

دراسة صوتية للخصائص المميزة للاصوات في اللغة الانكليزية مع الاشارة لها في اللغة العربية
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A Phonological Study of Distinctive Features in English with Reference to Arabic

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Abstract

The present study aims at identifying, explaining and classifying the distinctive features of English and Arabic phonemes. In fact, certain phonetic features characterize each phoneme. Consonants, for instance, are described in terms of voicing, manner of articulation and place of articulation, in addition to other features such as length and strength. Vowels, on the other hand, are classified in terms of high – mid – low/ front – central – back / length and roundness. It is hypothesized that each group of phonemes has its own feature by which it is distinguished from other groups. It is concluded that phonemes are characterized by means of phonological features described in binary terms of being present or absent, i.e. [+] or [-]

Key words: distinctive, feature, consonants, vowels, binary.

الملخص

تهدف الدراسة الحالية الى تعريف وتوضيح وتصنيف الخصائص المميزة لفونيمات اللغتين الإنجليزية والعربية. كل فونيم، في الحقيقة، يتميز بخصائص صوتية معينة. السواكن، على سبيل المثال، توصف من ناحية الهمس والجهر وأسلوب النطق ومكان النطق إضافة الى خصائص الطول والقوة. توصف الحركات، من ناحية أخرى، من حيث ارتفاع اللسان نحو سقف الفم وانخفاضه وجزء اللسان الامامي والوسط والخلفي إضافة الى طول الصوت وشكل الشفتين. تنص الفرضية على ان كل مجموعة فونيمات لها خاصيتها التي تميزها عن المجموعات الاخرى. وقد استنتج ان الفونيمات تميزها خصائص صوتية توصف بانها ثنائية من حيث وجودها وغيابها وتكتب {+} او {-}.

الكلمات المفتاحية: مميزة، خصائص، سواكن، حركات، ثنائي

Introduction

Lyons(1981:89) indicates that "phonemes are bundles (or sets) of simultaneous distinctive features". In this sense, Roca and Johnson(1999: 89) mention the two terms "distinctive" and "feature", the former serves to keep the sounds distinct whereas the latter is used "to express properties of the sounds. Such properties are enclosed in square brackets preceded by the operators [+] or [-] to express the precise value of the feature." Thus, [voice] stands for either [+ voice] or [- voice].

Fromkin et al. (2003: 91) point out that when two words are phonetically similar except for one feature, such a feature is distinctive since it makes a difference in meaning. In English, for instance, as stated by Akmajian et al. (1997: 101 - 2), the feature of voicing is distinctive in that it distinguishes, for example, /s/ and /z/ in the words *sip* /sip/ and *zip* /zip/ where /s/ is voiceless whereas /z/ is voiced. Phonetic features of human languages are so significant that they play an important role in the

statement of the phonological rules. Phonologists have proposed certain features of consonants to be generally mentioned. For instance, instead of using the phonetic feature "alveolar" to describe /t/ and /d/, the term "coronal" is used to describe all the consonants which are produced when the tongue blade is raised to approach or touch the teeth, alveolar ridge or the palatal region of the roof of the mouth. Thus, the feature "coronal" includes a wider range of possible articulation. Consequently, it is more general than the term "alveolar".

Another example is that of the phoneme /k/ which is described as voiceless, velar and stop, i.e. it is produced when the back of the tongue touches the soft palate (velum). In fact, /k/ is not completely velar since it is articulated, under certain conditions, with the body of the tongue making contact with the roof of the mouth to produce post palatal /k/. In this sense, all kinds of /k/ in English are articulated with a high tongue body and they differ in how far front or back the part of the tongue contacts with the roof of the mouth. Thus, /k/ can be characterized by being "high" and "back" rather than "velar" (Akmajian et al, 1997: 102- 3). Distinctive features can be listed and explained as follows:

1. Syllabic

The feature [+ syllabic] represents the phonemes that function as the head of the syllable including vowels and certain consonants such as /l, r, m, n/ and /ŋ/ (Akmajian et al, 1997: 106). In Arabic, there are also syllabic consonants such as [l, r, m] and [n] whose occurrence is restricted to final positions in paused situations (Abdul-Tawwaab, 1981: 48).

2. Consonantal

With the exception of approximants, the feature [+ cons] characterizes all the consonants whose production requires stricture or complete closure in the oral cavity. Thus, all vowels are [- cons] (Carr, 1993: 55). In this sense, Gimson(1989: 206 – 12) says that "approximants" are referred to as "semi-vowels" which are produced without audible friction in the passage where air comes from the lungs. Phonetically, they are vowel-like. However, they do not form the centre of a syllable. Phonologically, they are consonants. Such sounds are /j, w/ and /r/.

Farrokhpey(1999: 78) states that the feature [cons] is present when some part of the vocal tract forms an obstruction to the air stream in the oral cavity. Accordingly, he classifies all English sounds as follows:

- [+ vocalic], [- consonantal] (that is, vowels).
- [- vocalic], [+ consonantal] (that is, consonants).
- [+vocalic], [+ consonantal] (that is, /l/ and /r/).
- [- vocalic], [-consonantal] (that is, /h/, /w/ and /j/).

It is noteworthy that the feature "vocalic" is present when:

1. the vocal cords are vibrating.
2. the air passes out of the oral cavity.
3. there is no obstruction on the way of the air stream (ibid: 81).

In Arabic, consonants are produced with some kind of obstruction in the air stream (Anees, 1975: 20). Vowels, on the other hand, are produced with a free passage of the air, i.e. with no obstruction to the air stream (Bishr, 2000: 431). Accordingly, consonants can be referred to as [+ cons], [-voc], and vowels as [-cons], [+ voc]. Semi-vowels such as [y] and [w] are produced with no obstruction to the air stream, i.e. they are similar to vowels (Abdul-Jaleel, 1998: 152; Anees, 1975: 26). On the other hand, such sounds do the function of consonants (Bishr, 1980: 169-70). Thus, they can be referred to as [- voc], [-cons].

3. Sonorant

Sonorants are the sounds which are articulated with partial closure of the respiratory passage and vibration of the vocal cords. Under certain conditions, they may be syllabic as illustrated in the production of /l/ in *bottle* /botl/. In this sense, sonorants sometimes resemble vowels phonologically. They include nasals such as /m, n/ and /ŋ/ whose production involves closure of the mouth resulting in an air release through the nasal cavity, and "the lateral /l/ which has partial closure of the mouth at the alveolar ridge with lateral release of air around the sides of the tongue where it touches the top of the mouth" (Gramely and Patzold, 1992: 90). Similarly, Akmajian et al (1997: 106) say that "vowels, glides and nasals are [+ sonorant]. [- sonorant] are referred to as obstruents". In this respect, Carr (1993: 56) affirms that "obstruents", including oral stops, affricates and fricatives, should be distinguished from "sonorants." As far as "obstruents" are concerned, fricatives differ from stops in that the air flow through the central area of the oral cavity is not totally blocked at any point during their production.

Farrokhpey (1999: 83) distinguishes between stops and affricates by means of using the feature [abrupt release]. Since stops are released quickly, i.e. the obstacle that blocks the air stream in their production is removed quickly, they are termed [+ abrupt release]. Concerning affricates, the obstacle is not removed fast; therefore, they are termed [- abrupt release].

In Arabic, the consonants whose characteristics are similar to English ones are [m, n, l] and [r] which are produced with partial closure of the air stream and they function as syllabic consonants (Bishr, 2000: 358-59). Thus, they can be termed [+ sonorant).

4. Voice

Phonemes are voiced when their articulation is accompanied by periodic vibration in the vocal cords" (Akmajian et al, 1997: 106). Thus, voiced sounds are termed [+ voice] whereas voiceless ones are [- voice].

5. Continuant

Sounds produced with a complete blockage of the oral cavity are termed [-continuant]. They comprise oral and nasal stops. [+continuant] are those produced without such a blockage. They include vowels, fricatives and approximants (Carr, 1993: 56). Farrokhpey (1999: 82) points out that [+continuant] can be listed as follows:

- Fricatives /f, v, θ, ð, s, z, ʃ, ʒ/ and /h/.
- Vowels.
- Liquids /l/ and /r/.
- Glides /j, w/ and /r/.

[-continuant] includes the following groups of consonants:

- Stops /p, b, t, d, k/ and /g/.
- Nasals /m, n/ and /ŋ/.
- Affricates /tʃ/ and /dʒ/.

In Arabic, the sounds produced without complete closure of the air stream are as follows:

- Vowels such as [a, aa, u, uu, i] and [ii] (Bishr, 2000: 431).
- Fricatives [f, θ, ð, ʃ, s, z, ʒ, x, ġ, ʕ, h] and [h] (Anees, 1975: 24).
- Semi - vowels [y] and [w] (Abdul-Jaleel, 1998: 152).
- Middle sounds [l] and [r] (Anees, 1975: 64).

Accordingly, such sounds can be termed [+ continuant]. Sounds produced with complete closure of the air stream include:

- plosives [b, t, d, t̪, d̪, q, k] and [ʔ] (Abdul-Jaleel, 1998: 152).
- nasals [m] and [n] (Anees, 1975: 66).

Thus, such sounds are termed [- continuant].

6. Nasals

Sounds produced when the velum is lowered and the air is allowed to pass through the nasal cavity are termed [+ nasal] (Akmajian et al, 1997: 106). Such sounds are [m, n] and [ŋ] (Farrokhpey, 1999: 83). In Arabic, the consonants produced with air passing through the nasal cavity are [m] and [n] (Anees, 1975: 66). As a result, these sounds are termed [+ nasal].

7. Strident

This is the feature that characterizes some fricatives and affricates whose production is accompanied by noise (Akmajian et al, 1997: 106). In this sense, Farrokhpey (ibid) affirms that with the exception of /θ, ʃ/ and /h/, fricatives and affricates /tʃ/ and /dʒ/ produce lots of friction and they are termed [+ strident]. The remaining sounds are [- strident]. In Arabic, the consonants [s, z] and [ʂ] are referred to as sibilant sounds (Al-Isterabaathy, 1975: 258). Thus, they can be termed [+ strident].

8. Lateral

The feature that stands for the phoneme whose production involves the air passage along one or both sides of the tongue after being partially blocked by the tip of the tongue is [+ lateral]. This sound is /l/ (Akmajian et al, 1997: 106). In this case, Farrokhpey(1999: 1984) states that the feature [lateral] is mentioned to distinguish between /l/ and /r/whose features can be stated as follows:

/l/ is [+ lateral], [+ vocalic], [+ consonantal].

/r/ is [- lateral], [+ vocalic], [+ consonantal].

In Arabic, the lateral sound is [l] (Abdul-Tawwaab, 1981: 49).

9. Anterior

Sounds articulated with constriction in front of the palato-alveolar region are termed [+ ant]. They comprise bilabials, labio-dentals, dentals and alveolars. Sounds articulated in or behind such a region are termed [- ant] such as pharyngeals, uvulars, velars, palatals and palato-alveolars (Akmajian et al, 1997: 106). According to Farrokhpey (1999: 84), sounds made by obstructing the air stream in the front half of the oral cavity are known as [+ ant]. They include /p, b, t, m, n, f, v, θ, s, z/ and /r/. Sounds produced in the back half of the mouth are [- anterior] such as /k, g, ŋ, ʃ, ʒ, tʃ, dʒ, h, w/ and /j/ and vowels.

In Arabic, the consonants [l, r, n, f, b] and [m] are referred to as apical since their production depends on the apical part of the tongue (Ibn Jinni, 1954: 64). Thus, they can be termed [+ ant].

10. Distributed

This feature characterizes the sounds whose production requires a type of contact that the tongue makes along the roof of the mouth. In producing /ʃ/, for instance, the tongue has a longer region of contact along the hard palate than in producing /s/. Thus, /ʃ/ is [+ distributed] but /s/ is [- distributed] (Akmajian et al. 1997: 106). The same thing can be said about Arabic in that the counterpart sound that carries the same feature is [ʃ].

11. Affricate

This feature characterizes the sounds produced with a temporarily stoppage of air flow. Then such a stoppage is secondarily released into fricative. This sequence of

stop plus fricative makes single phonemes such as /tʃ/ and /dʒ/ which are termed [+affricate] (ibid: 107). In Arabic, the only sound that carries the feature [+affricate] is [j] (Bishr, 2000: 310).

12. Labial

This feature characterizes the sounds whose production involves bringing the lips together or closing them. Thus, the phonemes /f, b/ and /m/ are termed [+labial] (Akmajian et al, 1997: 107). In Arabic, bilabial sounds are [f, b, m] and [w] (Hassaan, 1990: 79). As a result, they are termed [+labial].

13. Coronal

Sounds produced when the blade of the tongue is raised towards or touches the teeth or the alveolar ridge comprise dental, alveolar and alveo-palatal consonants (Akmajian et al, 1997: 107). On the other hand, Carr(1993: 60) indicates that [-cor] segments are bilabials, labio-dentals, palatals, velars, uvulars and pharyngeals.

In Arabic, coronal sounds comprise:

- denti-alveolar [t, d, t̪, d̪, s, z] and [ʃ] (Hassaan, 1990: 95-100).
- palato-alveolar [ʃ, j] and [r] (ibid: 101- 4).
- alveolar [l] and [n] (ibid: 105).
- dentals [θ, ð] and [ʒ] (Bishr, 2000: 299).

14. Round

This feature means that the lips take a round shape when producing sounds. All sounds that are [+round] are [+labial], but [+labial] sounds are not necessarily [+round] (Akmajian et al, 1997: 107). In this case, Farrokhpey (1999: 85) indicates that the segments /u, u:, o/ and /o:/ are [+round]. In Arabic, the vowels [u] and [uu] (Bishr, 2000: 431) can be termed [+round].

15. High

Phonemes produced when the body of the tongue is raised towards or touches the roof of the mouth are termed [+high] such as /k, ŋ/ and /tʃ/ (Akmajian et al, 1997: 107). Carr (1993: 61) points out that high, front, vowels and palatals share two properties: " They are both articulated high up in the oral cavity, with front of the tongue". In Arabic, Ibn Usfoor (1978: 675) defines high sounds as those which are produced when the tongue is raised towards or touches the roof of the mouth. They comprise [ʃ, d̪, t̪, ʒ, x, ɡ] and [q]. Thus, such sounds are termed [+high].

16. Low

This feature characterizes the sounds articulated with the body of the tongue lowered from the neutral position such as low vowels. In this case, Carr (1993: 61) states that velars are [+high] and [-low].

In Arabic, sounds which are not high are termed [+low] (Ibn Usfoor, 1978: 672).

17. Back

Segments produced with the body of the tongue retracted from the neutral position are termed [+high] and [-back] such as palatals and high front vowels, whereas velars and high back vowels are [+high] and [+back] (Carr, 1993: 61). In Arabic, velar consonants such as [k, x] and [ɡ] (Hassaan, 1990: 95-102) and the vowels such as [u] and [uu] (Bishr, 2000: 31) can be termed [+back] since the back of the tongue is raised to touch the soft palate in their production.

18. Tense

This feature refers to the tenseness of the muscles in the vocal tract. In the production of the [-voice] consonants, the muscles in the vocal tract are more tense. Thus, /p/ and other voiceless consonants are termed [+tense]. In the production of [+

voice] consonants, the muscles are not tense. Hence, /b/ and other voiced consonants are termed [- tense] (Farrokhpey, 1999: 87). In Arabic, tense consonants comprise [b, d, t, ʈ, ɖ, k, q] and [ʔ] which can be called plosive consonants (Abul-Jaleel, 1998: 150). Thus, they are termed [+ tense]. The other consonants referred to as fricatives such as [f, θ, ð, ʃ, s, z, ʒ, x, ɣ, ʕ, h] and [h] are termed [- tense] (Anees, 1975: 24).

Conclusions

It can be concluded that consonants are classified and described in terms of phonetic and phonological features. Phonetic features include voicing, place of articulation and manner of articulation. Phonological features are referred to as distinctive features which means that each group of phonemes has its own feature by which they are distinct from other groups. Phonetic features are reduced to phonological distinctive features. The phonetic feature of place of articulation, for instance, is reduced to binary features including [anterior] and [coronal]. Thus, sounds produced in front of the mouth are termed [+ anterior] including bilabials, labio – dentals, dentals and alveolars whereas those produced at the back of the mouth are referred to as [- anterior] such as pharyngeals, uvulars, velars, palatals and palato - alveolars. In the same respect, sounds produced at the top of the mouth are termed [+ coronal] such as dental, alveolar and alveo – palatal whereas those which are not produced in such a place are called [- coronal] including bilabials, labio – dentals, palatals, velars, uvulars and pharyngials.

As far as manner of articulation is concerned, sounds such as plosives, fricatives and affricates are termed [+ obstruent] whereas other groups such as vowels, nasals and approximants are known as [+ sonorant]. In the same respect, sounds such as vowels, fricatives and approximants are termed [+ continuant] whereas stops, nasals and affricates are referred to as [- continuant]. Vowels, on the other hand, are classified and described in terms of high – low/ front – back/ and roundness.

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