A Primer in Phonetics

Disclosures

- Nancy Cartino serves on the PSHA Executive Board but receives no compensation for this role.

Fun Phonetic Facts

- The English tongue of the big cat is part of the Mixtec language.
- The English tongue of the big cat is part of the Zapotec language.
- The English tongue of the big cat is part of the Mixtec language.
- The English tongue of the big cat is part of the Zapotec language.
- The English tongue of the big cat is part of the Mixtec language.
- The English tongue of the big cat is part of the Zapotec language.
- An article in the International Phonetic Association journal was published on 21 PA.
Vocabulary review

- Metathesis—switched production of phonemes
  /aks/ for "ask"
- Epenthesis—addition of a phoneme (often a schwa)
  /kapun/ for "spoon"
- Elision—omission of a phoneme
  /baunz/ for "bands"
- Vowel reduction—centralizing of vowels
  /tama/ for "tomorrow"

Counting phonemes

Determine the number of phonemes in the following words:
- Through
- Onion
- Spilled
- Judge
- Lengths

The IPA

- [link](http://www.internationalphoneticassociation.org/resources/default/files/IPA.pdf)
- [link](http://www.internationalphoneticassociation.org/ipa-xvii-ipa-chart-with-sounds)
Vowel Quadrilateral

- Vowel quadrilateral is a schematic representation of the mouth that places vowels generally according to where they are produced in the mouth.
- Vowels vary
- Charts vary

[Link: https://www.youtube.com/watch?v=x5KNQ7Y_8]

Vowel Classification

- Classified as monophthongs and diphthongs
- Most English vowels are monophthongs (one tongue placement)
- Primary articulator for vowels is the tongue
- Classified according to tongue height (high, mid, low), tongue advancement (front, central, back), tenseness/laxness, rounded/unrounded.
Front vowels

- /i, e, e, a/,
- Tongue is anteriorly positioned
- Moves high to low

Central Vowels

- /æ, a, ə, ə/,
- /a/

Back vowels

- /u, u, o, ɔ, ə/
Diphthongs

- There are 3 phonemic diphthongs and 2 nonphonemic diphthongs in English.
- Diphthongs are produced with 2 tongue placements (on glide and off glide).
- Phonemic diphthongs in English are /æt, øt, øt/.
- /ju/ is sometimes considered a diphthong.
- Tongue is in a lower position in the mouth for the on glide and moves to a higher position for the off glide.

Nonphonemic diphthongs

- Two nonphonemic diphthongs are /æt, øt/.
- Use is dependent upon how the sound is used in a word (one syllable word, open syllable that ends a word, stressed syllable in a more than one syllable word).

Rhotic diphthongs

- R-colored vowels
  - /æt/ = air
  - /æt/ = ear
  - /æt/ = are
  - /æt/ = or
  - /æt/ = our
  - /æt/ = ire
Consonant Classification

- 24 American English consonants
- Classified according to Manner, Place, and Voice
- Resonant and nonresonant classifications
- Primary articulator is the tongue
- Multiple other movable and immovable articulators

Manner

- How the breath stream is modified as it moves through the vocal tract
- Stop Fricatives: b, p, t, d, k, g
- Fricatives /θ, θ, f, s, x, j, s, h/
- Affricates /ʃ, ʒ/
- Nasals /m, n, ŋ/
- Glides /w, ɹ(/
- Liquids /l, r/
Voice

- Presence or absence of vocal fold vibration during the production of phonemes
- Voiced /b, d, g, m, n, η, r, l, w, j, ʒ, v, z, ð/ (Resonant)
- Unvoiced or Voiceless /p, t, k, θ, f, s, j, h, ɬ/ (Nonresonant or obstruent)

Other commonly used symbols: stops

- Glottal stop /ʔ/
- Tap /ɾ/)
- The tap and glottal stop are allophones of /t/ and /d/
- The glottal stop is also used to assist in transitions between and within words

Other commonly used symbols: fricatives

- Bilabial fricatives /θ, ɬ/
- Prenasal fricative /ɾ, ʃ/
Other commonly used symbols: approximant

- A production that is somewhere between a /w/ and an /l/.
- /v/ is a voiced labiodental approximant.
- Lower lip and teeth are used in the production of the sound but do not touch.

Common errors

- There is no symbol for c, q, or x in phonetics.
- Candy /kændi/  Cent /sent/
- Queen /kwɪn/  bisque /bɪsɛk/  Bisque /bɪsɛk/
- Extra /ɪkˈstræ/  Exact /ɛkˈzækt/  Exact /ɛkˈzækt/  Exact /ɛkˈzækt/

Variations of symbols

- /r/ versus /s/
- /n/ versus /hw/
Syllables

- Nucleus, onset, coda
- Every syllable must contain a nucleus, typically a vowel
- Syllabic consonants /m,n,l/
- The onset includes all of the consonants that precede the nucleus in a syllable
- The coda includes all of the consonants that follow the nucleus in a syllable

Suprasegmental aspects

- Stress (word versus sentence)
- Intonation
- Tempo

Word stress

- Primary—the syllable that receives the most energy (greater amplitude, longer duration, higher frequency of the syllable nucleus)
- Indicated with a "*" in front of the stressed syllable
- Secondary—some stress is given but not as much as primary
- Indicated with a "." in front of the syllable
- Unstressed syllables—no stress is given (a>a, syllabic consonant)
Word stress

- One syllable words always receive primary stress
- The majority of two syllable words have stress on the first syllable
- Stress can serve a phonemic function where a change in the stressed syllable changes word meaning and pronunciation
- Digest, Contest, Rebel, Produce, Address

Sentence stress

- Each sentence a speaker produces also has sentence stress.
- Certain words in a sentence will usually receive emphasis or stress depending on the level of importance of that word in the sentence and the speaker's intent of the message being conveyed.
- Don't drive to school.
- Can use more primary and secondary stress markers before a word to indicate sentence stress.
- May be relevant when working with individuals with hearing impairment or who are learning English as a second language.

Intonation

- The modification of the vocal pitch to convey meaning.
- Rising and falling intonation contours.
- Rising intonation contours—questions and incomplete thoughts. [\]
- Falling intonation contours—statements and commands. [\]
Intonational phrases

- Intonational phrases: made up of all changes in the fundamental frequency in a meaningful utterance.
- One intonational phrase: I want to go home.
- Two intonational phrases: You took my umbrella, didn't you?
- Three intonational phrases: The boys who ate the candy got sick.

Tempo

- Describes durational aspect of connected speech.
- Overall rate of speech plays a role in determining the tempo of speech.
- Average speech rate of adults is 5 to 5.5 syllables per second.
- Tempo is also determined by the duration of individual phonemes and the duration of the pauses located between syllables, words, phrases, and sentences.

Tempo

- Diphthongs have a greater duration than vowels.
- Vowels have a greater duration than consonants.
- Glides and liquids have the greatest duration.
- Stop consonants have shortest duration.
- Duration of any individual phonoeme will change in connected speech.
Tempo

- Length of individual phonemes also varies depending upon the phonetic context. (batch /bad/g)
- Vowels in open syllables are longer than vowels in closed syllables (beet /bee/)
- The final phoneme of one word and the initial phoneme of the following word may be the same (Sam may go—no break in the production)

Juncture

- Used to indicate the way in which syllables and words are linked together in connected speech
- External juncture—pause that connects 2 lexical items
- Symbols (; and ,) are used to mark external juncture
- These symbols replace commas, semicolons, and periods
- ( ) Indicates a colon (comma)
- ( ) Indicates a longer pause (period, semicolon, colon)
- ( ) Indicates open internal juncture (question/ice cream)
- /a/ versus /æ/ as in ice/cream

Diacritics

- Symbols that are added to phonetic transcription to provide more precise information about the production.
- Narrow transcription
- Can refer to an entire utterance or to a particular phoneme
- Typically used in the clinical setting to indicate an abnormality in the production
Examples of commonly used diacritics

- `ʰ` - aspiration
- `ː` - syllable
- `ʾ` - anterior production
- `ʷ` - rounding
- `=` - raised vowel
- `�` - lowered vowel
- `ː` - devoicing
- `ː` - lengthening

[http://www.internationalphonetassoc.org/symbols/diacritics/]

Examples of commonly used diacritics

- `[ɣ]`
- `[ɜ]`
- `[u]`
- `[uː]`

Practice with phonetic transcription

- Transcribe the following words and phrases
Online Resources

- Index of American Dialects: http://www.novoclimb.com/dialects.html
- Douglass Phonetics Laboratory: http://www.dpa.stanford.edu/dpl/fonetics.php
- Using IPA symbols in documents with Greek: https://www.phonetics.ox.ac.uk/phonetics/phonetics-interpreting-greek.html
- Sounds of Speech, online app available: http://mashedspeakers.ncl.ac.uk/phonetics/phonetics-english
- Pinyin: http://www2.gwu.edu/~wongen/phonetics/phoneticsFrancais.html

References