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Voicing in English

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ABSTRACT

Voicing in phonetics has long been of interest to linguists and others passionate about languages. Besides, understanding the nuances of voicing is essential in phonetic analysis and language learning. This paper enhances the understanding of voicing in English speech sounds. It strives to examine the presence and absence of voicing in various contexts, both in consonant and vowel sounds. The questions tackled here include: How does the English language manifest voicing in its sound system? How does voicing affect the articulation and perception of consonant and vowel sounds? In what ways do voicing and devoicing enhance the distinctiveness of speech sounds? This paper hypothesizes that the English language has its norms that govern the presence and absence of voicing phenomenon; hence, a complete understanding of consonant and vowel sounds is inevitable for adequately analyzing and comprehending the intricacies of voicing in English. This study adopts a descriptive qualitative method of analysis. Most of the data are taken from books on phonetics and phonology, as well as academic articles and researches. The paper concludes that voicing in English displays different patterns in distinctive phonetic categories, comprising plosives, fricatives, affricates, nasals, approximants, and vowels. The findings of this paper

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designate that the occurrence of voicing and its absence (devoicing) is considerably affected by the contextual nuances of speech sounds.

1. Introduction

This paper, descriptive in its nature, presents the English Phoneme Inventory, unraveling the properties of English speech sounds, categorizing them to consonants and vowels, and emphasizing their significant characteristics- how they are produced and perceived- preparing the ground for a deeper understanding of the voicing phenomenon. To this end, the second section provides an in-depth analysis of voicing in English, presenting a comprehensive overview, explaining its function, and highlighting its different uses.

The third section depicts the voicing of consonant sounds, attempting to illustrate the varied properties of voicing that identify consonants. Finally, the fourth section examines a distinguishing analysis of voicing in vowel sounds, providing a comprehensive perception.

2. The English Phoneme Inventory

As a Germanic language developed over many decades, English possesses a large and varied phoneme inventory that includes both segmental and suprasegmental phonetic properties. Phonemes are the tiniest sound units, each representing a unique phonemic distinction (O'Connor, 1991, pp. 66-128). An effective way of differentiating between phonemes is being familiar with minimal pairs.

A minimal pair consists of two distinct words that vary by a single consonant. Examples include "bit/bat," where even though the vowel in each word differs, each word has a distinct meaning. Also, "dire/tire" has different meanings while sharing the same initial consonant (Odden, 2005, p. 44).

Vowels and consonants are all part of the English phoneme inventory, and they each have their own set of qualities and ways of being articulated. According to most phonetics and phonology textbooks, English consists of 44 phonemes: 24 consonants and 20 vowels (Bizzocchi, 2017, pp. 34-36).

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2.1 The Consonants

Consonants describe a group of sounds in which the pulmonary airflow is wholly blocked or restricted in some way. The production of consonant sounds involves obstructing air passage while it is expelled from the lungs (Denham & Lobeck, 2013, pp. 72-73; Skandera & Burleigh, 2005, p. 20). Consonants can be described both phonetically and phonologically. From a phonetic standpoint, they are sounds created by entirely or partially blocking the vocal tract's airway, causing audible friction. Consonant articulations are simple to feel and are thus most defined in terms of place and manner of articulation, i.e., where and how they are articulated. It is also essential to define the sound duration with the airstream mechanism involved, the direction of airflow in a usual phonetic characterization of consonants (egressive or ingressive), and the vibration mode of the vocal folds (Crystal, 2018, pp. 103-110-514).

From a phonological perspective, consonants are the units that function at the margins of syllables, either alone or in clusters. Typically, phonetic and phonological characteristics coincide; for instance, the consonant /f/, as used in words like "fat" and "leaf," is a consonant due to the audible friction (Pike, 1943/1971, pp. 78-90).

Sounds like /l/, /j/, /w/, and /r/ are phonologically consonants because they play the same function in syllables as /p/, /f/, and so on, as in the words "lip," "wet," and "rip." Nonetheless, they have the characteristics of vowels and lack the required friction by the classifications mentioned above since they resemble vowels. Consequently, these sounds are sometimes called "semi-vowels" or "semi-consonants" (Crystal, 2018, pp. 103-110-514).

Avoiding the confusion of one term serving for both phonetic and phonological purposes, Pike (1943/1971) proposed reserving the term consonant to analyze the phonological level and presenting the term "contoid" for the phonetic level. Consequently, he wanted to differentiate between consonants' phonetic and phonological features. The sounds /l/, /r/, /w/, and /j/ are phonetically vowel-like., but act as consonants in syllables. So, contoid refers to the above-described phonetic description of a consonant, and a consonant indicates the phonological description. Therefore, he introduced the term "vocoid" to differentiate between the phonetic

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and phonological concepts of vowels. Phonetically, a vowel is a sound that does not have enough closure or narrowing to create audible friction, and phonologically, it is a sound unit that serves as the nucleus of a syllable. Thus, Pike (1943/1971) proposed the word vocoid for sounds that have a phonetic sense, and the term vowel is retained for phonological sense. Accordingly, the sound /p/ would function as both a consonant and a contoid, whereas /l/ would function as both a consonant and a vocoid (pp. 78-90).

Consonants are typically described in articulatory terms in three phonetic tiers: whether they are voiced or voiceless, where there is obstruction (place of articulation), and the sort of sound produced (manner of articulation) (Roach, 2001, p. 20).

2.1.1 Voice

As stated earlier, all consonants can be voiced or unvoiced depending on the quantity of air and muscle tension in the folds; if there is no vibration in folds, the outcome is a voiceless consonant (Denham & Lobeck, 2013, p. 73).

2.1.2 Place of Articulation

The second characteristic is the place of articulation, which is the place of constriction or closure in the vocal tract, whether partial or complete. Finch (2000) illuminates the place of articulation as “The point in the vocal tract where the speech organs restrict the passage of air in some way so producing distinctive speech sounds” (p. 66).

One of the primary differences between consonant and vowel sounds is that the former restricts airflow to a considerably larger extent and has a more accurate place of articulation. Place of articulation is widely used to refer to consonant sounds. Concerning their places of articulation, consonants are grouped into several phonetic categories essential in determining their phonetic characteristics (Abdulla Hamad, 2009, p. 6).

Ladefoged and Johnson (2011) state that bilabial articulation is one of the constrictions that occurs when both lips come together, generating a complete closure in the vocal tract. The phonemes /p/, /b/, and /m/ are notable examples of

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bilabials in English. Specifically, /p/ is generated by briefly compressing the lips and then releasing the breath to produce a burst sound. On the other hand, /b/ is produced by vibrating the vocal folds while preserving lip closure, resulting in a resonant sound (p. 11).

Alternatively, the lower lip can contact the upper teeth to generate labio-dental sounds, as in /f/ and /v/ (Carr, 2013, p. 38; Zsiga, 2013, p. 24). English has two dental sounds: the voiced /ð/, as in “this,” and the voiceless /θ/, as in “thing” (Collins & Mees, 2013, pp. 40-41-45).

When producing alveolar consonants, the tip of the tongue touches the alveolar ridge, which is the bony ridge behind the upper front teeth located at the roof of the mouth. The consonants /t/, /d/, /l/, /n/, /s/, and /z/ are made with the blade and tip of the tongue being in contact with the alveolar ridge; then, the result is an alveolar place or articulation. Words like “tie,” “die,” “night,” “sigh,” “zeal,” and “lie” can be pronounced with either the tongue tip, moving near the back of the alveolar ridge, or the tongue blade in which the sides of the tongue are lifted and in touch with the back teeth. The post-alveolar (or palatal-alveolar) posture of articulation is used for the /r/ in “red,” “rarer,” and “trip” (Collins & Mees, 2013, pp. 45-52-95; Ladefoged & Johnson, 2011, p. 12).

Finch (2000) asserts that palatal-alveolar is another aspect of constructing consonants, in which the tongue makes simultaneous contact with the hard palate and the alveolar ridge. The sounds /ʧ/, /ʤ/, /ʒ/, and / ʃ / are palatal-alveolar sounds. For example, the sound /ʧ/, as in “chimpanzee,” is a voiceless palatal-alveolar affricate, and the sound /ʤ/, as in “jaguar,” is a voiced counterpart of /ʧ/ (p. 66). Likewise, a palatal sound is one in which the whole middle section of the tongue, including the blade and body, makes contact with the roof of the mouth, namely, with the palate, as in the pronunciation of /j/ in “yes” and “you” (Davenport & Hannahs, 2005, p. 28).

Sounds like /g/, /k/, and /ŋ/ that are produced using the velum and the rear of the tongue are referred to as velar sounds, i.e., the back part of the tongue is lifted to be in contact with the velum (Gut, 2009, p. 31; Lodge, 2009, p. 31).

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Ladefoged and Johnson (2011) affirm that English consonant sounds at the end of words like “hack,” “hang,” and “hag” have the most posterior articulation; that is, the raised rear part of the tongue touches the velum (p. 13).

Finally, the glottal consonant involves a constriction of the glottis or opening amid the vocal folds, as in the initial sound of the English words’ “home” and “hot.” When the air is stopped at the glottis by firmly closed vocal folds, the sound produced following the release of the folds is a glottal stop [ʔ]. The interjection “uh-oh!” which contains two glottal stops, is phonetically spelled [ʔʌʔo] (Carr, 2013, p. 45; Yavaş, 2011, p. 7).

2.1.3 Manner of Articulation

In addition to the places of articulation, the manner of articulation differentiates English consonants from one another by the obstruction produced by the airflow. This can range from a complete closure of the vocal tract, which prevents any air from escaping to an articulation that, in most ways, is identical to a vowel (Odden, 2005, p. 335). The manner of articulation is determined by the degree of stricture, i.e., the extent to which the articulation impedes air passage (Carr & Montreuil, 1993, p.1).

The manner of articulation is an integral part of phonetics that explores how speech sounds are formed by altering the airflow inside the vocal tract. There are five primary manners to identify consonant sounds in English (Roach, 2009, p. 23).

Plosive consonants are produced by closing the vocal tract completely and abruptly opening it again (Finch, 2000, p. 58). Thus, a plosive is a consonant articulation with a total stricture, preventing air from escaping the vocal tract. Air is compressed behind the stricture; if it is still under pressure, it produces a plosion-like noise. Voicing may occur during part or all of the plosive articulation. The consonant sounds /p, t, k, b, d, g/ are the six plosive consonants in English. The articulation places of the plosives vary; lips together produce bilabial plosives (/p/ and / b/), whereas the tongue blade against the alveolar ridge produces alveolar plosives (/t/ and /d/). The velar plosives /k/ and /g/ are made by pressing the back part of the tongue on the transition between the hard and soft palates. Each of the six plosives has three possible positions in a word: initial, medial, and final position.

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In addition to plosives, nasal sounds are produced by closing the mouth and directing the airflow via the nose. The nasal consonants /m/, /n/, and/ŋ/ are similar to plosives in having a complete obstruction of the airstream throughout the oral cavity; nonetheless, they let air easily flow through the nasal cavity. Thus, like the sounds /b/ and /p/, the lips entirely close off the oral cavity, but the velum is lowered, and the air flows through the nose, resulting in a nasal stop (O'Connor, 1991; McGregor, 2015). Therefore, it can be indicated that English nasal sounds are voiced and articulated at the same three places of articulation as plosives: bilabial as in "me," alveolar in "no," and velar as in the last sound of "long" (Reetz & Jongman, 2009, p. 15).

Fricative is another phonetic categorization used to classify consonant sounds based on their manner of articulation. Davenport and Hannahs (2005) describe fricatives as "The sounds produced when the articulators are close together but without complete closure, so the air is forced throughout the narrow gap between the articulators, causing some turbulence, for example, the first and last sounds in "fez," (p. 249). So, the term "friction" describes the sound created when two organs are brought so near together that air rushing past them causes audible friction. Unlike plosives, the organs do not come together tightly enough to create a plosive articulation; basically, there is a restriction or narrowing. There are several similar voiced and voiceless sounds in English, such as the /f/ in "fin,"/v/ in "van,"/θ/ in "thin,"/ð/ in "this,"/s/ in "sin,"/z/ in "zoo,"/ʃ/ in "ship,"/ʒ/ in "measure" (Crystal, 2008, p. 199).

Affricate consonants /ʧ/ and /ʤ/ are a combination of plosives and fricatives, with a short stop followed by a steady release of airflow with friction. Since the stop and fricative are generated at roughly the same place of articulation, they function as a single unit, the product of a single articulatory action. As in "chin" /ʧɪn/ and "gin" /ʤɪn/, the affricates in English are blends of post-alveolar plosives and post-alveolar fricatives. First, the tip or blade of the tongue is lifted to make contact directly below the alveolar ridge. Secondly, the contact between the tongue tip and the mouth's roof is loosened to generate a fricative at the same place of articulation (Reetz & Jongman, 2009, p. 16).

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Approximants are sounds made by bringing together two vocal organs such that air may pass freely back and forth between them (Collins & Mees, 2013); more precisely, Odden (2005) defines approximant as "A sound made with minimal constriction, where articulators approximate but do not touch, which produces no turbulence in the airflow" (p. 333). Two main sub-types of approximants are glides and liquids (laterals). In terms of articulation, glides resemble vowels more than consonants, as there is no contact among the articulators; in fact, another word for these sounds is "semi-vowel." However, they act similarly to consonants in that they do not construct syllabic nuclei but emerge at the syllable edges, as in the initial sound of "yes" (Davenport & Hannahs, 2005, p. 35). The glides /w/ and /j/ in the words "well" and "yell" seamlessly merge into the vowel next to them (Fasold & Connor-Linton, 2014, 22).

Roach (2009) defines lateral approximant as "An approximant sound made when the center of the tongue is in close contact with the roof of the mouth, and air escapes along the sides of the tongue" (p. 110). In the production of laterals (also referred to as liquids), the sides of the tongue and teeth come close to each other when the tongue tip touches the alveolar ridge and air passes across the tongue sides; the resultant sound is /l/, as in "led" /led/ and "hill" /hɪl/ although it is produced like vowels, the lateral /l/ is classified as a consonant because of its position in the language's sound system (Gut, 2009, p. 30).

Besides, there is another approximant in which the tip of the tongue moves closer to the alveolar ridge as air runs down the center of the tongue, producing the approximant sound /r/ (Finch, 2009, p. 58). Roach (2009) affirms that the approximant /r/ sound is referred to as a post-alveolar approximant; however, the term is accurately used to describe the /r/ sound made in American and British English by slightly bending the tongue backward so that it does not touch the roof of the mouth, represented as [ɻ], as in "car" [kɑɻ] in British English, and "red" [ɻed] in American English (p. 24).

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2.2 The Vowels

Vowels are fundamental units and play a pivotal role in syllables. In the categorization of speech sounds, vowels are one of two broad groups, as mentioned earlier, the other being consonants, and there are 20 vowel sounds in English (Crystal, 2018, p. 249).

Roach (2009) defines a vowel as "A class of speech sound in which there is little or no obstruction to the flow of air through the vocal tract, and which is normally found forming the middle of a syllable" (p. 114). So, vowels are formed by directing the airflow from the lungs through the mouth and the nose with little obstruction. It is worth elucidating that vowels can be defined in phonetic and phonological terms (Fromkin et al., 2011, p. 246).

Phonetically, vowels are the sort of sounds produced when the articulators are separated far apart and the air can escape freely, such as /a/, /i/, or /u/. Vowels, from a phonological perspective, are those units that form the nucleus of a syllable. For instance, the middle vowel sound in the words "cat" /kæt/ and "dog" /dɒg forms the nucleus of the syllable (Davenport & Hannahs, 2005, p. 253).

Vowels are divided mainly into monophthongs (or pure vowels) and diphthongs. Monophthongs have just one audible characteristic and are produced by moving the tongue to a single place in the mouth. Twelve of the twenty vowels are monophthongs, simple nuclei with just one vowel symbol in their written form. The length of a pure vowel can determine its classification into one of two primary categories: long and short. Long vowels are distinguishable from short vowels because the time spent articulating them is, to some extent, longer than the time spent articulating short vowels. As illustrated in Figure (1), the length of long vowels is indicated schematically by adding a colon (:) after the phoneme that represents the vowel in question. There are mainly five long vowels in English (Birjandi & Salmani-Nodoushan, 2005, p. 62); these are given in the Figure below.

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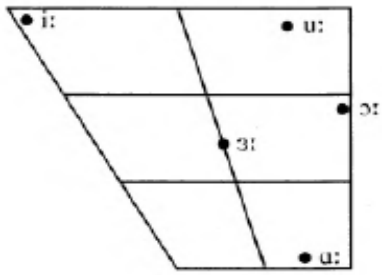

Figure 1: The Long Vowel in English (Roach, 2009, p. 13)

It is worth noting that forming short vowels takes much less time than long vowels. In other words, there is no length feature in short vowels. As illustrated in Figure 2, there are seven short vowel sounds in English (Birjandi & Salmani-Nodoushan, 2005, 62).

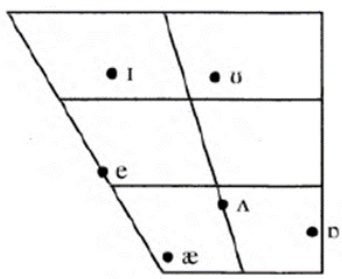

Figure 2: The Short Vowels in English (Roach, 2009, p.16)

Along with single vowel sounds, people often produce diphthongs, combining two vowel sounds. When the sound /aɪ/ is made, as in “hi” or “bye,” vocal organs move from one vocalic position /a/ to another /ɪ/, so the resultant vowel sound is the /aɪ/ diphthong (Yule, 2017, p. 113). Thus, this can be affirmed by the definition of Trask (1996), who describes diphthongs as “A single syllabic nucleus which begins with one vowel quality and changes more or less smoothly to a second quality” (p. 114).
The most significant thing about the diphthongs is that the first vowel is noticeably longer and more prominent than the second. For instance, the vowel /a/ makes up most of the diphthong /ai/, while the glide to the vowel /ɪ/ becomes audible only in

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the last quarter of the diphthong. When the glide to /ɪ/ occurs, the audibility of the sound declines. The /ɪ/ part is hence shortened and less audible (Roach, 2009, p. 17). There are two distinct categories of diphthongs: closing and centering diphthongs. When the tongue moves from the position of an open vowel to the position of a closed vowel, the resulting sound is called a closing diphthong. However, when the tongue is moved toward the central vowel, i.e., shifts from the edges of the vowel space to the center, they are referred to as "centering diphthong.". The closing diphthongs are /eɪ/, /aɪ/, /ɔɪ/, /aʊ/, and /əʊ/. The centering diphthongs are /ɪə/, /eə/, and /ʊə/ (Dosia & Rido, 2017, p. 22).

Triphthongs consist of three consecutive vowels of different quality in a single syllable, i.e., vowels with three distinct vowel properties, like the vowel sound sequences (Zsiga, 2013, p. 67), According to Roach (2009), triphthongs are the most complicated vowel types that may not be pronounced easily and recognized. Also, he defines them as "A triphthong is a glide from one vowel to another and then to a third, all produced rapidly and without interruption." In the word "hour," for example, the vowel quality is similar to /ɑː/ at the beginning, then it glides towards the rear near the rounded region (for which the symbol ʊ is used), and finally, it closes with mid-central vowel /ə/. Notably, the triphthongs comprise the five closing diphthongs with /ə/ at the end (pp. 18-19).

Vowel production includes articulators that are not as close together as consonant production, allowing for clear airflows and vibrating vocal folds. As a result, the airstream is generally unobstructed. The sound generated at the glottis is affected by the size and form of the vocal tract, particularly the shape of the tongue. Articulatory descriptions concentrate on the highest point of the tongue and the place of the lips, which influence the quality of a vowel. Three main articulatory properties are used for classifying vowels (Carr & Montreuil, 1993, p. 8).

2.2.1 Front, Central, and Back Vowels

The frontness of vowels refers to the position of the body of the tongue with the front and rear dimensions of the oral cavity; specifically, most vowels are produced by arching the tongue. This may occur at the front, middle, or rear of the oral cavity. This

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horizontal dimension is known as the vowel's frontness (or backness). Thus, vowels may vary in terms of relative tongue frontness (Carr and Montreuil, 1993, p. 8; Ladefoged and Johnson, 2011, p. 20).

The vowel /ɪ/ is formed with the tongue in the front position, whereas /ʊ/ is produced with the tongue in the back position (Odden, 2005, p. 22). The tongue moves onward in the mouth for the front vowel and backward for the back vowel. Besides, some vowels are referred to as central, as they are articulated with the tongue placed in a position that is more or less neutral between the roof of the mouth and the back of the throat, namely, between the front and back, for instance, as the schwa vowel /ə/, which may be found either as the initial sound in "about" /əbaʊt/ or as the concluding sound in "sofa" /sofə/ (Fromkin et al., 2011, p. 247).

2.2.2 Tongue Height

Height is another dimension in categorizing vowel sounds; it is possible to adjust the size of the oral cavity by moving the body of the tongue up and down inside the lower jaw. The name given to this vertical dimension is the "height of the vowel." While the lower jaw and tongue often move in tandem, the tongue can move independently of the jaw. Although the lower jaw and tongue often move in conjunction with one another, the tongue can move in a manner distinct from that of the jaw (Giegerich, 1992, p. 14).

The concept of tongue height may be split into four distinct stages: the highest position, in which there is no audible friction; the lowest position; and two phases, which fall somewhere in between. The front part of the tongue is responsible for the production of vowels like /i/ and /e/. The rear of the mouth is responsible for producing vowels like /ɑ/ and /u/ (O'Connor, 1991, pp. 50-51-52).

As a result, precisely, it can be said that when producing close (also called high) vowels, the body of the tongue rises upwards; when producing open (also called low) vowels, it moves downwards, and when producing mid vowels, it remains in the center (McGregor, 2015, p. 38). Moreover, the difference in the height of the tongue can also be referred to as a close vowel and an open vowel. For example, the low

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sound /i:/ is referred to as being a relatively close vowel, and the high /ae/is a comparatively open vowel (Roach, 2009, p. 12).

Table 1: Open and Close Vowels in English (Adapted from Roach, 2009, p. 12)

	Front	**Back**
Close	iː	uː
Open	æ	ɑː

2.2.3 Lip Shape

There are three primary categories of vowel description based on the placement of the lips. They can be rounded, in which the lips are pushed forward to create the form of a circle, or spread, which is when the corners of the lips are pulled apart from each other like a smile. For example, /u/ is produced with rounded lips, whereas /i/ is produced with unrounded, viz., spread lips. The neutral position is also one in which the lips do not have a rounded or wide appearance, the sound that the majority of English speakers produce when they are unsure of what they want to say, as in “er” /ə/, (written as “er”), has a neutral lip position (Crystal, 2018, p. 250; Gut, 2009, p. 19).

3. Voicing in English

As indicated in the preceding chapter, voicing occurs when the vocal folds vibrate due to the air flowing between them. The folds continuously expand and contract to allow air to enter and exit the lungs. As they approach each other, the airflow between them causes their inner edges to somewhat contact and vibrate as it passes between them. This results in the production of vocal vibrations, or voice. Voiced speech sounds, such as /b/, /z/, and /v/, are created by vocal vibrations (Finch, 2000, p. 71).

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When the vocal folds are widely apart, the air can freely pass between them with no vocal vibration; thus, voiceless speech is produced in this way (as in /p/, /s/, /f/). Precisely, the most obvious example is whispering. The glottis is wide open when someone whispers, and all sounds are made voiceless. However, when the glottis is closed, the impact of the pulmonary air causes the vocal folds to vibrate. Voicing plays a vital part in differentiating between distinct speech sounds. It can be noted that voicing distinguishes voiced consonants from voiceless ones in pairs such as /p, b/, /t, d/, and /k, g/. The primary difference between these two sets is whether or not vocal cord vibration occurs during their production (Roach, 2001, p. 20).

Accurate and understandable English pronunciation is facilitated by familiarity with voicing (Roach, 2001). For example, in a language like English, voicing is essential since the meaning of a word often relies on whether it is pronounced with an initial voiced consonant, as in “big” and “pig.” Many sounds in English are matched up in this way (Birjandi & Salmani-Nodoushan, 2005, pp. 45-46-47).

3.1 Phonatory Modes of Voicing

The study of English phonetics requires comprehension of the numerous phonatory modes that affect speech production. Modal voice, the most prevalent and natural phonatory mode in English, is one of the primary modes. The modal voice is the most frequent and natural phonatory mode in daily speech. The voice folds generate clear, full-toned tones in this mode through regular vibration. The modal voice produces the vast majority of English-speaking sounds. Modal voice, sometimes called normal or chest voice, is the regular and usual vibration of the vocal folds during speech production (Crystal, 2008, p. 308).

According to Trask (1996), modal voice is the most common voicing type, and it occurs when the glottis works as a whole; the vocal folds vibrate regularly and thoroughly close with each vibration without any friction noise (p. 225). Modal voice is described by vibrations of the vocal folds that are smooth and regular. Throughout modal voice production, the vocal folds shut and separate, allowing air to flow through and produce clear, full-toned sounds (Esling et al., 2019, p. 125).

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In English, the modal voice is crucial in producing different speech sounds. /ɪ/, /æ/, /ɑ/ is it correct? /ɒ/and /ʊ/ are commonly generated in modal voice when the vocal cords vibrate regularly. Likewise, modal voice is necessary to produce voiced consonants like /b/, /d/, /g/, /v/, and /z/ (Wayland, 2018, p. 42; Marchal, 2009, p. 122).

Another notable phonatory mode is breathy voice, which occurs with audible friction throughout vocal folds' vibration, i.e., it appears when the vocal folds do not close completely, allowing air to escape audibly throughout speech production (Crystal, 2008, p. 62). In English, a breathy voice is a distinguishing feature that gives speech more depth and character, and it is widely employed for voiceless consonants like /h/ when a breathy onset accompanies the sound creation. Also, it is pretty typical to hear a breathy voice in a fast English conversation, similar to the voice of a speaker who is somewhat out of breath (Ashby, 2017, p. 25-26; Lodge, 2009, p. 19-20).

Breathy voice is also prevalent in dialects and speech patterns when breathiness is artistically employed for expressive or emotional objectives. A breathy voice can express a variety of meanings. It is frequently connected with speech marked by sensitivity, fragility, or tenderness (Cleghorn & Rugg, 2011, p. 319).

Creaky voice is another phonatory mode in which the vocal cords vibrate slowly and firmly, resulting in a deep and gruff sound. It is characterized by a creaking, cracking tone, sometimes linked with frying or popping sounds, thus called "vocal fry" (Ladefoged & Maddieson, 1996, p. 53; Wayland, 2018, p. 42-43). Depending on the speech sound and the context, a creaky voice can mean several different things in English. For example, it is sometimes used to indicate contempt when a sentence such as "Oh, I do not know" is spoken at an extremely low pitch level (Crystal, 2008, pp. 121-122).

As mentioned earlier, vocal fold vibration is responsible for the varying degrees of voicing that consonants display. Recognizing and using the various voicing variations in consonant sounds is crucial for fluent speech and clear expression. Partial voicing, in which consonants are produced with slight or incomplete vocal cord vibration, is an intriguing voicing pattern. Specifically, it happens when the vocal folds stay partially open during the creation of the sound, enabling a small amount of passage

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of air without full vocal fold vibration. For instance, partial voicing can be heard at the beginning of the English word “huge,” which is pronounced /hjuːdʒ/. This is because the vocal folds stay slightly open, permitting the airflow to pass through without a regular vibration when producing the /h/ sound (Fromkin et al., 2011, p. 238).

The consonant /w/ is another example of partial voicing in English. The /w/ sound in “wine” exhibits partial voicing. The vocal folds are relaxed and only partially closed during production, allowing for a breathy start. The resultant sound is glide-like, akin to the /j/ sound in “yes” (Fromkin et al., 2011, p. 238).

Full voicing, another pattern of voicing, is the complete vibrating of the vocal folds during the production of a consonant sound. When a consonant is completely voiced, the vocal folds come together and vibrate, enabling air to travel through them. It is distinguished by regular and whole vocal fold vibration. This is a significant aspect of voiced consonants. The English consonants /b/, /d/, /g/, /v/, and /z/ are examples of wholly voiced sounds. It can be denoted that full voicing is a defining characteristic of English-voiced consonants (Ladefoged & Johnson, 2011, p. 59).

The English bilabial stop /b/, as seen in “buy” /baɪ/, is a fully voiced consonant. During the process of producing it, the vocal folds are brought closer together, which creates a passageway for air as the vocal folds vibrate. The consonant /d/, as in “dill” /dɪl/, is an example of a fully voiced alveolar stop. The sound /d/ produces vocal fold vibration, which results in a full-toned, voiced sound. The velar stop /g/ in “guy” /gaɪ/ has a full voice. When pronouncing the letter /g/, vocal folds vibrate to create a voiced, resonant sound (Ladefoged & Johnson, 2011, p. 59).

3.2 Devoicing

Devoicing is another crucial phonetic phenomenon in various languages, including English. It is a sort of phonetic reduction wherein contrasting phonetic information is either eliminated or rendered inaudible due to changes in speech tempo or style. This phenomenon is often characterized in English by the loss of voicing from voiced consonants, particularly in specific phonetic contexts. The following sections and sub-sections are devoted to clarifying these phonemic contexts with related examples (Ladefoged & Johnson, 2011, p. 282).

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Indeed, a voiced sound is created when the vocal folds are together, causing vibration. Still, when they are separated, a voiceless sound is produced, such as the voiced /b/ and the voiceless /p/ pairings in English and the voiced /d/ and the voiceless /t/ pairs. Nevertheless, voiced consonants may change to their unvoiced or devoiced counterparts in specific contexts. English obstruents, like the customarily voiced stops, fricatives, and affricates, are commonly devoiced at the end of words and after voiceless ones. Hence, the English final sounds /b/ and /d/ in words like "bib" [bɪb̥], "robe" [rəʊb̥], and "bed" [bed̥] are less voiced, i.e., devoiced at the end of a word or the end of a syllable. As a result, the vocal folds do not vibrate, and the /b/ and /d/ sounds are produced without a usual flow of air (Rogerson-Revell, 2011, pp. 21-286).

4. Voicing in Consonants

The study of English phonology distinguishes between two sets of consonants: the voiced /b/, /d/, /g/, /v/, /ð/, /z/, /ʒ/, /n/, /m/, /ŋ/, /l/, /r/, /w/, /j/, and the voiceless /p/, /t/, /k/, /f/, /θ/, /s/, /ʃ/, /h/, /ʧ/. From a phonetic standpoint, these labels are inefficient since they obscure the connection between voicing, closure, and release. Therefore, it becomes inevitable to examine consonant sounds in various contexts and how neighboring sounds affect them (Ogden, 2009, p. 99).

A fully voiced sound may become partially voiced (vocal fold vibrations take place just during a portion of the articulation, as in the /d/ sound in the word "die" [d̥aɪ]) or even devoiced (a voiced sound that is generated with much less voice, or without any voice at all in certain contexts) depending on the sound that surrounds it. The voiced sounds /l, r, j, w/ are fully voiced in the words "ray" and "lay." Still, when they are preceded by one of the voiceless sounds /p, t, k/, they become devoiced and fricative, as in "play" [p̥leɪ] and "quick" [kw̥ɪk] (Ladefoged and Johnson, 2011, p. 311; Roach, 2009, p. 51).

Numerous permutations of voicing and closing may occur, and there may be voicing during the hold time. Voicing may pause before, during, or after closure is obtained, and it may resume during or after release. As mentioned earlier, the period between release and the starting of voicing is called the voice onset time (VOT). If the voicing

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begins after release, it is said that the VOT is positive; however, if it starts before release, it is said that the VOT is negative (Ogden, 2009, p. 100).

4.1 Voicing in Plosives

The plosives /p/, /t/, and /k/ are constantly voiceless, but the plosives /b/, /d/, and /g/ can be fully voiced, partially voiced, or sometimes even voiceless. The pressure that is higher above the glottis than it is below causes the vocal folds to vibrate. The length of a wholly voiced closure is restricted to the amount of pressure differential that can be maintained across the glottis, and the production of a fully voiced plosive occurs when the closure is promptly released. For example, a fully voiced plosive occurs between two voiced consonants in words like “under,” “hobby,” and “hunger” (Ogden, 2009, p. 100). There is no voicing in /p/, /t/, and /k/, and there is usually very little in /b/, /d/, and /g/ throughout the compression phase; it begins only before the release. Since there is more space above the glottis, air from the lungs may flow through it longer during /b/ than /d/ and /g/, thus letting vocal folds vibrate. However, there is little space above the glottis in /g/; therefore, voicing lasts shorter (Ladefoged & Johnson, 2011, p. 311).

When /b/, /d/, and /g/ sounds are pronounced very slowly and carefully, there may be voicing throughout the compression phase, then the plosives /b/, /d/, and /g/ are fully voiced, whereas there might be even no voicing in fast speech (Roach, 2009, p. 27). Thus, the /b, d, g/ sounds are fully voiced only if any other voiced sounds enclose them; for example, the /b, d, g/ sounds are fully voiced in words “table,” “tidy,” “anger,” however, when they precede a voiceless sound as in “abscess,” “bedsore,” “bagpipe,” they are generally partially voiced, or even devoiced (O’Connor, 1991, pp. 130-131).

The sounds /b/, /d/, and /g/ can also be partially devoiced in such contexts when they come next to a voiceless sound, such as the plosives in “obtain” [əb̥teɪn], “bodkin” [bɒd̥kɪn], “wagtail” [wæg̥teɪl], and when they come at the beginning of a word, after a silence (after a pause), as in “buy” [b̥aɪ], “die” [d̥aɪ], and “guy” [g̥aɪ] (Giegerich, 1992, p. 222). Additionally, if a voiced sound comes before /b/, /d/, and /g/ in English, it is partially voiced; voicing continues until the beginning of the closure but stops during

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the middle of the hold phase. Almost soon after being released, the voicing begins again (Ogden, 2009, p. 101).

In “a bit” [ə bɪt], the [b], in between two vowels, is partially voiced. At around the halfway point of the hold phase, voicing ceases; it resumes as soon as the closure is released (Ogden, 2009, p. 101). Besides, in general, the final b, d, and g have very little voicing, i.e., they are devoiced when they come before a pause (when they come at the end of a word), as in words like “rib” [rɪb̥], “rid” [rɪd̥], and “rig” [rɪg̥]. The plosion that occurs after the release of /p/, /t/, and /k/ along with /b/, /d/, and /g/ is extremely weak and often inaudible, as in “cat,” “rub,” “big,” the final sounds are devoiced, or they hardly have any voicing (Davenport and Hannahs, 2005, p. 22). Hence, it can be affirmed that devoicing is stronger in the final position than the initial position, as in the word “bib,” where the final [b] is more noticeably devoiced than the initial [b] (Giegerich, 1992, p. 223).

4.2 Voicing in Fricatives

Moreover, voicing is used to differentiate between the four pairs of fricatives in English: /s, z/, /f, v/, /θ, ð/, and /ʃ, ʒ/. Vocal vibration is never present with /f, θ, s, ʃ/; nevertheless it may be present in varying amounts with /v, ð, z, ʒ/; the amount of voicing in the latter depends, as with the stops, on the surrounding sounds - full voicing throughout the articulation takes place only when the neighboring sounds are also voiced, as /v/ in “ivy” [aɪvi], /s/ in “insist” [ɪnsɪst], and as /ð/ in “writhing” [raɪðɪŋ], where the vowels on either side are voiced (Giegerich, 1992, p. 222).

Conversely, voicing may be partial or devoiced: in “visions” [viʒn̥z], spoken between pauses, the first [v] is somewhat voiced, the middle [ʒ] is fully voiced, and the last [z] may have little or no voice, viz., devoiced (O” Connor, 1991, p. 139). Words like “prove” [pruv], “smooth” [smuːð], “choose” [ʧuːz], and “rouge” [ruːʒ], all include voiced fricatives at the end. These fricatives are voiced throughout their articulation only when they precede another voiced sound. Since the fricative comes after a vowel in the phrase “prove it,” the [v] is fully voiced. Whereas, when the /v/ is followed by the voiceless sound /t/ or by a stop at the end of the sentence, as “prove two times two is four,” the [v] is not fully voiced, then it is partially voiced. Thus, it can be said

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that when the fricatives come next to voiceless sounds, they are partially devoiced (Ladefoged & Johnson, 2011, p. 66).

Furthermore, the distribution of devoicing is not constrained to voiced stops; it is relatively applicable to voiced fricatives in final and initial positions in specific contexts, i.e., before and after a pause. For example, the final [z], [v], and [ð] sounds in “rise” [raɪz̥], “drive” [draɪv̥], and “writhe” [raɪð̥], and the initial fricatives in “zoo” [z̥u], “veal” [v̥il], and “they” [ð̥eɪ] are all partially devoiced. It is also worth stating that there is no general rule for the fricatives to be partially voiced in final positions; for instance, in the utterance “the rise is…”, the /z/ sound is fully voiced because of the fully voiced context (“is”), akin to full voicing in the word “rising (Giegerich, 1992, p. 222).

When voiced and voiceless fricative pairs, such as /f, v/ or /s, z/, are compared, it is found that voiced fricatives have less friction sound than voiceless fricatives. This is because vibrations in the vocal folds force them to shut for about half the time, decreasing the amount of air that can pass over the vocal tract. Voicing decreases airflow, reducing the amount of noise produced by friction. Thus, compared to “zip,” the friction perceived during the production of fricative /s/ in “sip” lasts nearly twice as long (Ogden, 2009, pp. 120-122).

Based on what has been referred to so far, it is clear that the full voicing of a plosive or a fricative requires it to be maintained during the whole medial phase of the segment. For stops and fricatives to be devoiced, the medial phase of the corresponding segments must be voiceless (Laver, 1994, p. 342).

4.3 Voicing in Affricates

As for English affricates, the voiceless /ʧ/ and the voiced /ʤ/ are sequences that involve a plosive sound and a fricative. The voiceless affricate /ʧ/ is usually voiceless; however, the surrounding sounds and speech tempo may vary the intensity of its voicelessness. The voiced affricate /ʤ/ tends to maintain its full voice when accompanied by other voiced sounds; accordingly, for instance, both the initial and the final [ʤ] are fully voiced in the word “judge” [ʤʌʤ] (Giegerich, 1992, p. 173; Roach, 2009, p. 97).

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Unlike the sounds /s/ and /z/, the /h/ sound is mainly a strong voiceless version of the vowel that comes after it. As a result, the tongue is not typically at a position near enough to the roof of the mouth to cause that sort of local friction. When used between voiced consonants, such as in “alcohol,” “rehearse,” and “manhood,” [h] may be partially voiced. The vocal folds vibrate in a breathy manner for these, enabling more air to flow between them than in regular voice. The voiceless /h/ sound is symbolized as [h]; nonetheless, the voiced one is symbolized as [ɦ]. The [h] sound in “go ahead” picks up the voice from the adjacent voiced sounds, so it becomes partially voiced (O’Connor, 1991, p. 144).

4.4 Voicing in Nasals

English nasals /m, n, ŋ/ are all inherently voiced since the air passes through the nose while the vocal folds vibrate. Nasals are more likely to keep their full voice when surrounded by other voiced sounds. For example, the /m/ sound in “mill” [mɪl], /n/ sound in “nil” [nɪl], and /ŋ/ in “sing” [sɪŋ] are fully voiced (Davenport and Hannahs, 2005, p. 31). When nasals precede voiceless sounds, particularly at the ends of phrases or syllables, they might become partially devoiced, like before the voiceless [tʃ], the [n] in “lunch” [lʌn̥tʃ] is partially devoiced, and this usually happens due to the effect of the succeeding voiceless sound [tʃ]. Additionally, nasal consonants can lose some of their voice following voiceless plosives, as in the word “utmost;” thus, the /m/ sound is partially voiced (Crystal, 2008, p. 270).

4.5 Voicing in Approximants

The lateral approximant /l/ is completely voiced across numerous phonetic situations in English pronunciation. It is fully voiced before a stressed syllable when located between vowels, as in “belly,” and after a stressed syllable when positioned between vowels, as in “loose,” the beginning of a syllable, as at the end of the word “hollow,” and after a stressed syllable between vowels, as in the middle of the term “allow.” The /l/ sound also keeps its voice at the end of words like “fall” (O’Connor, 1991, pp. 145-146; Ogden, 2009, pp. 83- 145). However, the lateral /l/ can be devoiced when it occurs after the voiceless plosives /p, t, k/ in the initial syllable cluster, i.e., when /l/

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comes after one of the plosives, as in “play” [pl̥eɪ], it loses its voicing and becomes devoiced (Crystal, 2008, p. 270).

As a vowel-like consonant, the approximant /j/ is usually fully voiced as in “yak” [jæk] and “yaw” [jɔː]. Nevertheless, when it comes after one of the voiceless stops, it loses its voice, such as /p, t, k/, as in “cue” [kj̥uː], “pew” [pj̥uː], and tune” [tj̥uːn] (Ladefoged and Johnson, 2011, p. 68). Similar to /j/, the approximant/w/ entails a fully voiced consonant, as in words like “wet” and “wick,” and when it is preceded by the voiceless stops /p, t, k/, it forfeits its voice and turns to be devoiced, for example, the [w] sound in “quick” [kw̥ɪk] and “quit” [kw̥ɪt] is devoiced. The approximant /r/ is almost always fully voiced as in “red” [red] and “ray” [reɪ], whereas the /r/ is different when it follows one of the voiceless plosives /p, t, k/, it is then devoiced, as in “press” [pr̥es] and “tray” [tr̥eɪ] (Roach, 2009, pp. 49-50-51).

5. Voicing in Vowels

Vowels are usually voiced in most languages; thus, it is reasonable to assume they are voiced unless explicitly indicated otherwise. However, there are phonetically voiceless vowels. There is a phonological distinction between voiced and voiceless vowels, or vowels with glottal friction in a few languages (like whisperings). For instance, in English, vowels can be whispered or voiceless toward the end of an utterance or in contexts where they are somewhat unstressed and next to voiceless consonants (Hewlett & Beck, 2010, p. 60).

Thus, when the vowel in the preposition “to” [tə] occurs in an utterance such as “Come to tea,” where it is unstressed, it appears in its weak form, which is /ə/, and between two voiceless plosives, the vowel is uttered without voicing. In the first syllable of the word “potato” [pəteɪtəʊ], the unstressed syllable whose nucleus is /ə/, is devoiced because of the preceding and following the voiceless consonants. Additionally, without a doubt, it is significant to note that vowels and consonants are not voiced when they are whispered (Hewlett & Beck, 2010, p. 60).

Furthermore, another way of proving the possibility of devoicing vowels is when the vowel sound in the word “see” is uttered on its own and for an extended period as [i i i i i i i i...], then when the initiation and breathing are stopped and abruptly the

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glottis is opened, switching off the voice while keeping everything else constant as in [i i i i i i̥ i̥ i̥ i̥], therefore, the vowel loses its voice and becomes devoiced (Catford, 2001, p. 40).

6. Conclusions

This research analyzes English voicing, a crucial phonetic feature affecting language perception and articulation. The investigation started with examining the English Phoneme Inventory to understand the functioning of voicing. The study classifies English speech sounds into vowels and consonants, focusing on their production and perception.

The study demonstrates the many aspects of voicing in consonants and its importance for distinguishing between sounds, particularly in plosives, fricatives, nasals, and approximants. Besides, the English sound system is intricate and sophisticated, as seen by the variance in voicing across different kinds of consonants. Similarly, further insights are also obtained from examining vowel sounds, which showed how voicing adds to the distinctiveness and clarity of these sounds.

A key finding is the contextual variables that significantly affect the frequency of voicing and devoicing in English, highlighting their adaptive nature in response to the distinctive properties of speech contexts. Thus, the surrounding linguistic context constantly influences these processes. It is identified here that voicing requires deep comprehension of vowel and consonant sounds.

Voicing and devoicing are essential components that contribute to the uniqueness of speech sounds rather than just phonetic phenomena. It provides valuable insights for educators, students, and linguists in phonetics and suggests future research on contextual impacts.

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گڕیی دەنگەکان لە زمانی ئینگلیزی

پـوختـە

دیاردەی 'گڕیی' voicing دەنگەکان لە دەنگسازییدا ماوەیەکی زۆرە بۆتە جێی بایەخی زمانەوانەکان و ئەوانەی گرنگی بە زمان دەدەن.هەروەها ، تێگەیشتن لە وردەکارییەکانی 'گڕیی' دەنگەکان زۆر پێویستە بۆ شیکردنەوەی دەنگسازی و فێربوونی زمان.ئەم توێژینەوەیە بە تەواوی تێگەیشتنی دیاریدەی 'گڕیی' دەنگەکانی ئینگلیزی بەهێزتر دەکات.ئەمە هەوڵێکە بۆ لێکۆڵینەوە لەو شوێنە جیاجیایانەی 'گڕیی ' دەنگە جیاوازەکان لە دەنگە بزوێن ونەبزوێنەکانن.لێرەدا هەوڵدراوە وەڵامی ئەم پرسیارانەمان دەست بکەوێت: لە سیستەمی دەنگی زمانی ئینگلیزیدا چەمکی ' گڕیی' چۆن کار دەکات؟ ئاخۆ ' گڕیی' دەنگەکان کاریگەری چۆنە لەسەر گۆکردن و وەرگرتنی دەنگە بزوێن و نەبزوێنەکان؟ ئایا بوون و نەبوونی 'گڕیی' لە دەنگەکاندا چۆن دەبێتە هۆی بەهێزترکردنی لایەنی جیاکەرەوەی واتا لە دەنگەکاندا؟ ئەم توێژینەوەی گریمانەی ئەوە دەکات کە زمانی ئینگلیزی شێوازی تایبەت بە خۆی هەیە کە بڕیاردەدات لەسەر بوون و نەبوونی ' گڕیی' دەنگەکان. بۆیە تێگەیشتنێکی تەواو دەربارەی دەنگە بزوێن ونەبزوێنەکان زۆر پێویستن بۆ ئەوەی بە شێوەیەکی گونجاو شیکردنەوە بکەین بۆ وردەکارییەکانی دیاردەی 'گڕیی' دەنگەکان. لەم توێژینەوەیەدا رێبازی وەسفی – چۆنایەتی بۆ شیکردنەوە بەکارهێندراوە.زۆربەی داتاکانی ئەو توێژینەوەیە لە کتێب و سەرچاوەی تایبەتمەندی ئەو بوارە وەرگیراون لەگەڵ چەند توێژینەوەیەکی تری ئەکادیمی.ئەنجامەکانی ئەم توێژینەوەیە دەریانخست کە دیاریدەی ' گڕیی' لە ئینگلیزییدا بە شێوازی جیاجیا خۆی نیشان دەدات لە هەر پۆلێکی فۆنەتیکی جیاوازدا وەکو دەنگە ' تەقیوو/وەستاو ' ، 'خشۆک ' ، 'لوتیی' ، 'نیمچە-بزوێن' و ' بزوێنەکان'.هەروەها ئەنجامەکانیش دەریانخست کە بوون و نەبوونی 'گڕیی' بە ڕادەیەکی زۆر لەژێر کاریگەری وردەکارییە کۆنتێکستیەکانی دەنگەکاندایە.

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الإجهار في اللغة الإنكليزية

الملخص:
منذ امد بعيد كانت ظاهرة "الإجهار" في الصوتيات محل اهتمام اللغويين وغيرهم من المهتمين باللغات. اضافة الى ذلك ، فإنه من الضروري فهم الفروق الدقيقة حول " الإجهار " لتحليل الصوتي ولتعلم اللغة. تهدف هذه الدراسة الى فهم ظاهرة " الإجهار " في أصوات الكلام في اللغة الإنجليزية. ويسعى البحث للتحقيق في مسألة وجود وغياب الإجهار في سياقات مختلفة ، سواء في الأصوات الساكنة أو المتحركة. تشمل الأسئلة التي يتناولها البحث ما يلي: كيف تُظهر اللغة الإنجليزية الإجهار في نظامها الصوتي؟ كيف يؤثر الإجهار على الأصوات الساكنة و المتحركة؟ ما هي الطرق التي يعزز بها الإجهار قوة التمييز لأصوات الكلام؟ تفترض هذه الدراسة أن اللغة الإنجليزية لها معاييرها التي تحكم وجود وغياب الإجهار. وبالتالي ، فإن الفهم الكامل للأصوات الساكنة والمتحركة أمر حتمي لتحليل وفهم الفروق الدقيقة للإجهار في اللغة الإنجليزية بشكل صحيح.
تعتمد هذه الدراسة المنهج الوصفي-النوعي للتحليل. وقد تم جمع غالبية البيانات الخاصة بهذا البحث من كتب معتمدة مع بعض الابحاث العلمية. استنتج البحث إلى أن الإجهار في اللغة الإنجليزية لها أنماطٌ مختلفة حسب فئات صوتية مميزة، و التي تشمل الاصوات الانفجارية، والاحتكاكية، والمركبة، والأنفية، وشبه الصحيحة، و العلة.وتشير نتائج إلى أن وجود الإجهار وغيابه يتأثر بشكل كبير بالفروق الدقيقة في فئة الأصوات.