

Today's topics:

- **Segmental phonology:**
Phonemes and allophones
- **Phonological rules**

Background:

- *Data set - Bilabial, palatal, and glottal fricatives | Part I*
- *Data set - Alveolar/alveo-palatal obstruents, part I | Set (2)*

0. Today's objectives

After today's class, you should be able to:

- Use a data set to determine whether segments belong to separate phonemes, or are allophones of the same phoneme
- State a phonological rule, in terms of sound properties, that accounts for the distribution of allophones in a data set

1. Warm-up/check-in

- The mental sound categories of a language are known as...
- The physical or surface forms of a sound category (the pronunciations) are known as...

1. Warm-up/check-in

- The mental sound categories of a language are known as **phonemes**
- The physical or surface forms of a sound category (the pronunciations) are known as **allophones**
- Whether two (phonetically similar) sounds are separate phonemes, or allophones of the same phoneme, can **differ** from language to language

1. Warm-up/check-in

- How do we analyze [d] and [ð] in English / Spanish?
 - Handout - "[Phonemes and allophones](#)", ex (15)

1. Warm-up/check-in

- *Last time:*

The status of sounds as separate phonemes vs. allophones of a phoneme (vs. absent entirely) has implications for **second-language learning**

- *This time:*

In **linguistic theory**, we need to account for the fact that speakers have multiple allophones for some phonemes (and that this differs by language)

- How are allophones and phonemes represented in the **mental grammar**?

2. Analysis: Phonemes and allophones

Data sets

- Bilabial, palatal, and glottal fricatives | Part I
- Alveolar/alveo-palatal obstruents, part (I) | Set (2)
 - Is it **predictable** from the environment which of the consonants will appear?
 - How many **phonemes** do we have here? What are their **allophones**?

2. Analysis: Phonemes and allophones

Bilabial, palatal, and glottal fricatives | Part I

- Consider the environments of these sounds (remember to think in terms of properties)
 - What is the context where [ɸ] occurs?
 - What is the context where [ç] occurs?
 - What is the context where [h] occurs?
- How many phonemes would we propose for these three consonants, based on this data set?

2. Analysis: Phonemes and allophones

Alveolar/alveo-palatal obstruents, part (I) | Set (2)

- Consider the environments of these sounds (remember to think in terms of properties)
 - What is the context where [t] occurs?
 - What is the context where [tʃ] occurs?
 - What is the context where [ts] occurs?
- How many phonemes would we propose for these three consonants, based on this data set?

3. Phonological rules

- **Phonological rule** — (One) model of how the mental grammar puts allophones in the right places
target → *change / environment*
 - Write rules using **properties** (not IPA symbols)!
- Handout - “Phonemes and allophones”, section IV
 - Try this for the voiceless vowels example

3. Phonological rules

- **Phonological rule** — Our model of how the mental grammar puts allophones in the right places
target → *change* / *environment*
 - Write rules using **properties** (not IPA symbols)!
- Rule for **voiceless vowels** in Japanese

high
vowels → voiceless / voiceless __ voiceless

Paraphrase of rule: High vowels become voiceless when they occur between voiceless sounds.

3. Phonological rules

What our phonological analysis is claiming:

- Native speakers of Japanese **mentally categorize** [i] and [i̥] as “the same sound”, / i /
- Words are stored in the **mental lexicon** in terms of phonemes: / ika / ‘squid’, / ki̥ta / ‘north’
- The mental grammar uses the Voiceless Vowels rule to put [i̥] where it needs to be:
/ ika / → [ika] (conditions for rule not met)
/ ki̥ta / → [ki̥ta] (conditions are met; rule applies)
- And likewise for [u] and [u̥]

4. Try it: Phonological rules

Data sets

- [Bilabial, palatal, and glottal fricatives](#) | Part I
- [Alveolar/alveo-palatal obstruents, part \(I\)](#) | Set (2)
 - Start from the analysis of phonemes, allophones, and environments that we arrived at
 - What two phonological rules do you need for the most insightful analysis of your data set?

5. For next time

- Try some more analyses/rules on your own (PQs)
 - Set (1) in the “Alveolar/alveopalatal obstruents, part (I)” data set
 - Part (II) in the “Bilabial, palatal, and glottal fricatives” data set
- In class next time, we will then consider
 - Can we generalize our analysis over sets (1) and (2) in the alveolar/alveopalatal data set?
 - How can we reconcile all the facts in parts I and II of the bilabial/palatal/glottal data set?