

PHONOLOGY

Back to minimal pairs:

Two words that differ only by a single sound in the same position and that have different meanings.

‘pit’ and ‘bit’ form a minimal pair. → [pɪt] vs. [bɪt]

Minimal pairs will be our main tool!



Why is it important?

We want to understand the phonemes and the allophones in a language.



Phoneme: A class of speech sounds identified by a native speaker as the same sound; a mental entity (or category) related to various allophones by phonological rules.

Allophone: One of a set of realizations of the same phoneme; an actual phonetic segment.

We need to know:

Contrastive distribution

Complementary distribution

Free variation

The experimental and acquisition
side of phonology:

<https://www.youtube.com/watch?v=psgv41HVdaE>



From our book:

Contrastive

Distinct phonemes /
Allophones of **separate**
phonemes

Unpredictable distribution

Contrastive distribution;
minimal pairs

Allophonic

Allophones of **same**
phoneme

Predictable distribution

Complementary
distribution

Free variation

Allophones of **same**
phoneme

Unpredictable distribution

Overlapping distribution
with no difference in
meaning

Phonemic level: / /

Phonetic level: []

How to approach the data:

Step 1: Look for the MINIMAL PAIRS involving the relevant sounds in the data set.

Practice

Are [ɹ] and [l] in English allophones of the one phoneme? Or allophones of separate phonemes?

We need some minimal pairs. Try to find minimal pairs with the sound at word-initial, word-medial, and word-final positions.

Word-initial

l.....

ɹ.....

Word-medial

...l....

...ɹ....

Word-final

....l

....ɹ

Are there any minimal pairs? If so, these sounds are **contrastive**; therefore, they are **distinct phonemes**.

Step 2: Indicate the immediately adjacent environments of the sounds in question in the data set and look for **near-minimal pairs**, i.e., pairs of identical immediately adjacent environments.

What does it mean?: For each sound we are interested in, point out the immediately preceding and immediately following segments for each instance of the sound in the data set.

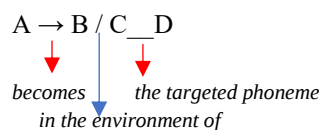
In [bin] and [liv], [b] is followed by [i] → #__i
 [l] is also followed by [i] → #__i

[bin] and [liv] are not minimal pairs but they are near-minimal pairs since we can control the environments in which [b] and [l] occur, namely, at the word-initial position and followed by the vowel [i].

If we have a similar situation, then we have contrastive sounds as our first step and we can claim that these sounds are separate phonemes.

Step 3: If there are no minimal or near-minimal pairs, then we are probably dealing with sounds that are in **complementary distribution**. You can predict which sound appears in a particular environment.

How we formulate our rules:

$A \rightarrow B / C_D$ A becomes B when it occurs between C and D.


Let's have a sample made-up rule for language X (pay attention to notation!):

/s/ → [k] / i__u /s/ becomes [k] when it occurs before /i/ and after /u/.

Your turn: Can you point out the cases when this rule applies?

NA	Output
/isur/	
/asak/	
/ester/	
/kisur/	
/misua/	
/asuq/	

Practice time:

1. Hindi – Consider the distribution of [b] and [ɓ].

[bara]	'large'	[ɓari]	'heavy'	[ɓəs]	'buffalo'
[bina]	'without'	[ɓir]	'crowd'	[bap]	'father'
[ɓəd]	'disagreement'	[bais]	'twenty-two'	[ɓag]	'part'
		[ɓori]	'sackcloth'		

Do we observe any (near-)minimal pairs?

If so, what does it mean?

If not, what are the environments for [b] and [ɓ]? Can you formulate a rule for their distribution?

[b] [ɓ]

2. Modern Greek – Consider the distribution of [x] and [ç].

[xano]	‘lose’	[xori]	‘dances’	[çeli]	‘eel’
[çino]	‘pour’	[xrima]	‘money’	[oçi]	‘no’
[xufta]	‘handful’	[xali]	‘candle’		

Do we observe any (near-)minimal pairs?

If so, what does it mean?

If not, what are the environments for [x] and [ç]? Can you formulate a rule for their distribution?

[x]

[ç]

3. Tongan – Consider the distribution of [t] and [s] in Tongan.

[fata]	‘shelf’	[movete]	‘to come apart’	[fesi]	‘to break’
[motu]	‘island’	[sipitau]	‘war-chant’	[sisi]	‘grand’
[tolu]	‘three’	[tasi:]	‘to be too small’	[mosimosi]	‘to drizzle’

Do we observe any (near-)minimal pairs?

If so, what does it mean?

If not, what are the environments for [t] and [s]? Can you formulate a rule for their distribution?

[t]

[s]

4. Standard Italian

Consider the following data from Standard Italian, an Indo-European language of the Romance family, spoken in Italy. Answer the questions that follow.

a. [tinta]	‘dye’	g. [tingo]	‘I dye’
b. [tenda]	‘tent’	h. [teŋgo]	‘I keep’
c. [dantsa]	‘dance’	i. [fuŋgo]	‘mushroom’
d. [nero]	‘black’	j. [bjaŋka]	‘white’
e. [dʒente]	‘people’	k. [aŋke]	‘also’
f. [sapone]	‘soap’	l. [faŋgo]	‘mud’

- i.** Are there any minimal pairs? If so, what are they, and what can you conclude to be true of Italian from those minimal pairs?
- ii.** State the phonetic environments in which the sounds [n] and [ŋ] appear. Identify any natural classes of sounds that appear in the environments you’ve provided.
- iii.** Given what you know about the distribution of sounds and the environments you listed in (ii), are [n] and [ŋ] in complementary or contrastive distribution? Please explain your answer.

5. Korean – Focus on the distribution of [s] and [ʃ].

a. [ʃi]	‘poem’	j. [sal]	‘flesh’
b. [miʃin]	‘superstition’	k. [kasu]	‘singer’
c. [ʃinmun]	‘newspaper’	l. [sanmun]	‘prose’
d. [tʰaksanʃige]	‘table clock’	m. [kasəl]	‘hypothesis’
e. [ʃilsu]	‘mistake’	n. [miso]	‘smile’
f. [oʃip]	‘fifty’	o. [susek]	‘search’
g. [paŋʃik]	‘method’	p. [tapsa]	‘exploration’
h. [kanʃik]	‘snack’	q. [so]	‘cow’
i. [kaʃi]	‘thorn’		

6. Maltese

a.	<i>Indefinite</i>		<i>Definite</i>	
	[fellus]	‘chicken’	[ilfellus]	‘the chicken’
	[aria]	‘air’	[laria]	‘the air’
	[mara]	‘woman’	[ilmara]	‘the woman’
	[omm]	‘mother’	[lomm]	‘the mother’
	[kelb]	‘dog’	[ilkelb]	‘the dog’
	[ʔattus]	‘cat’	[ilʔattus]	‘the cat’
	[ħitan]	‘walls’	[ilħitan]	‘the walls’
	[abt]	‘armpit’	[labt]	‘the armpit’
	[ispaniol]	‘Spanish (language)’	[lispaniol]	‘the Spanish (language)’

i. How can you predict the form of the definite marker?

ii. What natural classes of sounds are involved?

Now look at these nouns in the indefinite and the definite:

b.	<i>Indefinite</i>		<i>Definite</i>	
	[ti:n]	‘a fig’	[itti:n]	‘the fig’
	[dawl]	‘a light’	[iddawl]	‘the light’
	[ʃhab]	‘some clouds’	[issʃhab]	‘the clouds’
	[natura]	‘nature’	[innatura]	‘the nature’

The definite marker has the same phonemic form in these words as it had in part (a), but a phonological process has changed its phonetic form.

iii. What type of process is responsible for the change? How did it affect the definite marker?

iv. What natural class of sounds causes the change from the phonemic form to the various phonetic forms in part (b)?

v. Give the definite form of the following nouns:

<i>Indefinite</i>		<i>Definite</i>
[da:r]	‘a house’	_____ ‘the house’
[zift]	‘a pitch’	_____ ‘the pitch’
[azzar]	‘a piece of steel’	_____ ‘the steel’
[iŋgliz]	‘English’	_____ ‘the English (lang.)’
[belt]	‘a city’	_____ ‘the city’