncopation). There upon, these phonological rules are explored and introduced in accordance with the segmental category which gets some phonological transformations, transformational stages, and the contextual environment wherein the change occurs according to the SPE (1968) as demonstrated below:

$$A \rightarrow B/C_D$$

According to Chomsky and Halle (1968), the pervious format is interpreted and identified hereby:

- 1) “A” is a segmental category which is liable for change; it is the allocated *target* or the *focus*; in other words, it is the *Structural Description* “SD”.
- 2) “B” indicates the change category within the target. More clearly, it is the change or the *Structural Change* “SC”.
- 3) (C_D) formulates the *environment* where the change occurs.

4) () indicates the *focus bar* which shapes the target location within the new environment.

Some symbols, used within phonological rule representations, are interpreted below:

- 1) “#” indicates word boundaries.
- 2) “∅” indicates insertion or deletion.
- 3) “>” indicates transformational changes.
- 4) “{ }” indicates disjunction across two terms or more.

4.2 English and Tripolian Phonological Systems

English phonemic system is highlighted. It is associated with the phonological features of both monophthongs and consonants.

4.2.1 Monophthongs

Monophthongs are vowels of one sound (Roach, 2010). Furthermore, he classifies monophthongs into two categories. The first of which is the short one which involves seven sounds which are explored in /i/, /e/, /ə/, /ɔ/, /ʊ/, /æ/, and /ʌ/. Nonetheless, the second category is the long one namely /i:/, /ɑ:/, /ɔ:/, /ɜ:/, and /ʊ:/. Therefore, English monophthongs are twelve segments which are included in seven short and five long monophthongs as shown in the following figure:

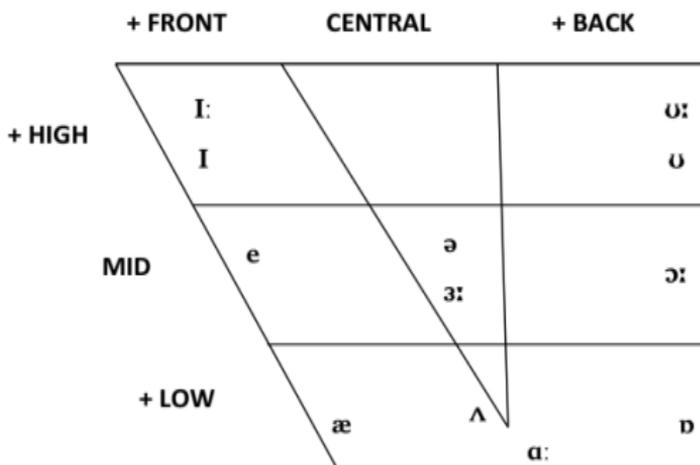


Figure (2) English Monophthongs (Roach, 2010)

4.2.2 Consonants

The following table expresses consonantal phonemic system:

Table (1) English Consonants (Roach, 2010)

Manner of Articulation	Place of Articulation							
	Bilabial	Alveolar	Velar	Labiodental	Dental	Post-alveolar	Palatal	Glottal
Stops	b p	d t	g k					
Fricatives		z s		v f	ð θ	ʒ ʃ		h
Affricates						dʒ tʃ		
Nasals	m	n	ŋ					
Lateral		l						
Glides	w	r					j	

According to the former table, there are three criteria through which consonants are defined and described: voicing, the place of articulation, and the manner of articulation. In accordance with voicing, a consonant may be [+voice] or [-voice]. However, a consonantal phoneme may be bilabial, alveolar, velar, dental, labiodental, post-alveolar, glottal or palatal according to the place of articulation. Further, the manner of articulation includes stops, fricatives, affricates, nasals, lateral, and glides.

4.3 TA's Phonological System

Vowels are segments which are pronounced without any obstruction or modification of the airstream through passage within the vocal tract (Ladefoged, 2000). According to Sheredi, (2015), TA's vowel system is divided into monophthongs and diphthongs.

4.3.1 Monophthongs

Monophthongs are vowels of one sound (Roach, 2010). They are divided into short and long sounds. Sheredi (2015) observes that TA has eight monophthongs. Short monophthongs are /i/, /a/, /e/, and /u/; nonetheless, long monophthongs are /i:/, /a:/, /u:/, and /ɔ:/.

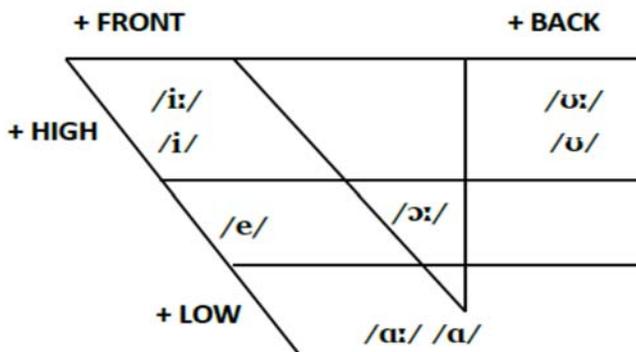


Figure (3) TA's Monophthongs (Sheredi, 2015)

4.4 TA's Consonantal System

Consonants are segments which are pronounced with airstream sever stricture within the vocal tract (Ladefoged, 2000). The following table is adapted from Sheredi (2015).

Table (2) TA's Consonants (Sheredi, 2015)

Place of Articulation	Manner of Articulation						
	Obstruents				Sonorants		
	Plosives		Fricatives		Nasals	Liquids	Glides
	(+V)	(-V)	(+V)	(-V)	(+V))	(+V)	(+V)
Bilabial	/b/				/m/		/w/
Alveolar	/d/	/t/	/z/	/s/	/n/	/l/	/r/
Labiodental				/f/			
Dental			/ð/	/θ/			
Emphatic	/dʔ/	/tʔ/	/zʔ/	/sʔ/			
Dental-emphatic			/ðʔ/				
Post-alveolar			/ʒ/	/ʃ/			
Velar	/g/	/k/					
Uvular		/q/	/ɣ/	/x/			
Glottal	/ʕ/	/ʔ/		/h/			
Pharyngeal				/ħ/			
Palatal							/j/

According to Sheredi (2015), three criteria are nominated with the aim of consonantal definition and description: voicing, the articulation place, and the articulation manner. With regard to voicing, a consonant is either [+voice] or [-voice]. However, a sound is sorted out into

bilabial, alveolar, velar, glottal and palatal according to the place of articulation. Further, the manner of articulation is pertinent with stops, fricatives, nasals, and glides.

4.5 Optimality Theory (OT)

Optimality Theory (OT) is, mainly, a constraint-based theory as it operates on constraint interaction. In the 1990s, Alan Prince and Paul Smolensky are the forerunners. Consequently, this theory is broadly known by John McCarthy. In addition, constraints are, universally, introduced in all languages as they formulate an essential part of UG which explores the innate language knowledge within the brain.

OT is a development of Chomsky's Generative Grammar (1965). Both theories shed light upon the requirement of universal tenets. Nonetheless, OT differs from previous generative models in many ways. Unlike the theory of generative Grammar, which assumes that the constraints are inviolable, OT emphasizes that universal constraints are violable. Therefore, every constraint is a part of UG; nevertheless, these constraints are not equally featured by activity in all languages according to OT. Therefore, in a language-specific necessity, constraints ranking, which is never violated in a certain language, may be violated in a 2nd language (Kager, 1999).

The fundamental notion of OT (Prince and Smolensky, 1993) is that the surface linguistic structures result from conflicts across competing constraints. These structures are appropriate since they have the least minimum violations of a set of violable constraints which are ranked in a hierarchical order. Two important functions of OT are monitored. The first of which is Generator (GEN) However, the second one is Evaluator (EVAL). Universally, the GEN generates endless number of candidates for a certain input. Consequently, these candidates are passed onto EVAL; in other words, a hierarchy of related well-formedness constraints is to be evaluated. Built upon the Minimal Violation Principle of OT, the winner candidate, the optimal output, violates the least high-ranking

constraint. The entire process is summarized and schematized in the following figure:

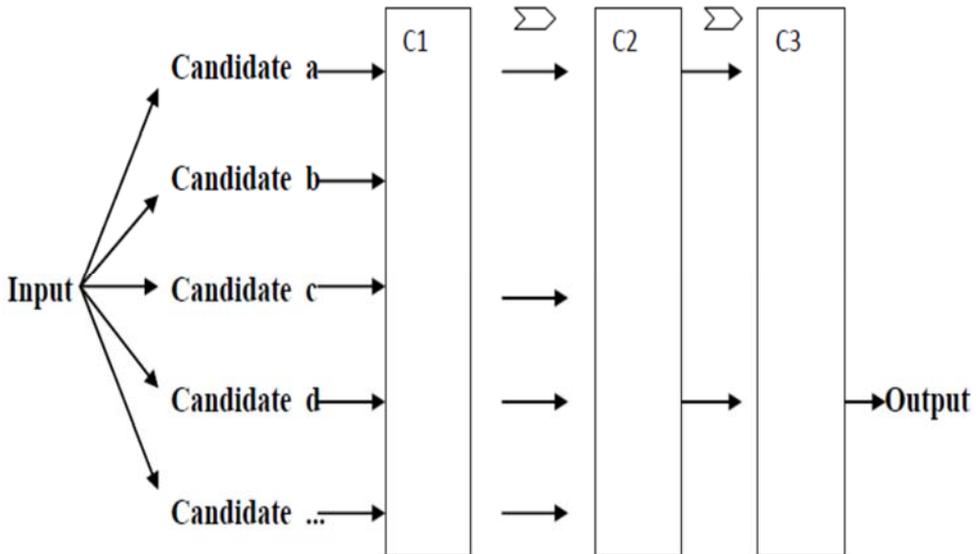


Figure (4) Input-Output Mechanisms in OT (Kager, 1999, p.8)

To illustrate the evaluation in OT, it is observed that a grammar consists of tri-columned constraints namely C1, C2 and C3 in CON which are ranked in the way that C1 and C2 dominate C3 (C1, C2 » C3). The GEN aims to provide three possible candidates (cand1, cand2, and cand3) which undergo the evaluation process operated by EVAL. The evaluation process is, usually, explored and rendered in a tableau form. According to this tableau, the optimal candidate is to be indicated by a pointing hand after evaluation (☞). Clearly, the following tableau exemplifies how a constraint-based analysis is represented in OT.

Table (3) Value Ranking and the Optimal Output Choice

INPUT	C ¹	C ²	C ³
1) ☞ Candidate ¹			*
2) Candidate ²	*!		
3) Candidate ³		*!	

At the top of Tableau 1, there are three relevant universal constraints which are introduced and explored in a respected

order which is to start from left to right. This order follows hierarchically ranked constraints. Furthermore, the violation is identified by the asterisk (*) in case a candidate violates such a constraint. When a violation is characterized by its fatality, an exclamation mark, along with the asterisks (*!), indicates such a fatal violation.

Investigating the three candidates in the previous tableau indicates that both candidates (b) and (c) violate constraint C1 and C2 which are the dominant highly ranked constraints. Accordingly, these two candidates have fatal violations (*!) of the two highly ranked constraints.

4.6 Optimality Theory Constraints

Constraints, involved in OT, are universal; however, the ranking of such constraints is language specific. Mainly, there are two essential Constraint Families; furthermore, each family includes infinite sub-constraints. Specifically, these are the Faithfulness and the Markedness Families. In addition, these two families are acknowledged as two forces engaged in a major conflict in every grammar (Kager, 1999). The operation of the markedness constraints is to integrate the OT into the MDH.

In accordance with Markedness, there are some structures within any language which are more marked than others. Furthermore, they are not allowed to come on the surface. For example, two of the most common markedness constraints which are mutual across English and Libyan Arabic are ONSET and NOCODA.

- **ONSET** in which every syllable begins with C
- **NOCODA (*CODA)** in which bare codas are allowed

In accordance with OT's framework, Markedness sub-constraints are considerably universal. Nonetheless, diverse phonological systems of different languages rank these constraints diversely; therefore, languages either allow or disallow some certain structures from being considered the optimal output. Therefore, as the marked structures are to be avoided, they are categorized according to certain processes such as epenthesis, deletion, or alternation.

However, faithfulness constraints require similarity across the output and the input (Kager, 1999). Thus, the output holds the features of its basic lexical form. In terms of faithfulness constraints, there are three major constraints namely identity, dependence, and maximality (Kager, 1999).

- IDENTITY (IDENT) in which the elements in the input and output should be similar. Furthermore, in the input, insertion, deletion, and featured changes of any segments are allowed in the output.
- DEPENDENCE (DEP) in which every element in the output has its counterpart in its input. Accordingly, insertion (epenthesis) is prohibited.
- MAXIMALITY (MAX) in which every element, in the input, has its counterpart in the output. Accordingly, deletion (syncopation) is prohibited.

According to McCarthy (2008), OT is the most appropriate framework which investigates syllabic structures. He points out that OT supplies a framework for the assignment of a constraint-based analysis and the application of the constraints' interactions and the evaluation of the representations that are essential part of any theory of syllabic or phraseological structures. There upon, this is acknowledged the reason why OT is possible applied to phonology.

5. Research Methodologies

The study follows a descriptive–analytic approach with the aim of analyzing some loanwords entering LA's phonological system. Firstly, a descriptive approach allocates and nominates reporting for the method that things should be (Mugenda and Mugenda, 1999). Furthermore, the design has its appropriateness to the present study since it is fundamentally pertained to the phonological processes occurring to some English loanwords entering TA's phonological environment. In addition, they are included in loanwords' nativization phenomenon in accordance with TA's phonological system with regard to the framework of OT. Some phonological strategies are defined and nominated in terms of Prince and Smolensky's (1993) OT. Segmental

processes are explored in emphasis spread and feature changes which includes fortition and lenition.

6. Data Collection

Native speakers of some Libyan speakers are the target population. Owing to the researcher's stay in Cairo, the researcher aims to collect loanwords from Cairo. Accordingly, she visits a neighboring Libyan school; there are a lot of Libyan students that are the participant observation.

A participant–observation is a method through which the researcher participates in people's daily life so as to collect the targeted loanwords (Mugenda, 2008). The researcher goes to the neighboring Libyan school to meet some students. The researcher asks them to pronounce the so-intended loanwords through an example of random derivations including both mono-syllabic and poly-syllabic loanwords.

The researcher seeks to attain recorded material from the students' performance as it is associated with phonology through some steps. Firstly, through the use of the researcher's own mobile phone, she accomplishes her task in accordance with recording the required material through telling the students. Consequently, the researcher listens to the loanwords as she is a woman who registers her own thesis at Damietta University. Furthermore, the thesis is pertained to phonology as the title indicates "*Interference of Mother Tongue in Vocabulary Acquisition by Libyan Speakers*". The title indicates that the phonological adaptation is related to Libyan speakers as the required region of the research. The students welcome the thesis topic.

7. Data Analysis and Manifestations

This section is pertained to the demonstration of the phonological processes within loanwords' interference in TA's phonological environment. Two phonological processes are apparent namely emphasis spread and feature changes.

7.1 Emphasis Spread

Durand (2014) refers to emphasis spread (ES) as a phonological process in which consonants are produced with primary and secondary articulations at the alveolar region. This phonological process involves the constriction of the

upper pharynx. Davis (1995) adds that it is the presence of such a non–primary articulation that it characterizes the emphatic phonemes. According to Lehn (1963), all consonants have some [+emphatic] counterparts. However, most of these consonants are existent in a very constricted phonological environment. He also emphasizes that there are five major [+emphatic] phonemes which are [+coronals]. They are /tʔ/, /sʔ/, /dʔ/, /zʔ/, and /rʔ/ which can be available on the syllable margins containing the [+high] [+tense] vowels /i:/ and /u:/. One of the most important observations of such phonemes is that they have an extensive impact of spreading their emphasis upon the word domain. Durand (2014) points out that [+high] vowels play an essential part in the ES process of some words.

Durand (2014) observes that the ES process may be obtained through the presence of the [+emphatic] phonemes along with the presence of the [-back] [+low] vowel, /ɑʔ/. According to Ghazeli (1977), some dialects of Arabic make a polarity in the phonemic system of vowels. Good examples are supported by the loanwords "potato" and "saloon" which have some [+emphatic] counterparts in TA. Speakers are to assume an essential emphatic consonant; thereupon, loanwords' vowels are deleted or transformed into the [+low] vowel /ɑʔ/ through some morphological processes.

Schuttle (1985) points out that the process of emphasis spread extends to the nominal, possessive, adjectival, and verbal transformational suffixes. He also states that the process of emphasis is highlighted with the presence of an emphatic stem. It is known that there are three morphological processes whereby the nominal, adjectival, and verbal processes take place. Durand (2014) observes that the ES can extend to all loanword's domains owing to the presence of the [+coronals], /tʔ/, /sʔ/, /dʔ/, /ðʔ/, and /rʔ/. There are about three loanwords assigned to the process of the ES. Only two loanwords are mono–syllabic; however, one loanword is poly–syllabic. All loanwords, assigned to the ES process, are featured by the presence of the [+coronal] /t/or /s/.

With reference to the specified loanwords, the [+coronal] phonemes of loanwords contribute to the occurrence of the ES process. The following two loanwords obtain the ES process of their domain due to the presence of the [+coronals] /s/ and /t/.

Table (4) "Pass" and "Shoot" Emphatic Spread

Loanwords	Transcription	The V. Process
Pass	/pɑ:s/	/ijbɑ:s ^ʔ i:/
Shoot	/ʃu:t/	/ijʃu:t ^ʔ /

In terms of the loanword "pass", it follows CVC syllabic structure. According to the verbal derivational processes, the polarity moves rightwards and leftwards. As for loanword "shoot", it follows CV:C syllable pattern. Due to the presence of the [-syllabic] [+coronal] /t/ as the coda, the spread polarity moves leftwards. In the verbal process, the effect moves from rightwards to leftwards. Thus, in the verbal processes, there is a leftward polarity.

Lehn (1963) observes that all consonants have their emphatic counterparts. As for the loanword "pass", it has a change from /ɑ/ to /ɑ^ʔ/. The presence of the [+coronals], /t/ and /s/, in the two loanwords supports Ghazeli's (1977) claim in which the emphatic segments are conditioned by the presence of the [+emphatic] /s^ʔ/ and /t^ʔ/. Furthermore, both /s/ and /t/ are, finally, allocated in loanwords' codas which contribute to spreading emphasis on the 1st rightward direction of the verbal derivation. As for the loanword "Pasteur", it is demonstrated below in the following table:

Table (5) "Pasteur" Emphasis Spread

Loanwords	Transcription	The N. Process
Pasteur	/pəstɜ:r/	/bas ^ʔ tarah/
Magnetic	/mæɡnetik/	/mɑχnat ^ʔ i:s/

Regarding The loanword "Pasteur", /pəstɜ:r/, follows the syllable structures of CVC–CV:C. There is a presence of three [+coronals], /s/, /t/, and /r/. However, the coda of the 1st syllable is assigned to emphasis spread /t/ considered the onset

of the 1st syllable. Thus, the emphatic spread moves rightwards and leftwards in the nominal process.

8. Feature Changes

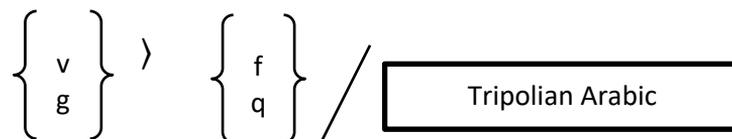
Feature changes are considerable transformations which contain explicit segmental transmissions. Owing to diversities across the phonemic systems of English and TA, there are some segments which are found in English which TA lacks and vice versa. Within the current research, feature changes are monitored with fortition and lenition.

8.1 Fortition

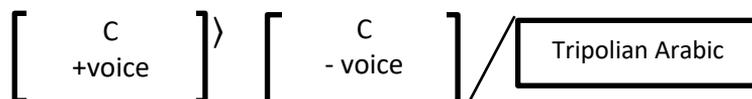
Fortition is a phonological process which identifies some strength in the entire segmental force (Crystal, 2008). To clarify, fortition is pertinent to transformations from a fricative to stop, an approximant to a fricative, or a [+voiced] to a [-voice] sound (Crystal, 2008). Within the current research study, there are some segmental transformations from [+voice] to [-voice] as shown below:

Loanwords	The V. Process	The N. Process
/vi:zə/		/fi:za/
/gæra:ʒ/	/ijqoradz/	
/gælvænik/	/ijdʒalɸin/	/dʒalfanah/

According to the former template, the fortition process is summarized in the following context:



Thus, the fortition process is demonstrated as shown below:



8.2 Lenition

Lenition is a phonological process term which identifies a sound weakening (Crystal, 2008). Furthermore, it includes transformations from a stop to a fricative (spirantization), a fricative to an approximant, or a [-voice] sound to a [+voice] sound (Crystal, 2008). Within the current research study, there are some certain loanwords undergoing segmental transformations from a stop to a fricative and from [-voice] sounds to [+voiced] ones.

8.3 Spirantization

Spirantization is a phonological process via which plosives are phonologically transformed into fricatives (Burquest, 2001). In addition, it is common process of scientific terms which are introduced into TA. To clarify, it is available of scientific terms namely "magnesium", "gas", and "gallon". Furthermore, it is apparent in some countries' names namely "Uganda", "Ghana", "Portugal", and "Guinea". Only two loanwords undergo the spirantization process namely "magnetic" and "galvanic".

Loanwords	The V. Process	The N. Process
-----------	----------------	----------------

/mæɡnetik/		/maxnatʔi:s/
------------	--	--------------

/gælvænik/	/ijdʒalfin/	/dʒalfanah/
------------	-------------	-------------

The [+voice] velar stop /g/ is turned into the [+voice] uvular fricative /ɣ/; furthermore, the [+voice] velar stop /g/ is phonologically transformed into the [+voiced] post-alveolar fricative /dʒ/ as in the following context:

$$/g/ \rangle / \left\{ \begin{array}{c} \gamma \\ dʒ \end{array} \right\} \left\{ \begin{array}{c} a \\ i \end{array} \right\} \text{---} \left\{ \begin{array}{c} n \\ a \end{array} \right\}$$

Thus, the spirantization process is explored as shown below:

$\left[\begin{array}{c} C \\ -uvular \end{array} \right] \rangle \left[\begin{array}{c} C \\ +uvular \end{array} \right] /$	<div style="border: 1px solid black; padding: 5px; display: inline-block;">Tripolian Arabic</div>
---	---

8.4 Devoicing

Lenition is a phonological process indicating a segmental transformation a [-voice] sound to a [+voiced] sound (Crystal, 2008). Within the current research, there is a phonological transformation from [-voice] sounds to [+voice] ones. Two loanwords undergo the devoicing process specifically including the [-voice] /p/.

Loanwords	The V. Process	The N. Process
/pɑ:s/	/ijba:s [?] i:/	
/pəstɜ:r/		/bas [?] t [?] arah/

The rule is that the [-voice] [-labial] stop /p/ is turned into the [+voice] [-labial] stop /b/ as shown hereby:

$$/p/ \} / b^?/ \quad / \quad \boxed{\text{TA}}$$

Thus, the devoicing process is represented as shown hereby:

$$\left[\begin{array}{c} \text{V} \\ \text{-voice} \end{array} \right] \} \left[\begin{array}{c} \text{V} \\ \text{+voice} \end{array} \right] / \quad \boxed{\text{TA}}$$

9. A CONSTRAINT-BASED ANALYSIS

This section sheds light upon demonstrating emphasis spread process and feature changes in accordance with OT.

9.1 Emphasis Spread

According to Al-Bataineh (2019), emphasis spread can operate in a leftward (regressive) or rightward (progressive) direction, or bi-directionally. To clarify, the emphasis spread in the loanwords: “shoot”, “pass”, “magnetic”, and “Pasteur” is triggered by the presence of [+syllabic]. In addition, this section is pertained to a discussion of how directional spreading and blocking are expressed by faithfulness and markedness constraints to decide which direction is the default pattern in Tripolian Arabic.

The emphatic segments /s^ʔ/ and /t^ʔ/ trigger harmony to the preceding segments; in other words, both vowels and consonants have the [RTR] feature from the pharyngealized [+coronal]. This process is not blocked by any segment. Specifically, McCarthy (1997) proposes a number of faithfulness and markedness constraints. The faithfulness constraint IDENT-ATR requires that an input segment that has the feature [ATR] ‘advanced tongue root’ must retain this feature in the output. IDENT-ATR is dominated by the markedness constraint RTR-LEFT which requires harmony of the feature [RTR] (McCarthy 1997, p. 235):

RTR-LEFT Align ([RTR], Left, Word, Left) “Any instance of [RTR] is aligned initially in Word”

RTR-LEFT assigns a violation mark to every segment between the leftmost RTR segment and the left edge of the word.

Table (6) Emphasis Spread in the Loanword "magnetic"

/mæɡnetik/		RTR-LEFT	IDENT-ATR
a) 	/mæɣnat ^ʔ i:s/		*!*
b)	/ mæɣnati:s/	*!*	

Candidate (a) satisfies the requirement of RTR-LEFT since the emphatic segment /t^ʔ/ in /mæɣnat^ʔi:s/ spreads the feature [RTR]. However, Candidate (b) is outruled from the competition since it violates the high-ranking constraint RTR-LEFT by not spreading the [RTR] feature to preceding segments.

9.2 Spirantization

Spirantization identifies a process whereby plosives are turned into fricatives (Kirchner, 1998). In addition, this process occurs in environments which contain containing [+long] vowels. Kirchner (1998) points out that lenition patterns are demonstrated according to some conflicts between the effort minimization constraint, LAZY, and, on the other hand, a class of lenition-blocking constraints which, in turn, are liable to divisibility into "faithfulness" constraints. These constraints penalize divergence from similarity across underlying representation and corresponding surface form.

(2) LAZY: minimize articulatory effort (biomechanical energy).

There upon, linguistic-specific lenition patterns spring from LAZY, interacting with faithfulness constraints. The treatment of spirantization in the following tableau, in terms of conflict between LAZY and faithfulness, can trivially be extended to all manner of lenition phenomena as in the following table.

Table (7) Spirantization in the Loanword "magnetic"

/mæɡnetik/		LAZY	IDENT
a) 	/mæʁnatʔi:s/		*!*
b)	/magnatʔi:s/	*!*	

Candidate (a) satisfies the requirement of LAZY since the velar stop /g/ is turned into the fricative /ʁ/. However, Candidate (b) is outruled from the competition since it retains the same pronunciation of the loanword.

10. Conclusion

The study shows that there are similarities and differences in the phonological systems across English and TA. That is, some segments in English and TA are the same. However, some other segments in English and TA are completely different. The ES process is specified by the presence of the [+coronal] phonemes /s/ and /t/especially in some poly-syllabic loanwords in addition to the mono-syllabic loanwords "pass" and "shoot". However, feature changes include fortition and lenition.

The fortition process includes a change from [+voice] to [-voice] segments. As for the lenition process, it is included in the spirantization process and a change from a [-voice] to [+voiced] sound. The spirantization process is only restricted to the loanword "magnetic" in which the [-uvular] /g/ is transformed in the [+uvular] /ʁ/. However, the devoicing process is applied to the [-voice] /p/ to be replaced by the [+voice] /b/. The hierarchical constraints of RTR-LEFT»IDENT-ATR conforms to the empathic spread

process. Furthermore, LAZY»IDENT conforms to spirantization process.

References

- Al-Bataineh, H. (2019). Emphasis Harmony in Arabic: A Critical Assessment of Feature-Geometric and Optimality-Theoretic Approaches. *Languages*, 4(4), 79.
- Burquest, D. A. (2001). *Phonological Analysis, a Functional Approach*, Dallas: SIL International.
- Chang, C. B. (2003). *"High-interest Loans": The phonology of English Loanwords' Adaptation in Burmese* (Doctoral dissertation, Harvard University).
- Cherniak, V.D. ed. (2002), *Russian Language and Culture of Speech*. Moscow, High School.
- Chomsky, N., & Halle, M. (1968). *The Sounds Pattern of English*.
- Crystal, David (2008). *A Dictionary of Linguistics and Phonetics 6th Edition*. Oxford: Blackwell Publishing. Accessed online on 25/ 07/2014
- Davis, Stuart. (1995). 'Emphasis Spread and Grounded Phonology'. *Linguistic Inquiry* 26. 465-498.
- Durand, A. D. L., & Mion, G. (2014). *Emphasis Spread in Cairene Arabic: A Reassessment*.
- Ghazeli, Salem. (1977). *Back Consonants and Backing Co-articulation in Arabic*. Ph.D. Dissertation, the University of Texas at Austin.
- Haspelmath, M. and Tadmor, U. (2009). *Loanwords in the World's Languages: A Comparative Handbook*. Berlin, De Gruyter Mouton.
- Jarrah, A. S. I. (2013). *English Loanwords Spoken by Madinah Hijazi Arabic Speakers*.
- Kager, R. (1999). *Optimality theory*. Cambridge university press.
- Kirchner, R. (1997). Contrastiveness and Faithfulness. *Phonology* 14.1, 83-111
- Ladefoged, P. (2000). *A Course in Phonetics* (4th ed.)
- Lehn, Walter. (1963) 'Emphasis in Cairo Arabic'. *Language* 39(1). 29-39.
-

- McCarthy, J. J. (2008). *Optimality theory in phonology: A reader*. John Wiley & Sons.
- McCarthy, John J. 1997. Process-Specific Constraints in Optimality Theory. *Linguistic Inquiry* 28: 231–51
- Mugenda, A.G. (2008). *Social Science Research: Theory and Principles*. Nairobi: Acts Press
- Mugenda, O. M. and Mugenda, A. G. (1999). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: Acts Press.
- Myers-Scotton, C. (2002). *Contact Linguistics Bilingual Encounters and Grammatical Outcomes*. Oxford: Oxford University Press.
- Prince, A. , & Smolensky, P. (1993). *Optimality: From Neural Networks to Universal Grammar*. *Science*, 275(5306), 1604-1610.
- Roach, P. (2010). *English Phonetics and Phonology 4th Edition: A Practical Course*. Ernst Klett Sprachen.
- Schulte, Martha. (1985). *The Word and the Syllable in the Spread of Emphasis in Cairene Arabic*. M.A. thesis, University of Arizona
- Sheredi, N. (2015). *Prosodic Processes in Two Dialects of Libyan Arabic: A Harmonic Serialism Approach* (Doctoral dissertation, University of Essex).
- Zivenge, W. (2009). *Phonological and Morphological Nativization of English Loans in Tonga* (Doctoral dissertation).