Chapter 12
Articulatory Phonetics:
English Vowels

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ABSTRACT

This chapter focuses on the articulatory phonetics of English vowels; thus, it identifies descriptive parameters for vowel articulation in English, differentiates monophthongs and diphthongs, classifies the vowels of American English using these parameters, and addresses vowel reduction in American English. The theoretical material is followed by a pedagogical consideration of how the specifics of the articulatory characteristics of English vowels can be addressed in the classroom to facilitate comprehension and production of English vowels by English language learners. Supplementary materials are suggested for readers offering sample activities that could be used by language practitioners in ESL classrooms for this goal, as well as for exploring other dialects of English, including specific regional dialects falling under the umbrella of General American English, the variety addressed in this chapter.

ARTICULATORY DESCRIPTION OF VOWELS

This chapter focuses on how the vocal organs are engaged in producing the vowel sounds of American English, including the descriptive parameters of vowel articulation and categorization of American English vowels according to those parameters, an explanation of differences between monophthongs and diphthongs, a brief discussion of vowel reduction, and pedagogical considerations of how these issues can be addressed in an ESL classroom and supplementary materials useful for both teachers and learners. The range of speech sounds utilized by spoken languages are produced in the vocal tract which filters sound produced at the larynx or voice box to create meaningful distinctions between sounds and thus yield the range of sounds of spoken human language (Gick, Wilson, & Derrick, 2013; Zsiga, 2013).
Articulatory Phonetics: English Vowels

Vowels pose an interesting challenge to articulatory description. They are most typically produced with vibrating vocal folds, which limits the utility of the voicing distinction for categorizing vowels (Zsiga, 2013). Since there is little constriction of the vocal tract involved in their production, the place and manner distinctions which can be used to describe the articulatory gestures involved in the production of consonants in rather concrete terms are inadequate for describing the typically open articulations of vowels (Zsiga, 2013). Instead, vowels are most effectively described with reference to the positioning of the tongue body and, to a lesser extent, lips (Gick, Wilson, & Derrick, 2013; Zsiga, 2013). Thus, the four main parameters for describing English vowels are the vertical position of the tongue in the oral cavity during the articulation of the vowel, or tongue height (high, mid, or low; in some sources, close, corresponding with high, close-mid, open-mid, and open, corresponding with low), the horizontal position of the tongue in the oral cavity, or tongue backness (front, central, or back), lip rounding (rounded or unrounded), and tenseness (tense or lax) (Shriberg & Kent, 2012; Zsiga, 2013).

**Height**

The first key difference between vowels refers to the vertical position of the tongue during the articulation of the vowel. Another way to think of tongue height is as the distance between the tongue and the roof of the mouth. There are three values used for describing tongue height: high, mid, and low. Vowels produced with the tongue close to the roof of the mouth (and thus with a nearly closed mouth) are high (sometimes referred to as close vowels) – e.g., /i/ as in *beat* and *heat*; /u/ as in *boot* and *hoot*.

Vowels produced with the tongue lowered to the jaw, far from the roof of the mouth (and thus with an open mouth) are low (also referred to as open vowels) – e.g., /æ/ as in *bat* and *hat*; /ɑ/ as in *hot* and *pot*.

Vowels produced with the tongue at an intermediate distance between the roof of the mouth and the jaw (such as /ɛ/ in *bet* and *pet*) are mid.

The simplest way to feel the difference between high and low vowels is to compare the vowels in a minimal pair like *beat* and *bat*. Both words begin with a *b* sound and end with a *t* sound, and only the vowel is different between the two words. Notice as you pronounce these two words carefully that to produce the high vowel /i/ in *beat*, the tongue is quite high in the mouth, almost touching the roof of the mouth; to produce the low vowel /æ/ in *bat*, the tongue is lowered to the jaw, far from the roof of the mouth. Moving between the words *beat* and *bat* helps to isolate the extreme points of the height continuum for vowels.

**Backness**

A second key difference between vowels refers to how far forward or back in the mouth the tongue, or, according to some sources, the highest point of the tongue, is positioned during the articulation of the vowel. As with tongue height, there are three values used for describing backness: back, central, and front. Vowels with tongue height, there are three values used for describing backness: back, central, and front. Vowels with the tongue pushed relatively forward in the mouth are front (/i/ as in *beat* and *peel*; /ɪ/ as in *bit* and *pill*; /ɛ/ as in *bet* and *bell*); vowels produced with the tongue bunched up near the back of the mouth are back (/u/ as in *boot* and *pool*; /ʊ/ as in *book* and *put*); vowels produced with the tongue in a neutral position, at an intermediate distance between these two values, are central (/æ/ as in *but* and *hut*). Another way to think of tongue backness is which part of the tongue is raised in articulation of the vowel – front, central, or back.
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