- **American English consonant and vowel sounds**

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*Background resources:*

- "Periodic table of speech sounds" video
- Consonant and vowel sound charts

# 0. Key points today

- Phonological awareness
- The consonant and vowel speech **sounds** of "standard" American English
  - Identifying and distinguishing them
  - IPA symbols for transcribing them
- Expectations for this material:
  - You do **not** have to **memorize** the terms and symbols introduced today
  - But: Be able to **use** and **understand** them (given a reference list or chart)

# 1. Phonological awareness

- Last time, you tried **dividing** spoken words into
  - **syllables** (*ma • ga • zine*)
  - **onset+rime** (*sp • ort*)
  - **phonemes** = invididual consonant and vowel sounds ( / s ɪ k s /)

- Remember:  this was something we did with the **sounds** of the words, not their spellings

# 1. Phonological awareness

- These three tasks show aspects of **phonological awareness**
  - **Syllable** awareness
  - **Onset/rime** awareness
  - **Phonemic** (phoneme) awareness

- **Phonological awareness**: *conscious* awareness of aspects of the sound structure of spoken language
  - Reinforces, and is reinforced by, **phonics-based reading instruction**

# 1. Phonological awareness

- Every spoken language **has** phonological structure
- But: Speakers typically develop (conscious) phonological ***awareness*** only when guided or taught
  - **Syllable** awareness — comes easily
  - **Onset/rime** awareness — more difficult
  - **Phonemic** (phoneme) awareness
    - requires the most practice
    - develops later
    - is the least consciously accessible without explicit teaching and practice

# 1. Phonological awareness

- For the rest of today's class, we will investigate the **phonemes** of English:
  - What are all the different phonemes (consonant and vowel sounds) that are **distinguished** in the mental grammar of speakers of English?
  - How can we **describe** these phonemes and their similarities and differences?

# 2. Notating speech sounds

- How can we **notate** (write down) the speech sounds of a language in order to …
    - distinguish
    - describe
    - compare
    - discuss

  … them?

# 2. Notating speech sounds

- **English letters** do not always **directly** represent speech sounds
  - How many **speech sounds** are there in these English words? (from last class)
    (a) *she* 2
    (b) *six* 4
    (c) *using* 5…but maybe not the ones you thought?

# 2. Notating speech sounds

- **English letters** do not always **directly** represent speech sounds
  - Do *thigh* / *thy* start with the same sound?
  - How many ways can we spell the sound [k] as in *kite*?
  - How many pronunciations can be spelled *ough*?

# 2. Notating speech sounds

- **English letters** do not always **directly** represent speech sounds
  - Do *thigh* / *thy* start with the same sound? No!
  - How many ways can we spell the sound [k] as in *kite*? k, kk, ck, c, cc, ch, cque, +...
  - How many pronunciations can be spelled *ough*? *dough, bough, through, cough, enough,* +...

# 2. Notating speech sounds

- **English letters** do not always **directly** represent speech sounds | *she* *six* *using*
  - A **sequence** of letters can spell **one** sound
  - **One** letter can spell a **sequence** of sounds
  - The **same** letter(s) can spell **different** sounds
  - **Different** letter(s) can spell the **same** sounds

- We need a way to **notate speech sounds** independently of the spelling system of a given language

# 2. Notating speech sounds

- The **International Phonetic Alphabet (IPA)** is a system that (approximately) represents **each distinct speech sound** found in the languages of the world with a **single, unique symbol**
  - Two sounds that are slightly different may be classified under the same symbol if they are not usually treated as distinct sounds within a single language

- Brackets [...] or /.../ show that a letter or symbol is being used as a **phonetic symbol**, which in turn represents a **speech sound**
  - So **[k] is a <u>sound</u>, NOT a letter**

# 3. Consonant sounds of English

- In school, you probably learned about consonant and vowel *letters*
  - This is actually shorthand for “letters that spell consonant / vowel speech sounds”
- Do you know what the **difference** is between **consonant** and **vowel speech sounds**?

# 3. Consonant sounds of English

- Do you know what the **difference** is between **consonant** and **vowel speech sounds**?
- *Phonetics* (sound production & perception):
  - Vowels: relatively **unobstructed** vocal tract
  - **Consonants**: have a **constriction** (obstruction)
    - We can classify consonants according to the **position** and **type** of this constriction
- *Phonology* (sound patterning / next time):
  - Vowels typically form the nucleus of a syllable
  - Consonants are on the syllable margins

# 3. Consonant sounds of English

## Group activity

- Consider the underlined letters and combinations. How many **distinct sounds** do we find here? Do any of these spellings represent the **same sound**?

# 3. Consonant sounds of English

| | | |
|---|---|---|
| (1) | *pill* | *fill* |
| | *Bill* | *mill* |
| | *Phil* | *village* |
| (2) | *tail* | *day* |
| | *knotting* | *nodding* |
| | *leaf* | *reef* |
| | *feel* | *fear* |
| (3) | *sass* | *zoos* |
| | *fresher* | *measure* |
| | *check* | *jacks* |
| | *thistles* | *this* |
| (4) | *thick* | *fig* |
| | *singer* | *dinner* |
| | *finger* | *you* |
| | *woo* | *who* |

# 3. Consonant sounds of English

**Group activity**

- Consider the underlined letters and combinations. How many **distinct sounds** do we find here? Do any of these spellings represent the **same sound**?

(1) *<u>p</u>ill*
*<u>f</u>ill*
*<u>B</u>ill*
*<u>m</u>ill*
*<u>Ph</u>il*
*<u>v</u>illage*

# 3. Consonant sounds of English

- Consider the underlined letters and combinations. How many **distinct sounds** do we find here? Do any of these spellings represent the **same sound**?

(1)

| | |
|---|---|
| *<u>p</u>ill* | [ p ] |
| *<u>f</u>ill* | [ f ] |
| *<u>B</u>ill* | [ b ] |
| *<u>m</u>ill* | [ m ] |
| *<u>Ph</u>il* | ( [ f ] again ) |
| *<u>v</u>illage* | [ v ] |

—Different spellings can represent the same sound

# 3. Consonant sounds of English

- Consider the underlined letters and combinations. How many **distinct sounds** do we find here?

(2) *tail*
*day*
*knotting*
*nodding*
*leaf*
*reef*
*feel*
*fear*

# 3. Consonant sounds of English

- Consider the underlined letters and combinations. How many **distinct sounds** do we find here?

(2)

| | |
|---|---|
| *tail* | [ t ] |
| *day* | [ d ] |
| *knotting* | [ n ], [ ɾ ] |
| *nodding* | ( [ n ] again, [ ɾ ] again ) |
| *leaf* | [ l ] |
| *reef* | [ ɹ ] — some sources use [ r ] for this |
| *feel* | [ ɬ ] |
| *fear* | ( [ ɹ ] again ) |

—Physically, some “t”, “d”, “l” sounds are different by context

# 3. Consonant sounds of English

- Consider the underlined letters and combinations. How many **distinct sounds** do we find here?

(3) *sass*

*zoos*

*fresher*

*measure*

*check*

*jacks*

*thistles*

*this*

# 3. Consonant sounds of English

- Consider the underlined letters and combinations. How many **distinct sounds** do we find here?

(3)

| | |
|---|---|
| *sass* | [ s ], ( [ s ] again ) |
| *zoos* | [ z ], ( [ z ] again ) |
| *fresher* | [ ʃ ] |
| *measure* | [ ʒ ] |
| *check* | [ ʧ ] |
| *jacks* | [ ʤ ], ( [ s ] again ) |
| *thistles* | [ θ ], ( [ z ] again ) |
| *this* | [ ð ], ( [ s ] again ) |

—Two different sounds are spelled “th”; “s” spells many sounds

# 3. Consonant sounds of English

- Consider the underlined letters and combinations. How many **distinct sounds** do we find here?

(4) *thi<u>ck</u>*
*fi<u>g</u>*
*si<u>ng</u>er*
*di<u>nn</u>er*
*fi<u>ng</u>er*
*<u>y</u>ou*
*<u>w</u>oo*
*<u>wh</u>o*

# 3. Consonant sounds of English

- Consider the underlined letters and combinations. How many **distinct sounds** do we find here?

(4)

| | |
|---|---|
| *thi<u>ck</u>* | [ k ] |
| *fi<u>g</u>* | [ g ] |
| *si<u>ng</u>er* | [ ŋ ] ( some varieties may have [ ŋg ] ) |
| *di<u>nn</u>er* | ( [ n ] again ) |
| *fi<u>ng</u>er* | ( [ ŋg ] — two sounds here ) |
| *<u>y</u>ou* | [ j ] |
| *<u>w</u>oo* | [ w ] |
| *<u>wh</u>o* | [ h ] |

—The spelling “ng” can represent one sound or two

# 3. Consonant sounds of English

- **Consonants**: have a **constriction** (obstruction)
  - We can **classify** consonants according to the **place** (position) and **manner** of this constriction
  - The details of this classification are summarized in the next few slides, FYI
    - You do not need to memorize this information
    - However, if you see these terms being used in a research paper, you should refer to today's materials and slides for information
    - If these details interest you, try LING 101!

# 3. Consonant sounds of English

- **Manner** of articulation
  - **Stops**: Complete constriction [ p b t d k g ]
  - **Nasals**: Stops, but airflow through nose [ m n ŋ ]
  - **Fricatives**: Narrow opening, turbulent airflow [ f v θ ð s z ʃ ʒ h ]
  - **Affricates**: Stop+fricative combinations [ ʧ ʤ ]
  - **Liquids**: *L* (lateral) and *R* (rhotic) sounds [ l ɫ ɹ ɾ ]
    - Grayed-out sounds are **not** separate **phonemes**—more on Wed)
  - **Glides**: Like very short vowels [ w j ]
- Stops, fricatives, affricates, can be **voiced** (with vocal-cord vibration) or **voiceless** (without)
  - The other classes are all **voiced**

# 3. Consonant sounds of English

- Place of articulation

  lips → **labial**

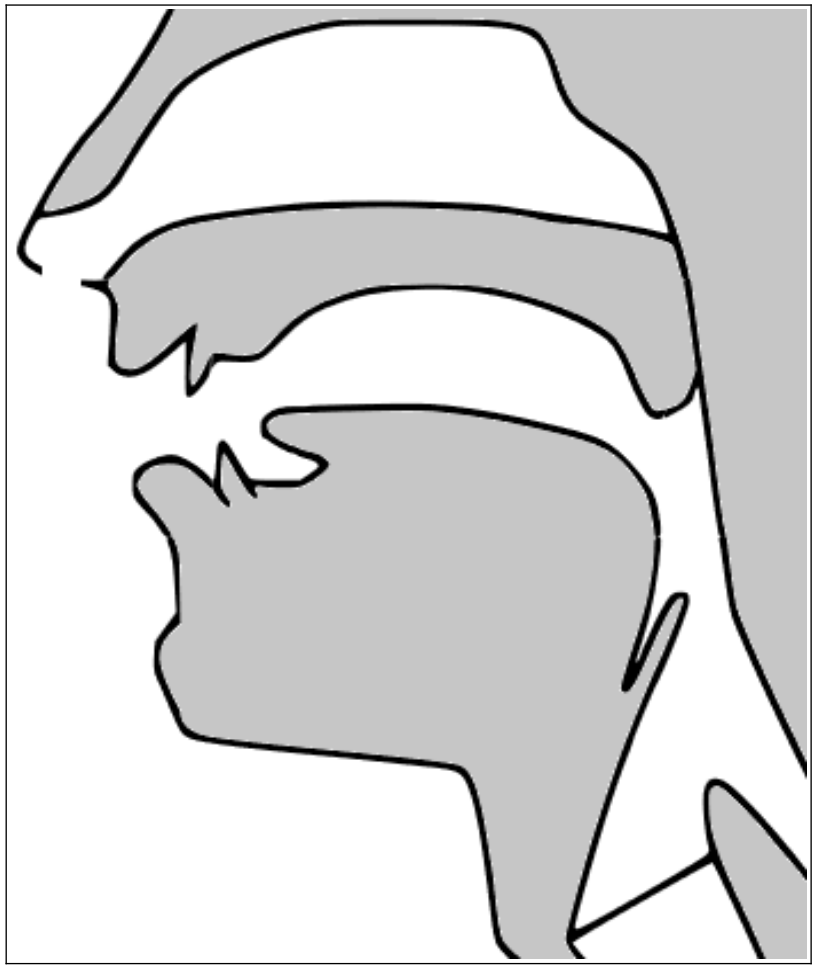
  teeth → **dental**

  alveolar ridge → **alveolar**
  - Bony ridge behind top teeth

  (hard) palate → **palatal**

  velum (soft palate) → **velar**

  glottis (in larynx) → **glottal**



Vocal tract drawing adapted from Daniel Currie Hall's interactive web site

# 3. Consonant sounds of English

(gray symbols are variants of another phoneme category)

| | | bilabial | labio-dental | inter-dental | alveolar | post-alveolar | palatal | velar | glottal |
|---|---|---|---|---|---|---|---|---|---|
| stops: | *voiceless* | [p] | | | [t] | | | [k] | |
| | *voiced* | [b] | | | [d] | | | [g] | |
| nasals | | [m] | | | [n] | | | [ŋ] | |
| fricatives: | *voiceless* | | [f] | [θ] | [s] | [ʃ] | | | [h] |
| | *voiced* | | [v] | [ð] | [z] | [ʒ] | | | |
| affricates: | *voiceless* | | | | | [ʧ] | | | |
| | *voiced* | | | | | [ʤ] | | | |
| liquids, lateral | | | | | [l] | | | [ɬ] | |
| liquids, rhotic | | | | | [ɾ] | [ɹ] | | | |
| glides | | [w] | | | | | [j] | | |

# 3. Consonant sounds of English

- Why could the consonant (and vowel) charts be called “the periodic table of speech sounds”?

# 3. Consonant sounds of English

- Why could the consonant (and vowel) charts be called “the periodic table of speech sounds”?
  - These charts are intended to represent all the possible speech sounds in the world’s spoken languages
  - The organization of the chart (rows and columns) sorts the speech sounds into classes

# 4. Vowel sounds of American English

**Poll time**

- How many distinct vowel sounds do most varieties of American English have?
  1. About 6
  2. About 10
  3. About 15

# 4. Vowel sounds of American English

- What is the **difference** between a **consonant** (sound) and a **vowel** (sound)?
- *Phonetics* (sound production & perception):
  - **Vowels**: relatively **unobstructed** vocal tract
    - We can classify vowels according to the **height** and **backness** of the tongue
  - Consonants: have a **constriction** (obstruction)
- *Phonology* (sound patterning / next time):
  - Vowels typically form the nucleus of a syllable
  - Consonants are on the syllable margins

# 4. Vowel sounds of American English

- Simple vowels

| | **front** | | **central** | | **back** | |
|---|---|---|---|---|---|---|
| **high** | *gr<u>ee</u>n* | [ i ] | | | *bl<u>ue</u>* | [ u ] |
| | *s<u>i</u>lver* | [ ɪ ] | | | *w<u>oo</u>den* | [ ʊ ] |
| **mid** | *gr<u>ay</u>* | [ e ] | *p<u>ur</u>ple* | [ ɚ ] | *r<u>o</u>se* | [ o ] |
| | | | *sof<u>a</u>* | [ ə ] | | |
| | *r<u>e</u>d* | [ ɛ ] | *m<u>u</u>stard* | [ ʌ ] | *<u>au</u>burn* | [ ɔ ] |
| **low** | *bl<u>a</u>ck* | [ æ ] | | | *<u>o</u>live* | [ ɑ ] |

- Color example words are from the “color vowel chart”, available at https://americanenglish.state.gov/resources/color-vowel-chart

# 4. Vowel sounds of American English

- Diphthongs

  *turqu<u>oi</u>se* [ ɔj ]

  *wh<u>i</u>te* [ aj ]

  *br<u>ow</u>n* [ aw ]

  - Diphthongs are vowel categories that are made up of a combination of two distinct sounds

- Color example words are from the “color vowel chart”, available at https://americanenglish.state.gov/resources/color-vowel-chart

# 4. Vowel sounds of American English

- Practice listening to vowel sounds:
  Which vowel category (“color”) do these words have?
  - *plate*
  - *flat*
  - *both*
  - *odd*
  - *boot*
  - *book*

# 4. Vowel sounds of American English

- Varieties (dialects) of English differ mostly in vowels

**Group activity**

- Compare with your neighbors:
  *i.* Same vowel or two different vowels?
    - *cot* vs. *caught* • *pin* vs. *pen* • *tight* vs. *tide*

  *ii.* Do you all say this vowel the same way?
    - *red*

  *iii.* Say these vowels slowly — what do you notice?
  (Was this ever an issue in learning another language?)
    - *gray*, *rose*

# 4. Vowel sounds of American English

- Varieties (dialects) of English differ mostly in vowels

  How do yours compare with your neighbors'?

  *i.* Some distinctions between vowels are found only in certain varieties
    - *olive (cot)* vs. *auburn (caught)* (in all contexts)
    - *pin* vs. *pen* (before nasals)
    - *tight* vs. *tide* (the vowel in *white* may have variants depending on the voicing of the following sound)

# 4. Vowel sounds of American English

- Varieties (dialects) of English differ mostly in vowels

  How do yours compare with your neighbors'?

  *ii.* Some vowel categories sound different in different varieties
    - *r<u>e</u>d* in "Standard" vs. North Midland (e.g., Chicago, Detroit) vs. southeastern

  *iii.* Most English varieties have **diphthongs** (two-part vowels) in place of "pure" [e], [o]
    - *gr<u>ay</u>* [gɹej] but for simplicity, some use: [gɹe]
    - *r<u>o</u>se* [ɹowz] [ɹoz]

# 5. Next time

- **Phonology** — the cognitive organization of sound categories in a language
  - Which physically different sounds are used to distinguish meanings?
  - Which sound combinations are allowed?
- **Syllables** — one phonological factor that organizes how individual consonants and vowel sounds can be combined in a word
- **Orthographic depth** — how directly the writing system of a language represents its sounds