

Today's objectives:

- **Motivating syllables**
- **Introduction to syllable structure**

Background preparation:

(none)

0. Course information & announcements

- Congratulations on finishing WU #1!
- We will discuss WU #1 sometime soon, after I have had a chance to read your papers
- No new prep-question assignment due next time: take a breather!

0. Today's plan

- English aspiration: Facts about the world
 - What are your intuitions about which voiceless stops are aspirated?
 - What happens when we check, phonetically and perceptually?
- English aspiration: Phonological analysis
 - How can we make our model describe/predict/explain where aspirated stop allophones occur?
- Revising our phonological model to include syllables and syllable structure

1. Which English voiceless stops are aspirated?

- Background: Aspiration
 - Some voiceless stops are **aspirated** — produced with a puff of air [h] after the stop release
 - **Unaspirated** stops do not have this puff of air
- In **English**, voiceless stop phonemes /p t k/ have aspirated **allophones** [p^h t^h k^h]
 - How can we use our **model** of the phonological grammar to **describe/predict/explain** the environment where aspiration occurs?

1. Which English voiceless stops are aspirated?

- Data set: [English aspiration](#)
- Discuss part (1) of this data set:
 - Which of the underlined stops are **aspirated**?

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(a)
pan
tar
kin

(b)
s**p**an
s**t**ar
s**k**in

(c)
pray
tray
cream

(d)
s**p**ray
s**t**ray
s**c**ream

1. Which English voiceless stops are aspirated?

- Data set: [English aspiration](#)
- Discuss part (1) of this data set:
 - Which of the underlined stops are **aspirated**?

(e)

appear

attach

accord

(f)

approve

attract

across

(g)

compare

contnt

conclude

(h)

aspire

astound

ascribe

2. A fun way to check for aspiration

- English **voiced** stops have an optional allophone in word-initial position that is voiceless unaspirated



- So: If we start playing audio during *any* stop
 - This tricks our phonological grammar into thinking we are listening to a *word-initial* stop
 - If it's not aspirated enough to "count" as aspirated, it will **sound** "voiced" (even if there is literally no vocal-fold vibration)

2. A fun way to check for aspiration

- Which of the stops are actually aspirated?

(a)

/p̣/an

/ṭ/ar

/ḳ/in

(b)

s/p̣/an

s/ṭ/ar

s/ḳ/in

(c)

/p̣/raɪ

/ṭ/raɪ

/ḳ/ri:m

(d)

s/p̣/raɪ

s/ṭ/raɪ

s/ḳ/ri:m

(e)

a/p̣/iə

a/ṭ/ætʃ

a/ḳ/ɔːd

(f)

a/p̣/rəʊv

a/ṭ/rækt

a/ḳ/rɒs

(g)

com/p̣/areɪ

con/ṭ/ent

con/ḳ/lud

(h)

as/p̣/ɪr

as/ṭ/əʊnd

as/ḳ/rɪb

2. A fun way to check for aspiration

- Which of the stops are actually aspirated?

(a)

[p^h]an

[t^h]ar

[k^h]in

(b)

s[p]an

s[t]ar

s[k]in

(c)

[p^h]ray

[t^h]ray

[k^h]ream

(d)

s[p]ray

s[t]ray

s[k]ream

(e)

a[p^h]ear

a[t^h]ach

a[k^h]ord

(f)

a[p^h]rove

a[t^h]ract

a[k^h]ross

(g)

com[p^h]are

con[t^h]ent

con[k^h]lude

(h)

as[p]ire

as[t]ound

as[k]ribe

3. The environment for English aspiration

Testing our model

- Using the tools of our **phonological model** as developed so far...

What generalization can we make about the **environment** for the aspirated allophones of the voiceless stops, based on the data above?

3. The environment for English aspiration

Testing our model

- Now consider the words in part (2) of the data set
 - (i) **applaud**
Atlantic
acclaim
 - Are these aspirated?
- Does our generalization still work for these examples?
 - Can we state a better generalization?
Why or why not?

4. Motivating syllable structure

- The concept of the “syllable” has a long tradition
 - But is it linguistically motivated?
- **Should** syllable structure be **part of our model** of the mental grammar?
 - What kind of evidence would decide this question?

4. Motivating syllable structure

- What we've seen from English aspiration:
 - The environment for aspiration **can't be easily stated** in terms of neighboring segments and word boundaries only (consider *Atlantic*)
 - **Converging evidence** for syllable boundaries:
 - Is there aspiration in [mp]?
 - Can [mp] start a word?
 - Why are these two questions related?
- Referring to syllable structure, and syllable position, lets us give a **simpler and more explanatory analysis** of aspiration in English voiceless stops

4. Motivating syllable structure

- With reference to syllable structure...
 - **Describe** — We can describe the environment of aspiration with a single generalization
 - **Predict** — Our generalization lets us predict other environments/words where we expect to see aspiration
 - **Explain** — Our new way of describing the relevant environments shows **why** apparently distinct environments (in segmental terms) are **connected**