Where did the segments go?

Teaching prosody with synthetic stimuli

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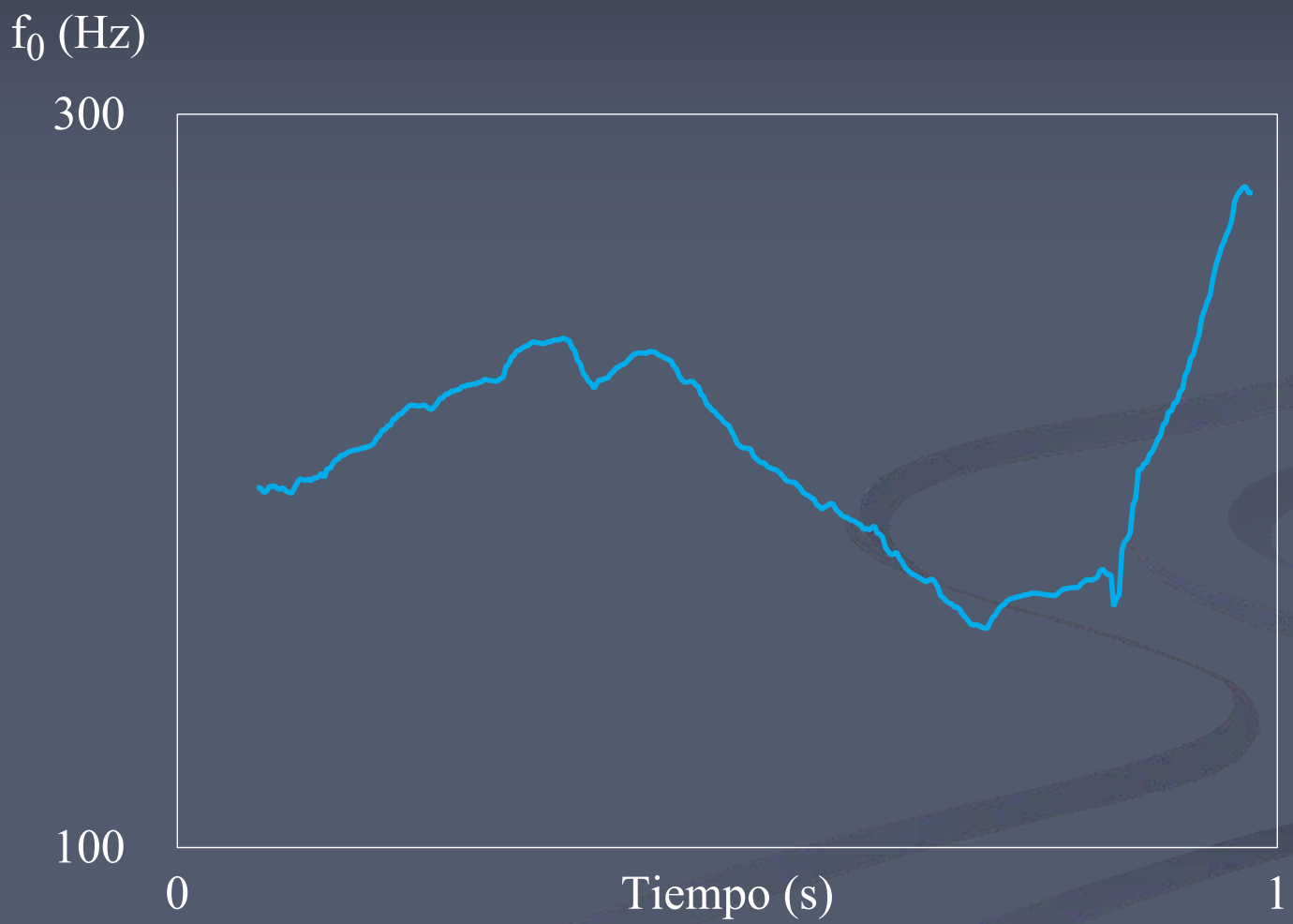
Sound transmission

- Air
- Liquid
- Solid

Prosody in L1 acquisition

Intonation



Time

Rhythm

Rhythm

SW PARK & MILL
WE ARE THE
URBAN EXPERTS
Portland
Streetcar
10766

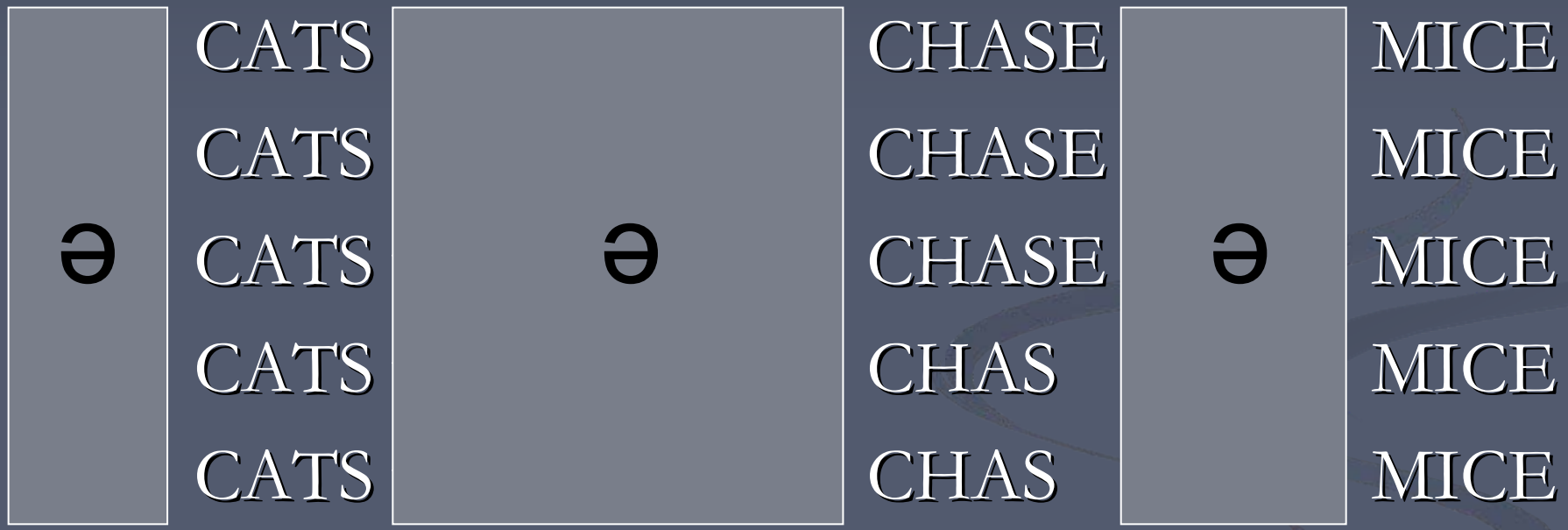
Stress-timed languages

Regularly occurring stressed syllables (Feet)

	CATS	CHASE		MICE
The	CATS	CHASE	the	MICE
The	CATS will	CHASE	the	MICE
The	CATS will be	CHAS	ing the	MICE
The	CATS will have been	CHAS	ing the	MICE

Stress-timed languages

Regularly occurring stressed syllables (Feet)



Stress-timed languages

Regularly occurring stressed syllables (Feet)

ə	CATS	ə	CHASE	ə	MICE
	CATS		CHASE		MICE
	CATS		CHASE		MICE
	CATS		CHAS		MICE
	CATS		CHAS		MICE

eng * deu nld swe ara ell

Syllable-timed languages

Regularly occurring ~~stressed~~ syllables

Mónica se ha comprado un CHAL

Mónica se ha comprado un jaRRÓN

Mónica se ha comprado un salchiCHÓN

Mónica se ha comprado un camaleÓN

Mónica se ha comprado un destornillaDOR

Syllable-timed languages

Regularly occurring ~~stressed~~ syllables

Mónica se ha comprado un CHAL

Mónica se ha comprado un jaRRÓN

Mónica se ha comprado un salchiCHÓN

Mónica se ha comprado un camaleÓN

Mónica se ha comprado un destornillaDOR

spa

ita

por *

fra

kor

chi

Mora-timed languages

Regularly occurring morae

(CV = 1 μ; CVV / CVC = 2 μ)

Mora-timed languages

Regularly occurring morae

(CV = 1 μ; CVV / CVC = 2 μ)

oshiete ojiisan

jpn

Foot-based segmentation

Blurry syllabic boundaries

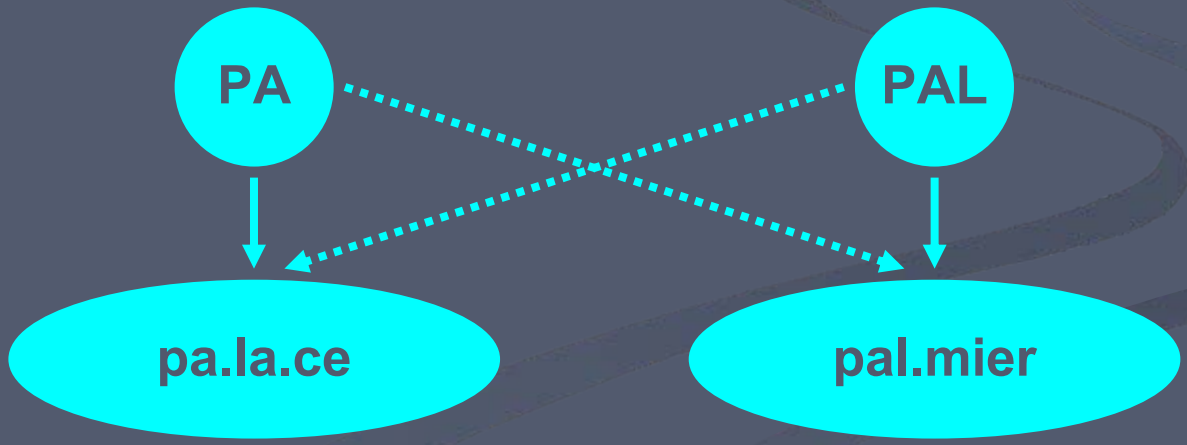
Real words embedded in pseudowords

Faster recognition if not split between feet

mintesh	mintayve
[$_{\Sigma}$ **mint**esh]	[$_{\Sigma}$ **min**] [$_{\Sigma}$ **t**ayve]

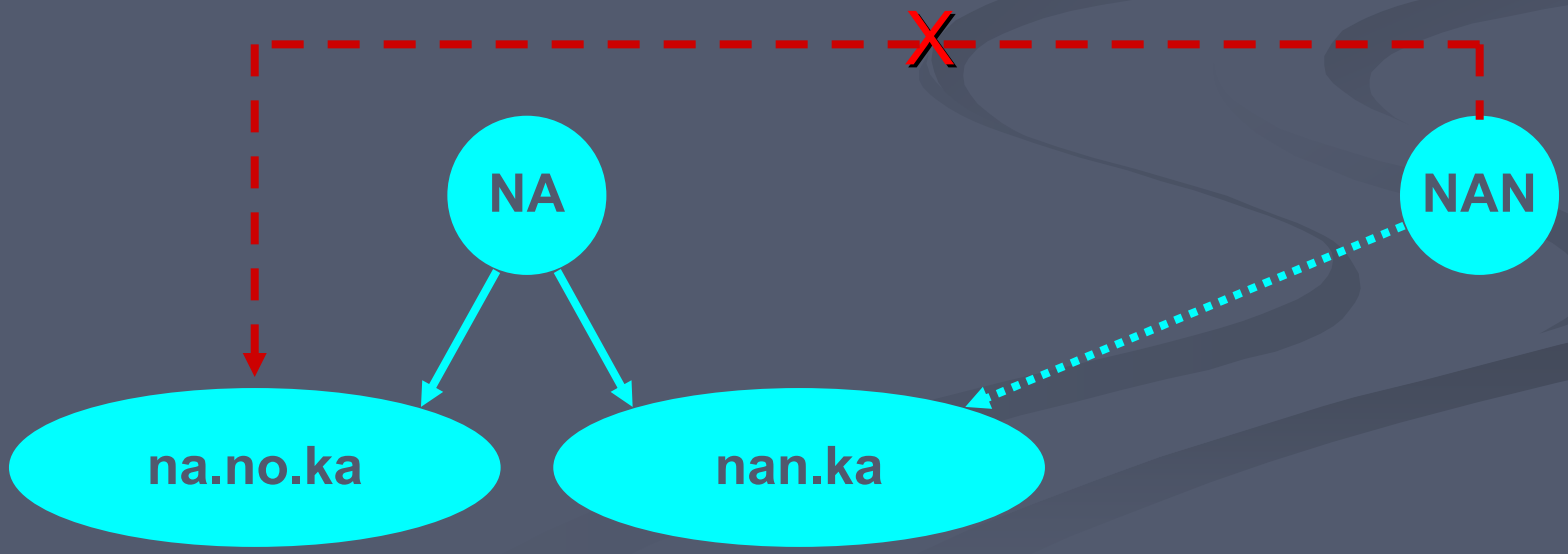
Syllable-based segmentation

Target sequences are faster detected if they match syllabic structure



Mora-based segmentation

Target sequences are only detected if they match moraic structure (1 μ faster than 2 μ)



Irritability

The difficulty of L2-rhythm learning

- Emerging property relying on
  - prosodic units (e.g. syllable)
  - prosodic prominence (stress)

- Not directly associated to any meaning
  - attention directed towards segments / intonation

The difficulty of L2-rhythm learning

- and excessive attention to words!

Learning rhythm without words

- Original sentence ……

  (lexical items substituted for by sasasa)
- Rhythm + intonation ……

  (flat-pitched)
- Rhythm ……

Learning rhythm without words

- Sentence structure: Someone bought something
- Subjects: **MÓ**nica, Pa**TRI**cia, Nico**LÁS**
- Objects: **PLÁ**tano, cua**DER**no, tentem**PIÉ**

Learning rhythm without words

	Mónica	*Patricia*	*Nicolás*	*se ha comprado un*	*plátano*	*cuaderno*	*tentempié*
	3	2	1		3	2	1
Sound 1							
Sound 2							
Sound 3							
Sound 4							
Sound 5							
Sound 6							
Sound 7							
Sound 8							
Sound 9							

Learning rhythm without words

	Mónica	*Patricia*	*Nicolás*	*se ha comprado un*	*plátano*	*cuaderno*	*tentempié*
	3	2	1		3	2	1
Sound 1	X					X	
Sound 2			X		X		
Sound 3			X				X
Sound 4		X					X
Sound 5	X				X		
Sound 6		X				X	
Sound 7		X			X		
Sound 8	X						X
Sound 9			X			X	

Learning rhythm without words

	Mónica	*Patricia*	*Nicolás*	*se ha comprado un*	*plátano*	*cuaderno*	*tentempié*
	3	2	1		3	2	1
Sound 1	X					X	
Sound 2			X		X		
Sound 3			X				X
Sound 4		X					X
Sound 5	X				X		
Sound 6		X				X	
Sound 7		X			X		
Sound 8	X						X
Sound 9			X			X	

Learning the body accents

- Body movements tend to synchronize with accent
  - Watch a video of some expressive person
  - Imitate their body movements
  - Imitate their body movements while dubbing (volume off, with the script)

Learning intonation

- Semantic aspects
- Formal (phonetic) aspects

Phonological deafness

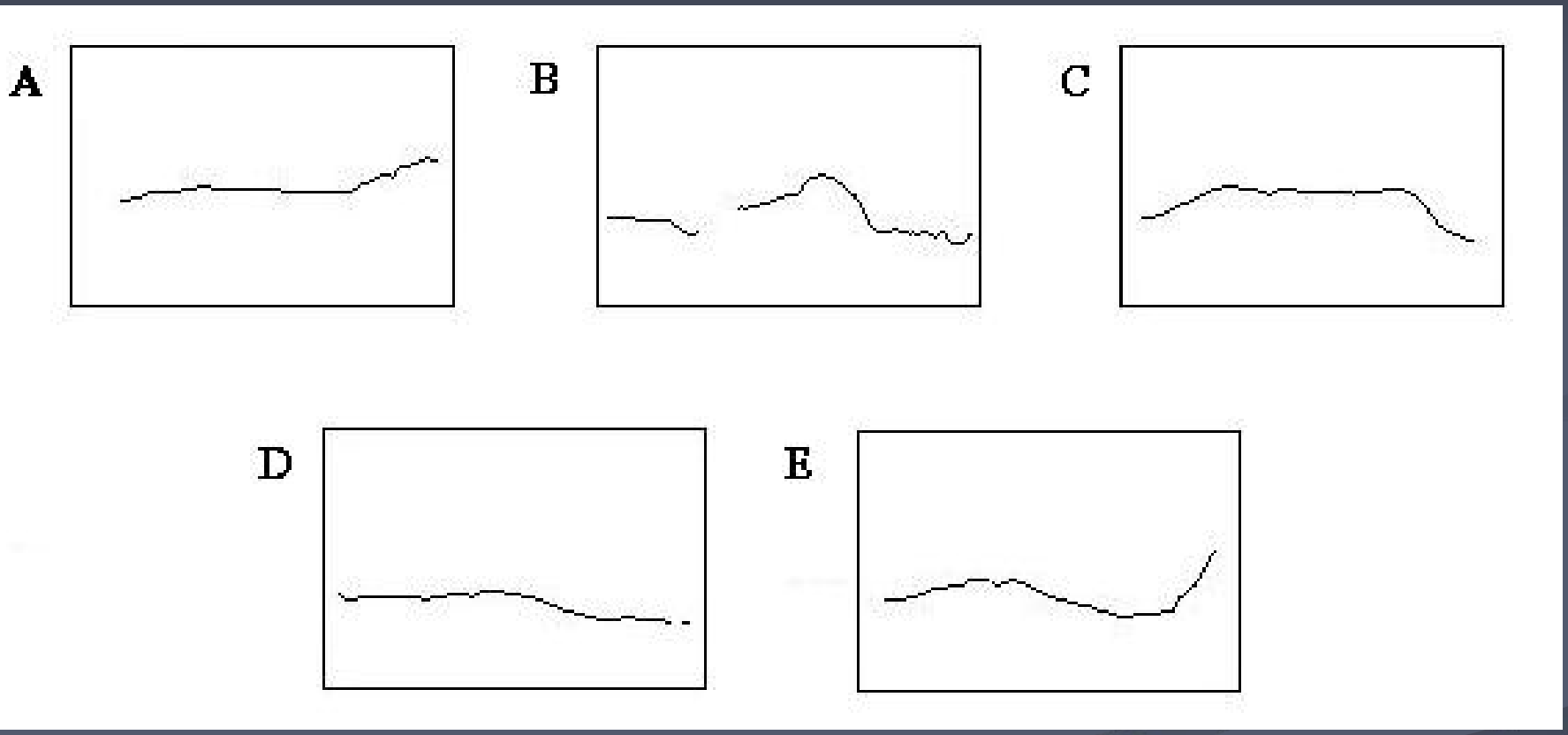
Intonation without segments

- Pingu
  - Shifts the focus away from words...
  - ... towards intonation
  - Students realize they understand thanks to context
  - Parallels characteristics of L1 acquisition

Intonation without segments

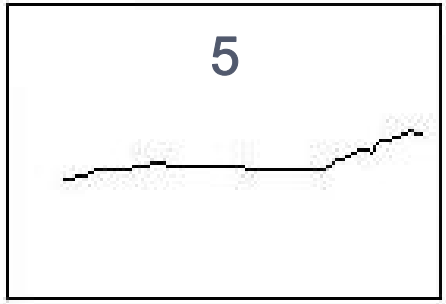
- Praat
  - Melody resynthesized to sound (hum)

Intonation without segments

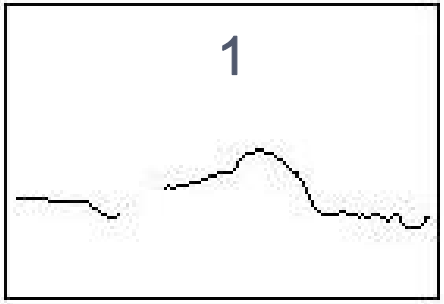


Intonation without segments

A



B



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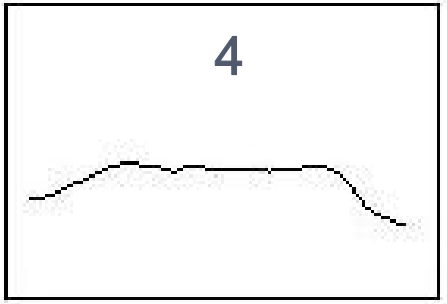

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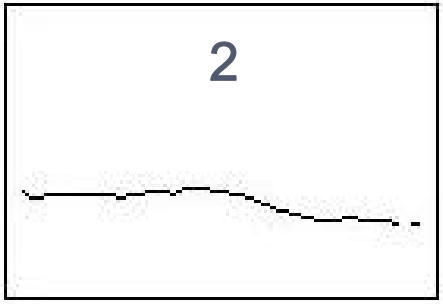

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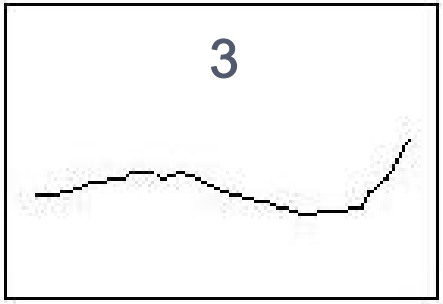

Conclusions

- Computer-assisted L2 learning can benefit from using synthetic stimuli
  - to avoid excessive attention to lexical meanings
  - to focus on the phenomenon being taught
  - to try to overcome phonological deafness
  - to reproduce characteristics of L1 acquisition

Thank you!