

1

Each list below contains sounds that are members of a natural class and one sound that does not belong to that natural class. Find one feature that all the phones of the natural class share and name the phone that is left out. (There may be more than one solution — you need give only one.) So, for example, if the sounds are [t, d, g, b, m], one answer would be: the natural class is made up of phones that are [+voice] and the phone that doesn't belong is [t].

- (1) [p, k, g, b, s, v, n, t, ʃ, ɹ]
Answer: [-nasal], excludes [n].
- (2) [f, g, n, p, d, m, k, ŋ]
Answer: [-continuant], excludes [f].
- (3) [o, æ, ɪ, i, e, u]
Answer: [-low], excludes [æ].
- (4) [s, ʃ, m, p, f, v, n]
Answer: [+anterior], excludes [ʃ].
- (5) [p, f, s, v, m, w, ʃ, n, t, j]
Answer: [-round], excludes [w].

2

Consider the following Finnish words.

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| [kuuzi] | six |
| [kadot] | failures |
| [kate] | cover |
| [liisa] | Lisa |
| [maton] | of a rug |
| [kade] | envious |
| [ˌɑːtɑːs] | wheel |
| [kuusi] | sixty |
| [ˌɑːdɑːn] | of a track |

([VV] represents a long vowel.) Compare the non-nasal voiceless alveolar stop (that is: $\left[\begin{array}{l} \text{-continuant} \\ \text{+coronal} \\ \text{+anterior} \\ \text{-voice} \\ \text{-nasal} \end{array} \right]$)

with the non-nasal voiced alveolar stop (that is: $\left[\begin{array}{l} -\text{continuant} \\ +\text{coronal} \\ +\text{anterior} \\ +\text{voice} \\ -\text{nasal} \end{array} \right]$). Are these allophones of the same phoneme or instances of different phonemes? If you decide that they are allophones, give the phonological rule using features that determines their distribution. If you decide that they are phonemes, explain why.

Answer:

First we must be specific about what the voiceless and voiced alveolar stops are in Finnish. They are [t] and [d]. So the question is: on the basis of this small list of words, is there evidence that these sounds are treated by Finnish as distinct (i.e., are phonemes) or as variant pronunciations of the same sound (i.e., allophones). If they are different phonemes, then it is possible for words to differ on the basis of a contrast in [t] and [d]. If they are allophones, then there should be a rule that determines which of [t] or [d] is used. The presence of this rule will mean that there is some position within words in which [t] will be converted to [d] (or vice versa) and as a consequence in that position we will find only one of the two sounds. A clue that [t] and [d] are allophones, then, would be if we found such a position within words — a position where only one of these phones is found.

This word list provides conclusive evidence that [t] and [d] are different phonemes. The minimal pairs [kate] and [kade] indicate that Finnish exploits the [t]/[d] distinction in building words.

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| 2 |
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There is a rule in English that devoices [ɹ]. An unvoiced [ɹ̥] is represented in the IPA with a little circle written under it, as in: [ɹ̥]. Based on the following distribution of words, come up with the rule that does this, and express it in terms of phonological features.

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|----------------------------|----------------------------------|
| [spɹaʊt] ‘sprout’ | [spɹaɪt] ‘sprite’ |
| [ɛɹoʊɹ] ‘error’ | [bɹaɪt] ‘bright’ |
| [k ^h ɹaɪ] ‘cry’ | [k ^h ɹeɪjən] ‘crayon’ |
| [fɹaɪt] ‘fright’ | [t ^h ɹɪp] ‘trip’ |
| [gɹaɪm] ‘grime’ | [p ^h ɹeɪ] ‘prey’ |
| [fɹɪəm] ‘from’ | [skɹætʃ] ‘skratch’ |
| [spɹeɪ] ‘spray’ | [bɹaʊ] ‘borrow’ |
| [stɹɪp] ‘strip’ | [dɹɪjɹɪj] ‘dreary’ |

(NOTE: The feature chart I handed out does not include the feature [+aspirated], but if it were more complete, it would. The sounds that are aspirated are [+aspirated] and those which aren't are [-aspirated].)

Answer:

/ +sonorant /
+coronal / → [-voice] / [+aspirated] _____

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| 3 |
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The following are words from the Portuguese spoken in Brazil.

| | |
|-------------|-------------|
| [tenu] | 'I have' |
| [tal] | 'such' |
| [natu] | 'born' |
| [kuat.ɾu] | 'four' |
| [uta.ɾ] | 'to anoint' |
| [ʃivi] | 'I had' |
| [ʃiu] | 'uncle' |
| [patʃina.ɾ] | 'to skate' |
| [pa.ʃi] | 'party' |
| [peʃi] | 'comb' |
| [dadu] | 'given' |
| [mad.ɾina] | 'godmother' |
| [mod.ɾnu] | 'modern' |
| [unidu] | 'united' |
| [gwa.ɾda] | 'guard' |
| [ʒineɾu] | 'money' |
| [oʒiu] | 'hatred' |
| [vɛ.ɾʒi] | 'green' |
| [vɛ.ɾdaʒi] | 'truth' |
| [gɾaʒi] | 'big' |

Compare [t]/[d] to [ʃ]/[ʒ]. Are these phonemes or allophones? If allophones, give the rule, in terms of phonological features, that controls their distribution.

Answer:

They are allophones. [ʃ] and [ʒ] are found before [i], and nowhere else, while [t] and [d] are never followed by [i]. The rule that controls the distribution of these sounds is:

$$\begin{array}{l} / \text{-sonorant} / \\ / \text{+coronal} / \end{array} \rightarrow \left[\begin{array}{l} \text{+delayed release} \\ \text{-anterior} \\ \text{+strident} \end{array} \right] / \text{_____} \left[\begin{array}{l} \text{-consonantal} \\ \text{+vocalic} \\ \text{+high} \\ \text{+front} \end{array} \right]$$

Or, to put it in terms of phones:

$$\begin{array}{l} / t / \\ / d / \end{array} \rightarrow \left[\begin{array}{l} \text{ʃ} \\ \text{ʒ} \end{array} \right] / \text{_____} [i]$$