

## Difficulties of Teaching and Learning English Plosives, with Special Reference to Aspiration

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### **Introduction:**

This paper is intended to shed some light upon English plosives: their production, positions, modifications of release, and their unique feature which no other sounds have, i.e. aspiration. Moreover, the difficulties that face the pedagogical process in dealing with this subject are also highlighted so as to deduce the best pedagogical methods that enable teachers and learners to overcome any obstacle that may face the teaching – learning task and to improve the means of carrying out this task in order to achieve the desirable results.

### **1.1 Articulation of Plosives :**

The complete articulation of a pulmonic egressive plosive consists of three stages :

- 1) The closing stage during which the articulating organs move together in order to form the obstruction.
- 2) The hold, or compression, stage during which the lung air is compressed behind the closure.
- 3) The release, or explosion, stage during which the organs forming the obstruction part rapidly allowing the compressed air to escape abruptly.

Stage (2) may or may not be accompanied by voice, i.e. vibration of the vocal cords. When it is voiced the vocal cords vibration may continue in stage (3) whereas when it is voiceless stage (3) may also be voiceless (aspiration) before silence or before the onset of voice (as for a following vowel), or stage (3) may coincide with the onset of vocal cord vibration as when a voiceless plosive is followed by a vowel without intervening aspiration. Since the primary closures for English plosives are normally made in the oral cavity, the soft palate must be held in its raised position for at least the first two stages of the articulation. (Gimson, 1976: 150-1)

As for the release stage, it is not always the case that plosives in English have a third stage consisting of a sudden oral release of air, either in the form of aspiration or as an immediately following vowel. There can be some modifications for this stage according to the word position and the neighbouring sounds of a plosive. Consequently, a number of variants can be recognized; they are explained below.

**1.1.1 Incomplete Plosion :**

Sometimes a plosive is unexploded, i.e. produced without audible release or even no release. The plosive in such cases is said to be 'incomplete' because of the absence of the third stage, which entails the loss of the release noise burst as a cue to the identification of the plosive. Examples of such cases can be found in final position and in stop<sup>(1)</sup> clusters.

**A- Final Position :**

In final position the closure stage may be maintained, the air compression becoming weak, and the release being achieved by a gentle delayed and relatively inaudible opening of the oral closure. Besides, the compressed air may be released nasally and relatively inaudibly by lowering the soft palate and delaying the separation of the organs forming the oral closure. Since there is no audible release, which is characteristic of plosives, unreleased final plosives can be distinguished mainly by the features of the preceding sounds. Thus, in final position the fortis series /p,t,k/ may be distinguished from the lenis series /b,d,g/ either by the reduction of length of the sounds preceding /p,t,k/ or by the presence of some voicing in /b,d,g/ or by a combination of both factors.

It is worth mentioning that the sensitivity of English listeners to such cues is proved by the high percentage of correct discrimination between such pairs as mat / mad , wrote / rode , back / bag presented without a context even when the final plosive is not released.

**B- Stop Clusters :**

It is also a feature of most kinds of English that in a cluster of two stops (two plosives , or plosive + affricate ) either within a word or at word boundaries , the first plosive has no audible release as in dropped (/p/ + /t/ ) , rubbed (/b/ + /d/ ) , big chin (/g/ + /tʃ/ ) .

In such cases the closure for the second stop is made before the release of the first, forming a further obstacle to the air stream.

Release of the first plosive is also delayed in cases of gemination as in top people (/p/ + /p/ ) .

The same delay in the release occurs when homorganic plosives which differ in fortis/lenis terms are in sequence as in big car (/g/ + /k/). In these cases cues to recognition may be provided by the onset or cassation of voice , by the aspiration characteristic of the fortis series in syllable initial position , and by the influence of the duration on preceding sounds of syllable final lenis

1) The term 'stop' refers to plosives and affricates, as used by o'connor (1984 : 46-7) who states that affricates are a special type of stop consonants that start by making an obstruction to compress the air , but end with friction , not with explosion .

Plosives. It should also be noted that in addition to the omission of an audible third stage of the first plosive in clusters, the first stage of the following stop is also inaudible. Thus, in sequences of three plosives, e.g. locked door (/k/ + /t/ + /d/) the central plosive has no audible first or third stage. When this position is occupied by /p,t,k/ the plosive is manifested only by a silence of a certain duration, i.e. the length of its second stage. (Ibid : 156-7).

#### 1.1.2 Nasal Release

When a plosive is followed by the homorganic nasal consonant, either syllabic or initial in a following syllable, the compressed air escapes through the nasal passage which is opened by lowering the soft palate for the nasal consonant and the oral closure is retained until the nasal release of compressed air occurs, as in written (/t/ + /n/). The same release takes place when the plosive and homorganic nasal occur at word boundaries, as in cheap meat (/p/ + /m/).

A different kind of nasal release occurs when the nasal consonant following a plosive is not homorganic, as in bad man (/d/ + /m/). In such cases the closure of the plosive is not normally removed until the articulatory movement for the nasal consonant, i.e. the second oral closure and the lowering of the soft palate, have been accomplished, (Ibid : 157-8).

#### 1.1.3 Lateral Release :

Lateral plosion occurs when contact of articulators is maintained in the centre of the vocal tract, allowing only lateral passage of the air compressed behind the closure. /l/ is the lateral consonant in English, and the most frequent tongue contact for it is alveolar, which makes the sequences /t/ or /d/ + /l/ homorganic; therefore, /t/ and /d/ are normally released laterally, i.e. one or both sides of the tongue are lowered to allow the air to escape while the tongue tip contact remaining. Such a release occurs whether the following /l/ is syllabic or initial in the next syllable or word, e.g. cattle, at last, regardless.

It is assumed that lateral plosion of /k/ and /g/ is found only in certain accents or as an individual peculiarity, and that lateral explosion of /p/ and /b/ is unknown and has not been reported from any other language. (Abercrombie, 1977: 145).

However, Gimson (1976 : 158) contradicts this assumption saying that sequences of /p,b,k,g/ -- /l/ can also be found, as in apple and below, but they are to be distinguished from the homorganic sequences above. In these cases the partial alveolar contact for /l/ is made before or at the time of the release of the plosive, and in this sense the escape of air is lateral. But since /p,b/ and /k,g/ may also be released by the removal of the bilabial or the velar closure, the term 'lateral release' is best reserved in English for the homorganic sequences of alveolar + /l/.

**1.1.4 Affrication :**

There is another way in which stage (3) may be modified. Stage (3) normally takes place so rapidly that the noise which is associated with it results entirely from the burst of escaping compressed air. It is possible, however, to slow down the separation of the articulators so that a fricative sound, articulated in the same place of articulation as the plosive, will be heard. This is known as 'affrication', and the plosives made with this slow fricative release are said to be 'affricated'<sup>(1)</sup>. (Abercrombie, 1977:147)

Common realizations of the English plosives /p,b,t,d,k,g/ might therefore be followed by brief fricatives of the type /ɸ, β, s, z, x, γ/ respectively<sup>(2)</sup>.

The alveolar consonants /t,d/ may frequently be heard in affricated /t,d/ forms [t<sup>s</sup>, d<sup>z</sup>] in strongly stressed positions, e.g. time, day; in relatively weakly stressed positions, e.g. waiting, riding; and in final position, e.g. hat, bed<sup>(3)</sup>.

Affrication is also occasionally heard with the velar plosives as [k<sup>x</sup>] and [g<sup>ɣ</sup>]. Velar plosives can also be found in their affricated forms in hesitant or emphatic speech in accented situations, e.g. come, good; or more commonly with /k/ in weak syllables and in final position, e.g. talker, talk.

The bilabial plosives /p,b/ are rarely affricated. (Gimson, 1976: 158-9).

**1.2 Aspiration :**

A minor articulation commonly associated with plosives is aspiration. The release of the supraglottal blockage in any plosive allows a spurt of the air compressed behind that blockage to escape. The size and duration of this spurt of air is under articulatory control; it depends essentially on the pressure of the pulmonic egressive air stream behind the supraglottal blockage during and immediately after the release of this blockage, and on the relative phasing of this release and the next closure of the vocal tract. If the air stream pressure is low and/or the next closure of the tract is simultaneous with the supraglottal release, the escape of air may be null or negligible.

- 1) when the friction following the stop is sufficiently marked to be considered a separate segment, the cluster of the stop and the homorganic fricative is known as an 'affricate' in order to be distinguished from affricated plosives. Examples are the beginning of the words cheese and jam.
- 2) Affricated plosives can be indicated by placing a raised small symbol for the homorganic fricative after the symbol for the plosive, e.g. [t<sup>s</sup>] and [d<sup>z</sup>].
- 3) In the last two examples the forms [t<sup>s</sup>] and [d<sup>z</sup>] differ from the realization of the plural terminations /t/ + /s/ and /d/ + /z/ mainly in the brevity of the friction associated with the afflicted plosives.

On the other hand, if the pressure is high and the next closure delayed it may be very considerable and clearly audible as a sound resembling /h/ after a voiceless plosive. In these cases the plosive is said to be 'aspirated', or to have an aspirated release. (Brosnahan & Malmberg, 1976:106)

Aspiration occurs when the release of the compressed air is impulsive sudden and puff-like. It sometime happens that a sound may be assigned to either of two phonemes with equal validity. In English, examples of this kind are found in plosive series. The main contrastive feature between the pairs pin / bin, team / deem, come / gum resides in the presence of aspiration in /p, t, k/ and its absence in /b, d, g/ <sup>(1)</sup>.

However, sometimes /p, t, k/ are realized with no aspiration, as in spy, stay, sky. In such cases there are three plosive phonemes which lack the aspiration often characteristic of /p, t, k/, but they do not have the voice which sometimes accompanies the unaspirated voiced plosives /b, d, g/. Since /p, t, k/ are never opposed to /b, d, g/ following /s/ in initial position, the words above might therefore be transcribed phonemically as /spai, stei, skai/ or as /sbai, sdei, sgai/ without ambiguity <sup>(2)</sup>. (Gimson, 1976: 48-9)

### 1.2.1 Positions and Degrees of Aspiration:

As mentioned earlier, aspiration is characteristic of English voiceless plosives, yet it can be recognized in various degrees according to the word positions where the plosives occur. Hence, aspiration can be strong, weak or even absent in certain positions. /p, t, k/ are strongly aspirated when they are initial in a stressed syllable and followed by a vowel or one of the consonants /l, r, w, j/, as in pin, tin, kin, and please, try, queen, pure respectively. In the latter case aspiration is manifested in the devoicing of /l, r, w, j/, i.e. it causes these sounds to lose some of the voicing which usually accompanies their production and makes them pronounced with rather voiceless onset.

However, When /p, t, k/ precede a vowel in an unstressed syllable, e.g. perhaps, together, contain; or when they occur in intervocalic position, i.e. between vowels, e.g. happy, city, lucky, they are produced with relatively weak aspiration.

Aspiration is also weak, or absent, when /p, t, k/ are preceded by initial /s/ in a syllable even when the syllable is stressed, e.g. spin, stay, sky.

Moreover, other pre-stop consonants, especially fortis fricatives, seem to exert a certain absorption effect upon the aspiration of initial /p, t, k/ in a following syllable or word, as in half past, finish talking, rough coat.

- 1) Presence or absence of voice being usually irrelevant in this initial accented position, where /b, d, g/ are largely or totally devoiced.
- 2) Experimental investigations suggest that perceptually and, to some extent, acoustically /p, t, k/ following /s/ have more in common with /b, d, g/ than with initial /p, t, k/.

In final position the amount of aspiration is very variable, i.e. /p, t, k/ may be aspirated or unaspirated.

This variation is stylistic as it is due to the different social styles and dialects of English. In this respect O'connor (1984 : 41-6) states that in final position (before a pause) voiceless stop<sup>(1)</sup> are aspirated and that they should have an explosion in this position. On the other hand, Roach (1984 : 31) states that in final position (before a pause) the plosion following the release of plosives is very weak and often not audible. This contradicts O'connor's statement above, yet it is logically acceptable, since a speaker normally doesn't need to explode a final stop unless he is using a formal style. Thus, it can be said that aspiration is weak or even absent in final position (before a pause), due to the fact that explosion is very weak or absent in that position.

### **2.1 Difficulties of Teaching and Learning Aspiration**

Differences between the sound system of the mother tongue, i.e. Arabic, and that of English make the process of teaching and learning aspiration quite difficult. In this respect some points of difficulty are summarized in the following:

- 1- The possibilities of Arabic syllable structure allow no consonant sequences in word initial position, which is an important position of aspiration in English. In other words, the main word position of aspiration in English is not found in Arabic; This needs more effort on the part of the teacher and the learner to carry out their task successfully.
- 2- Since plosives are produced by trapping the air for a while and then releasing it, things become more difficult to the learner as there can be different ways of release, depending on the nature of the following sound and the position of the plosive itself in a word. This requires the teacher and the learner to have in mind the nature of the articulation of the following sound and the features of the plosive in each word position in order to predict the manner in which the release takes place and the modifications that are likely to occur to the release of the compressed air, and the possibility of having or not having aspiration in each position.

### **3.1 Conclusions and Recommendations :**

Throughout this study the major points concerning the production of English plosives and their unique feature, i.e. aspiration, have been presented. This has led to the conclusions that the process of teaching and learning this subject may be faced by a number of difficulties due to the fact that there are no native counterparts for most of it.

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1) O'connor uses the term 'stop' to refer to plosive consonants.

Aspiration can be recognized in different degrees depending on the strength of the explosion of a voiceless plosive in different word positions . In other words , the strength of aspiration is determined by the strength of the explosion , and that the stronger the explosion is , the clearer the aspiration . This requires sufficient awareness on the part of the learner about the various ways of producing plosives in different word positions as well as the degree of aspiration (if there is any) that is likely to be found in each position . In order to overcome such difficulties and facilitate the teaching – learning task some recommendations have been suggested ; they are summarized as follows :

- 1- Exaggerating the production of plosives in such of a way that makes the learner recognize clearly what is going on in the process. This can be achieved by slowly and energetically pronouncing pairs of words that show the different features of voiced and voiceless plosives.
- 2- Paying special attention to the cases that have no native counterparts in order to familiarize the learner with them , and trying to give him more time for more practice until he masters them .
- 3- In order to get the required results the teacher is also required to be an actor who performs all these different manners of release in such a way that makes it clear to the learner how things happen. He may also use diagrams , sketches , tape recorders and other teaching aids that facilitate his job . Moreover , the learner should practise these steps himself so that he can relate what he theoretically learns to what he practically performs .

**Bibliography :**

Abercrombie , D. (1977). Elements of General Phonetics. Edinburgh : Edinburgh University Press.

Bronsnahan , L. & B. Malmberg. (1976). Introduction to Phonetics. Cambridge : Cambridge University Press.

Catford , J. C. (1989). A Practical Introduction to Phonetics. Oxford : Clarendon Press.

Crystal , D. (1987). A Dictionary of Linguistics and Phonetics. Oxford : Basil Blackwell.

Gimson , A. C. (1976). An Introduction to the Pronunciation of English. London : Edward Arnold Ltd.

O'connor , J. D. (1984). Better English Pronunciation. Cambridge : Cambridge University Press .

Roach , P. (1984). English Phonetics and Phonology. Cambridge : Cambridge University Press .

Schane , S. (1973). Generative Phonology. New Jersey : Prentice – Hall Inc.

Wells , J. & G. Colson. (1978). Practical Phonetics. Great Britain : Pitman Publishing Ltd.