

Segmental Patterns and Phonological Asymmetries in English Loans in Hugariyyah Yemeni Arabic (HYA): An OT Account

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Abstract

*This paper intends to focus on the notion of segmental patterns registered across the English loan words in Yemeni Arabic of Hugariyyah variety. The adaptation process of loanwords in HYA conforms to the structural constraints of Arabic Phonology. During the process of adaptation onset positions are treated as more salient than coda positions. Deletion is not allowed in onset position and the ranking schemata is ONS>>*Complex >> Max >> SSP >> *Coda. In the similar fashion devoicing of the voiced obstruents is more favourable in coda positions. In HYA English loanwords, the segments which are less salient and less sonorants are altered or deleted than their stronger counterparts in coda positions which support the accepted claim of positional faithfulness to the onset. The paper seeks to address whether idiosyncratic patterns displayed by loans in HYA supports the notion of the positional asymmetries and phonological strength in the loanwords. Furthermore, it provides reasons for the adaptation using the Optimality-Theoretic framework (Prince & Smolensky, 1993, McCarthy & Prince, 1995).*

Key Words: Segmental Patterns, Loanwords, Positional Faithfulness

Introduction

This paper is an attempt at representing the segmental patterning and phonological asymmetries within the phonological patterns of English loanwords in Yemeni Arabic of Hugariyyah. It is to examine what happens to English loanwords after lexical borrowing occurs in HYA. Borrowing of lexical items not only results in the enrichment of the lexical inventory of HYA, but also leads to a variety of changes to English borrowed words. The varied repair strategies (which are raised due to the ranking of constraints in the grammar of the native language) vary from epenthesis in some cases to deletion or assimilation / substitution in others. In addition to these various phonological processes which take place in Loanwords in HYA, some positions in the words are more salient and resist alternation than other positions. Non-silent positions, such as codas, treated in a specific repair strategy.

Section 1 talks about previous works in the loanwords in the Arabic language. Section 2 points out the various approaches that explain the adaptation of the loanwords. Section 3 focuses on the vowel epenthesis and shortenings repair strategies for loanwords in HYA. Section 4 shows consonant deletions in loanwords in HYA. Section 5 explains the patterns voicing assimilation in loanwords in HYA which is followed by Optimality-Theoretic account of loanword adaptation in section 6. Section 7 is a general summary and conclusion.

Previous Works in the Loanwords in the Arabic Language

The phenomenon of borrowing has been investigated in a number of Arabic dialects. A governing study on the adaptation of loanwords in Arabic language, in general, has been done by Bueasa (2015). She lists some of the loanwords in Classical Arabic which are borrowed from various

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languages such as Latin, Greek, Persian, Syriac, Turkish, and other languages. She also compares the loanwords of Classical Arabic with native words. She points out the vast productivity and flexibility of Arabic morphology. She shows how the Classical Arabic proposes the criteria that determine the morpho-phonological alternation. Another study of English loanwords in Jordanian Arabic is done by Alsaïdat (2011). He focuses on the gender and number of English loanwords in Jordanian Arabic and how they are used to integrate English lexical items. He concludes that English loanword nouns follow the Arabic gender distinction and are categorized according to number whether singular, dual or plural. Therefore, the English loanwords follow the Arabic morphological system rather than the English language system. English words in East Saudi Arabic are studied by Thornburg (1980). 283 words were examined to see the segmental alternation and their effects on Arabic phonology. The author comes out with certain rules, which are named "borrowing rules". The occurrence of English loanwords in Iraqi Arabic and the Arabic-English code switching behaviour among Iraqis is studied by Abu-Haidar (1988).

Some Approaches of the Loanword Phonology

It is necessary to point out the various approaches that explain the adaptation of the loanwords. Research in loanword proves that loanword adaptation is not random and it is based on phonetic motivations. The perception approach is the speaker's misperception of identification of the phonological shape. The construction is involved in the mental representation of the words in terms of articulatory features, which include fully specified syllabic and prosodic structures (Peperkamp and Dupoux, 2003). When the speakers face a new language, they deal with sounds that are not included in the inventory of their language.

The featural configurations characterizing these segments or combinations of segments are, therefore, absent and the speaker lacks a mental representation of these instructions which will be absent at the production level. The changes are made at the perceptual factor and not at the phonological factor. After the learner learns to produce them, he understands them in the process of perception.

With this approach, learning is difficult and time consuming. The words become familiar, and the learner understands them accordingly in perceptual mental representations. These perceptual mental representations and adjustments are stored in memory, and become the adjusted underlying representation for the non-native sound configuration. Then, the foreign word can fully undergo adjustments both phonologically and morphologically. In the process of adaptation, acoustic signal without phonological information may not be true and it must show other approaches and factors (Takagi & Mann, 1994 and Smith, 2004).

Paradis and La Charité (1997) claim that adaptation is not a case of misperception of the surface form of the foreign word but the changes that occur in production. In this approach, the Theory of Constraint and Repair Strategies (TCRS) is formulated. According to this view, the phonology of the language has universal and non-universal constraints which trigger the application of repair strategies and they do not work separately.

The perspective of perception and production approach treats the two approaches above (perception and the phonological) as two different levels, i.e., perceptual level and the operative level (Silverman, 1992 and Yip, 1993). Silverman's (1992) hypothesis that involves two levels is adopted by Yip (1993) who employs Optimality Theory perspective at the operative level for testing the input. The constraint-based analysis accounts for both loanword phonology and the phonology of the host language. This mechanism generates a variation in adaptation strategies (e.g. vowel insertion and consonant deletion). The foreign word is adapted at the production level based on the native language system. Segments that are not perceived will not remain in the adopted form, while those that are perceived at the perception level will be preserved at the production level (Nguyen, 2016).

In general Phonology, perceptual similarity integrates into the production grammar (Steriade, 2001). The perceptual-similarity approach proposes that loanword adaptations tend to maximize the perceptual similarity between the output and input forms. Consequently, it helps to account for phonological factors as well as non-contrastive phonetic factors. This perceptual similarity approach has some unique advantages over other types of approaches.

The “Too Many Solutions” problem (Steriade, 2001) indicates how there is almost always more than one possible repair strategy, although adaptation often converges on a specific strategy even when speakers have no clear evidence for that process in their native language.

Notice the following examples:

Examples (1)

HYA borrowed word	English word	Glossary
[ka.bat]	/kʌ.bəd/	‘cupboard’
[ba.la:k]	/plʌg/	‘plug’

HYA does not have the voiceless stop /p/ in its inventory of sounds; so, the English /p/ is systematically adapted as /b/, and not as /m/ or /w/, for example, although it does have these sounds in its inventory of labial segments. Similarly, a repair for a phonotactic constraint violation presents a wide range of logically possible choices. When the onset cluster is borrowed into a language which bans complex onsets, the structural requirements of the native language can be satisfied by the deletion of a consonant, or by the epenthesis of a vowel to break that cluster.

In the case of HYA, the epenthesis repair strategy is chosen over consonant deletion. So, the question is why do adapters converge on a specific repair strategy? It has been proposed that in segmental adaptation, the choice of which feature to preserve and which feature to sacrifice is informed by the status of the features and the contrastive feature specifications in the native phonology (Clements, 2001). So, in the process of loaning in HYA, we have to preserve feature specifications in the native language and satisfy the restriction of the language. For example, languages with restrictions on syllable structure permit vowel epenthesis in order to satisfy these restrictions when dealing with borrowing words from other languages (Uffmann, 2006).

Epenthetic vowels in English loanwords in HYA are motivated by English complex consonant clusters. In other words, epenthetic vowels occur in English loanwords to break up the consonant cluster in onset position which is illicit in the dialect. Modern Standard Arabic also does not permit initial consonant clusters, while it can tolerate final bi-consonant clusters as well as single codas (Watson, 2011). Therefore, the maximum syllable structure in MSA is of the canonical shape CVCC. To achieve this aim, two questions should be addressed; What are the restrictions on syllable structure in HYA? How the onset and coda in English loanwords are treated in HYA? The adaptation of loanwords using vowel epenthesis is considered as the main repair strategy in HYA.

Vowel Epenthesis and Shortenings Repair Strategies for Loanwords in HYA

HYA dislikes double-consonantal clusters in the onset position of English loanwords due to the restriction on its syllable structure. Such a cluster is always repaired by an epenthetic vowel breaking it up into CVC. Though many word final CC clusters are left unrepaired, loanwords ending with CC clusters which violate the Sonority Sequencing Principle are repaired in HYA with a peripheral vowel attached to the end of a word. On the other hand, word-final CVCC

syllables are not tolerated in HYA even if that final CC cluster obeys the SSP. These word-final CVVCC cluster are shortened to CVCC if the CC cluster in the coda goes with the SSP.

Examples (2)

HYA borrowed word	English word	Glossary
[bomb]	/pʌmp/	‘pump’
[kart]	/ka:rd/	‘card’
[bank]	/bænk/	‘bank’
[kit.li]	/kitl/	‘kettle’

In the first three examples above, word-final CC cluster are accepted. However, in the second and third examples (assuming American pronunciation in the second one), the syllables CVVCC are shortened whereas in the last example the [tl] cluster does not go with the SSP and, consequently, it is broken up by attaching a word-final vowel.

With regards to word-initial CC or CCC clusters, an epenthetic V after the initial consonant is the only option. No loanword with a consonant deletion to repair the initial CC cluster is attested in the dialect. Yet, the epenthetic vowel breaking up the initial complex cluster has to be harmonized with the vowel following the cluster.

Examples (3) epenthesis and vowel harmony in word-initial CC clusters.

HYA Borrowed word	English word	Glossary
[ki.ri:m]	/kri:m/	‘Cream’
[qa.las]	/gla:s/	‘Glass’
[ba.la:k]	/plʌg/	‘Plug’
[di.ril]	/dril/	‘Drill’
[suk.ru:b]	/skru:/	‘Screw’
[siwis]	/switʃ/	‘Switch’
[ba.las.tik]	/plæs.tɪk/	‘Plastic’
[fi.ri:.zar]	/fri:.zər/	‘Freezer’
[bo.roʃ]	/brʌʃ/	‘Brush’

In examples (3) above, all the words start with double-consonantal or tri-consonantal clusters and all are broken up by epenthetic vowels after the first C. This epenthetic vowel should be in

harmony with the vowel that immediately follows the cluster. It is clearly shown that vowel epenthesis is the strategy used for the adaptation of English loanwords beginning with a complex cluster in HYA.

Here, we have epenthesis in onset and coda clusters, while deletion occurs rarely in coda. So, we can state that there is no deletion for the consonants in strong position (onset) in the loanwords of HYA; consonants are maintained in the onset positions but not in coda position as in few examples such as, [kili:j] from /klatʃ/ 'clutch' and [laj.san] from /lai.sans/ 'license'.

It is claimed that epenthesis is the most commonly used strategy (Paradis and La Charite 1995, 2001). It is used to break up illegal consonant clusters whereas deletion strategy hardly exists in the cases of HYA.

The restriction on Arabic syllable structure in onset position is a motivating factor for adding a vowel /a/, /u/, /i/ and the consonant clusters are broken up by vowel epenthesis.

One of the three Arabic vowels /i/, /a/ or /u/ is inserted after the first C of the onset clusters (sp, cl, br, kr, gl, pl, dr, sw, skr). This reflects that the grammar and the structure of the original language are not followed in the borrowing language. It is always repaired with epenthesis.

Further, the vowels are not chosen randomly. It is clear from the examples that the inserted vowel in onset cluster undergoes the process of vowel harmony. The two vowels are similar in place and manner. The vowel harmony process presented here shows that the trigger for this harmony is the stressed English vowel. The epenthetic vowel is not chosen randomly. This indicates that in the process of loan formation, English vowel dominates the choice of the vowel adaptation in HYA. The English vowel alternates with a similar vowel which has some features of the English vowels.

Consonant Epenthesis

Consonants may be added to separate unfavourable vowels in hiatus in loanwords. We have interesting examples where the addition takes place between the diphthongs as in the following examples:

Examples (4)

[wa:ʔir] ¹	/waɪər/	'Wire'
[ta:ʔir]	/taɪər/	'Tires'
[laj.san]	/laɪ.səns/	'Licence'

The consonant /j/ in the third example compensates for the second member in the diphthong /aɪ/. It is claimed that deletion is not the most preferred repair strategy during loanword adaptation (Paradis and LaCharite, 1995, 2001), and that epenthesis is the most favourable repair strategy. Diphthongs do not exist in the HYA inventory and this accounts for the change. HYA speakers do not delete the diphthongs but the words are modified and alternated to follow the phonological grammar and the structure of HYA dialect. Furthermore, the syllabic affiliation of the C slots is largely predictable. The presence of the intervocalic consonant in the onset of the second syllable, rather than the coda of the first is universal. That is, consonants prefer to form an onset rather than a coda, if they can legitimately do so. Clements (2001) assumes that at the best only the

¹ In such examples, the words in the left-hand column (between angled brackets) are the HYA pronunciations, in the center column (between two slash marks) are the English pronunciations and in the right-hand column are the glossary.

association of the V slot with a vowel is lexically given, but that associations of the C slots with the syllable nodes can be derived by rule. So, the Maximum Onset Principle (MOP) requires that a string like [ta:ʔɪr] should be syllabified as [ta:.ʔɪr] rather than [ta:ʔ.ɪr]. The principle which is responsible for maximizing the onset is Maximum Onset Principle (MOP): first make the onset as long as it legitimately can be; then form a legitimate coda.

• **Glottal Stop /ʔ/ Prosthesis.**

The phonological system of HYA does not permit the occurrence of vowels in the initial position. The glottal stop is usually present word-initially prior to onsetless syllables. English loanwords which begin with onsetless vowels are preceded by the glottal stop in the surface in HYA. Consider the following Examples:

Examples (5)

HYA borrowed word	English word	Glossary
[ʔu.tu.mæ.ti.ki]	/ɔ:təmætɪk/	‘Automatic’
[ʔar.jal]	/eə.riəl/	‘Aerial’
[ʔa.mazu:n]	/a.ma.zən/	‘Amazon (forest)’
[ʔa.ka:.di:.mi]	/ækə.de.mɪk/	‘academic’
[ʔam.ri:.ka]	/a.me.ri.ka/	‘America’
[ʔa:s.ja]	/e:.[ə/	‘Asia’
[ʔi.ni].tain]	/ai.ni].tain/	‘Einstein’

Consonant Deletions in Loanwords in HYA

Deletion is a repair strategy in loanwords though it is not the most preferred during loanword adaptation (Paradis and LaCharite, 1995, 2001). Perceptual salience is the result of the strength or weakness of the acoustic cues. Across languages, consonant cluster in loanwords is uniformly treated by deletion or epenthesis, but to determine which of these two processes are to be applied or to determine whether a consonant is to be deleted or retained is something depends on the type of consonant and its phonological environment and perceptual salience. Consonant deletion in English loanwords borrowed by HYA provides strong evidence for the role of perception in consonant deletion.

Notice the following examples:

Examples (6)

HYA borrowed word	English word	Glossary
[re:.was]	/rɪvɜ:rs/	‘Reverse’
[ga.ram]	/gɑ:rmənt/	‘Garment’
[ho:n]	/hɔ:rn/	‘Horn’

[sa.kan.ʃut]	/'sek.ənd .ʃu:t/	'Second shoot'
[ham.ba.rik]	/'hænd.breɪk/	'Handbrake'
[ki.le:ʃ]	/klʌtʃ/	'Clutch'
[henʃ]	/ɪntʃ/	'Inch'

Consonant deletion is also a process determined and motivated by the members of final consonant clusters. Deletion targets the first consonant of the coda consonant clusters. Thus, we see that consonant deletion and vowel epenthesis are two repair strategies for coda clusters in English loanwords.

In the cluster of plosives (non-salient) and fricatives (highly salient), the plosives are deleted. Yet, when the second member of the cluster is the sound /r/, the trill is deleted. There is a sort of asymmetric faithfulness pattern that privileges fricative in loanwords to be maintained than plosives. The fricative sound /ʃ/ is a segment with its own strong internal cues, rendering contextual cues less crucial. It is maintained in all environments. However, a plosive sound has a few internal cues and is heavily dependent on good contextual cues. It is deleted when it comes with fricatives. So, there is a striking asymmetry as to which consonant is lost.

The deletion of the medial C in CCC clusters is related to perceptual strength: only the perceptually weakest consonants - stops - may be deleted, while fricatives and affricates may not. Here, the medial stop consonant /t/ of English loanword in HYA is deleted in the two loanwords /ɪntʃ/ and /klʌtʃ/ in CC clusters.

Deletion in HYA consonants in English loanwords is summarized below:

- Stops are mostly lost in coda positions.
- Fricatives always survive in any environment.
- Comparing the two sonorant sounds /r, n/ the trill is mostly deleted when it occurs either with /n/ or with obstruent consonants.

Thus, there is a harmonic relationship between the saliency factors and the sonority hierarchy in the process of deletions in loanwords. The segments in loanwords which have less sonority value are more likely to be sacrificed. These segments are deleted and not the segments which are high sonorant and more salient. This also can be noticed in the following examples where the feature [+Voice] is not licensed in coda position and maintained in onset position. Some examples are shown below:

Examples (7)

HYA borrowed word	English word	Glossary
[ka.bat]	/'kʌb.əd/	'Cupboard'
[ba.la:k]	/plʌg/	'Plug'
[ki.le:ʃ]	/klʌtʃ/	'Clutch'
[ga:k]	/dʒʌg/	'Jug'

[qe:.reʃ]	/gæra:ʒ/	‘Garage’
[mo:f]	/məʊv/	‘Mauve’

In the first three examples, we notice that the [-continuant sound /d, g/] consonants which occur in word final position are not deleted but they are devoiced. The [+continuant sound /ʒ/] that occurs in word final position is also devoiced. It is also worth mentioning that the sound /p/, which is voiceless in the original language, becomes voiced in the onset position in HYA /ka.bat/, /si.bi:t/ and /ba.lak/.

This means that this feature (+voice) is not licensed in coda positions and is maintained in the onset positions. Another example is the English word ‘bus’, it is borrowed into HYA with a change in vowel and coda consonant. The /s/ sound is not replaced with a voiced sound but with the voiceless sound /sʰ/. Hence, only obstruents (not sonorants) that are usually devoiced and, therefore, we can treat this as a kind of asymmetrical behaviour of obstruents and sonorants in the process of devoicing.

A native speaker usually searches for the closest segment phonetically and phonologically to that particular missing sound in the borrowing language and substitutes the ‘illicit’ sound. The substitution for the sounds /p/, /ʒ/ and /v/ are generally seen as a repair strategy in many of the Yemeni dialects. The sound /b/ is always used in the place of /p/, /ʃ/ in the place of /ʒ/, and /f/ in the place of /v/, in the borrowed words adaptation. The illicit voiceless bilabial is replaced by a voiced bilabial, the voiced postalveolar is replaced by its voiceless counterpart and the illicit voiced labiodental is replaced by the voiceless counterpart.

So, phonetically, the speaker determines the segment which has to be the substitutive one. The sound /ʒ/ does not exist in some dialects of HYA; instead, the sound /g/ is used. In the substitution process, it is the voiceless post alveolar /ʃ/ and not /g/ which is replaced, because the sound /ʃ/ is phonetically the closest sound to the illicit sound as is shown in the following phonetic chart:

	Bilabial	Labiodental	Postalveolar
Plosive	p b		
Fricative		f v	ʃ ʒ

Therefore, these sounds show the substitution of the English sounds with the ones that are closer to them and are a part of Arabic inventory. As we mentioned above, there are two possible hypotheses:

- During the process of perception and learning, the acoustic representation of the non-native segment is faithfully mapped into abstract featural representations (Jacobs, 2000). This featural representation is, hence, modified during production.
- The modifications already occur during perception and learning. This explains the change of the English loanword sounds with familiar sounds from Arabic inventory.

• **English Diphthongs in Loanwords.**

HYA has only two diphthongs which are [aj] and [aw]. These diphthongs are used by some speakers while other speakers use the long vowels [e:] and [o:] in their place respectively.

The question, then, arises: what happens when the dialect borrows an English word that contains a diphthong which is not available in its inventory?

One would expect that such diphthongs would be substituted by the diphthongs available in the dialect. This is true with regards to English diphthongs /ai/ and /au/ but not true with regards to other diphthongs such as /eɪ/ /əʊ/, /ɪə/, etc. Notice the following examples.

Examples (8)

HYA borrowed word	English word	The meaning
[ku:t]	/kəʊt/	‘Coat’
[di:.kɔ:r]	/deɪ.kɔ:r/	‘Décor’
[ki:s]	/keɪs/	‘Case’
[rɪ:.mu:t]	/rɪ.məʊt/	‘Remote’
[fi.ri:m]	/freɪm/	‘Frame’
[ləj.sən]	/laɪ.səns/	‘License’
[fəj.ru:s]	/vaɪə.rəs/	‘virus’
[maʊs]	/maʊs/	‘computer mouse’
[baʊ.dər] / [baʊ.da.rah]	/paʊ.dər/	‘powder’
[kaf.ti:r.jə]	/kaf.tiə.rɪə/	‘cafeteria’
[bak.ti:r.jə]	/bak.tiə.rɪə/	‘bacteria’

What seems to be happening in the examples above is that the English diphthongs /aɪ/ /aʊ/ are substituted by somewhat similar HYA diphthongs /aj/ and /aw/ respectively. The rest of English diphthongs are substituted by long vowels; a process which is the opposite of diphthongization whereby vowels change into diphthongs.

It is also noticed that the first member of the diphthong is deleted and the second member is lengthened except when the second member is a schwa as in /kəʊt/ → [ku:t] and /deɪ.kɔ:r/ → [di:.kɔ:r] but /bak.tiə.rɪə/ → [bak.ti:riə]. Unexpected lengthening, however, occurs in the initial syllable of the word ‘remote’. This can be attributed to stress placement on the initial syllable. The initial vowel in words like [fi.ri:m] ‘frame’ cannot be lengthened because it is an epenthetic vowel. There are, of course, many exceptions which do not abide by such generalisations for some reasons which are out of the limits of this study. Such a process of changing diphthongs into long vowels seems to be a kind of compensatory lengthening; one member of the diphthongs is deleted and another is lengthened.

Voicing Assimilation in Loanwords in HYA

The integration of English loanwords into the Arabic phonological and morphological systems of Arabic is very clear in all the phonological process. In all the examples given below, there is no voicing assimilation in clusters: /tb/, /tq/ and /sb/, because they are not identical in place of articulation. This happens not only in English loanword in HYA but also in the phonological change of the dialect’s original words. This means that loanwords are not close to the original form but they obey the grammatical rules of the borrowing language as it is shown in the following examples.

Examples (9):

HYA borrowed word	The English word	Glossary
[ʔedz]	/eɪdz/	‘Aids’
[kəp.tən]	/kæp.tɪn/	‘Captain’
[fʊt.bɑ:t]	/fʊt.pɑ:θ/	‘Footpath’
[ʔʊs.bi.tən]	/hɒspɪtəl/	‘Hospital’
[ʔɑ.si:t]	/æ.sɪd/	‘Acid’

Voicing assimilation does not affect obstruents when they are followed by sonorant consonants. Examples (10): (loanwords are only the ones marked in bold)

HYA borrowed word (only the words that are highlighted in bold)	The English word	Glossary
[da.bal.ki]	/dʌb.əl.kɪk/	‘double kick’
[ma.ri:ð ^s .ʔi:dz]	/peɪ.ʃənt.əv.eɪdz/	‘patient of AIDS’
[ʔɑ.si:t.kɑ:li]	/ɪk'spen.sɪv.æ.sɪd/	‘expensive acid’

The first example above the obstruent segment /k/ is voiceless, it is not changed by the sonorant segment /l/, but we notice here that the coda in the second word gets deleted and both onsets do not alternate. In the following examples, other phonological processes happen only in the non-prominent position.

HYA borrowed word	Gloss	
[ham.ba.re:k]	‘handbrake’	In the first example, [hambare:k], two phonological processes occur:
[ʔu.far.tajm]	‘overtime’	

HYA word	English word	The phonological Change	Gloss
[hambar:k]	/hænd.breɪk/	/hænd+breɪk/ → [hambare:k] 1-Deletion 2-Assimilation	‘handbrake’

The segment /d/ is deleted; the nasal sound in the coda position assimilates the following segment in the onset position (place regressive assimilation).

Optimality-Theoretic Account of Loanword Adaptation

Generally, English loanwords in HYA are affected by some repair strategies. These repair strategies will be explained in markedness and faithfulness constraints using the optimality theory framework. We concentrate on the change of consonant sounds and not the change of vowel sounds. The most common change is the addition of the glottal stop that is noticeably added constantly at the beginning of the English loanwords. The glottal stop shows that the syllable which starts with a vowel is not allowed in the grammar in HYA. Onsetless syllables word-initially are invariably repaired by the glottal stop prosthesis.

Therefore, the constraint ONSET is high ranked in HYA though not highly ranked in English because English words can start with vowels or consonants. In English, the constraint Align Word Left is to be higher than the constraint ONSET and in HYA the ranking of word initial syllables is: ONSET outranks Align Word Left (which requires every word to start with a consonant).

Vowel epenthesis is also another repair strategy to fix consonant clusters word-initially as we have seen above. The process of changing the two diphthongs [ai] and [au] into [aj] and [aw] can also be considered as a process of consonant epenthesis.

The constraint which militates against such epenthesis is DEP. DEP cannot be undominated; it has to be ranked lower because vowel epenthesis is attested in HYA. This epenthesis is motivated by initial consonant clusters while deletion targets the coda position. Though HYA allows clusters in the coda position, deletion strategy is attested in the coda position of some words. This phenomenon is accounted for with the constraint *COMPLEX which states that not more than one C or V may associate to any syllable position node (Prince and Smolensky, 2008). The constraint Max (Kager, 1999) militates against deletion. It states that input segments must have output correspondents. This constraint is to be ranked higher than DEP because it incurs less violation than DEP. This is because epenthesis is more favorable over deletion and takes place in onset and coda.

The ranking is shown below:

ONSET >> Align Word Left >> *COMPLEX >> MAX >> DEP

There is a substitution for some segments that are not in the inventory of the language. A sound is replaced by another identical sound that differs only in voice feature. The place and the manner of the illicit sound are maintained but with a violation of the IDENT-F constraint, (an output feature should be identical to the input feature). This constraint will be ranked lower because it incurs more violations, as it is shown below:

ONSET >> Align Word Left >> *COMPLEX >> MAX >> DEP [+cons] >> IDENT-F

Although, HYA has the syllable form CVCC, the two consonants in the coda are re-syllabified after loaning or one of the cluster members is deleted. In re-syllabification, the second consonant is syllabified as an onset for the following syllable whereas the epenthetic vowel is employed as its nucleus. Breaking the cluster sequence in the coda satisfies the sonority sequencing principle. Usually, a stop consonant is the one which is deleted in the coda cluster. So, SSP Coda constraint would be ranked least in order to fulfill these goals.

SSP Coda: It specifies that every complex coda must have falling sonority, the second segment must not be higher in sonority than the first segment.

Let us see the following tableau:

Tableau 1 Epenthesis within the clusters in onset

/brush /	ONS	Align Word Left	*COMPLEX	MAX	DEP	IDENT-F	SSP Coda
a. buruʃ					*		
b. pruʃ			*!			*	
c. bruʃ			*!				

Candidate (a) is the optimal output because it violates only DEP. The output (b) incurs two violations of the lower ranked constraints *COMPLEX and IDENT-F. The (c) output has a cluster in the onset position, which is not allowed in the borrowing language. Therefore, it violates the constraint *COMPLEX.

Tableau 2 Deletions within the clusters in Coda

/tɔ:tʃ.laɪt/	ONS	Align Word Left	*COMPLEX	MAX	DEP	IDENT-F	SSP Coda
a. tɔ:tʃ.la:jt				*			
b. tɔ:tʃ.laɪt			*!				*
c. o:tʃ.laɪt	*!	*		*	*		

Candidate (a) is the optimal above for incurring only one violation mark against the constraint max. Candidate (b) is ruled out for violating the constraint *COMPLEX and so is candidate (c) for violating the highest constraint – ONS.

Conclusion

This paper shows that HYA preserves the feature specifications in the native language and conforms to the phonotactic restriction of the language. In other words, English words are perceived according to the phonological system of the native language. HYA preserves the feature specifications in the native language and satisfy the restriction of the language. Thus, the adaptation processes in HYA loan words conform to structural constraints of the Arabic language phonology. The speakers of the dialect integrate their perceptual similarity into the production grammar of the loan words, and during the adaptation; onset positions of the loan words are perceptually treated as more salient than coda positions and this is reflected in the process of loaning, hence, consonants in onsets are preserved. Moreover, English loanwords motivate vowel epenthesis. It is basically used as the repair strategy in HYA loanwords which avoid onset cluster, either once or twice (depending on the forms of words), i.e., disyllabic or monosyllabic. In other words, the number of vowel insertion depends on the number of consonants in the onset position, i.e., /CCVC/ → vowel epenthesis → [CV.CVC] or [CV.CV.CV]. In HYA English loanwords, the segments which are less in terms of sonority and saliency are more likely to be altered and deleted than segments which are of higher sonority and saliency values, in coda position. Deletion is not

allowed in onset position and the following ranking triggers the mapping of English consonants to HYA:

ONS >> *COMPLEX >> MAX >> DEP >> *CODA.

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