Declination

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Declination is the tendency of fundamental frequency to gradually fall over the course of an utterance.

The F_0 declination line created by American English speakers is consistently steeper than that created by Mandarin speakers in every declarative utterance.

Liu, Ching Kang. (2007). Declination: A Mismatch between Taiwanese EFL Students and Native Speakers of American English in Oral Performance. *Studies in English Language and Literature*,20, 125-136.

Introduction

examples

Statistics &



Five expressions to serve as testing materials

- 1. The temperature is very low today.
- 2. Finally he feels sure of himself.
- 3. That' what I want to see.
- 4. At first it is not easy for him to be casual in dress, informal in manner, and confident in speech.
- 5. Little by little he learns what kind of clothing is usually worn here to be casually dressed for classes.

Sentences	MSs	ESs		
1	-0.19579	19579 -0.6782		
2	-0.11613	-0.47597		
3	-0.3436	-0.54088		
4	-0.0219	-0.0704		
5	-0.04087	-0.08836		



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An utterance "The temperature is very low today" pronounced by different subjects (Pitch range)





An utterance "The temperature is very low today" pronounced by different subjects





An utterance "The temperature is very low today" pronounced by different subjects





"For one thing, we could make our own cleaning solutions from baking soda, lemon, and vinegar." by AE speakers





"For one thing, we could make our own cleaning solutions from baking soda, lemon, and vinegar." by Mandarin speakers





"For one thing, we could make our own cleaning solutions from baking soda, lemon, and vinegar." by a British English speaker





"For one thing, we could make our own cleaning solutions from baking soda, lemon, and vinegar." by an Australian English speaker





"For one thing, we could make our own cleaning solutions from baking soda, lemon, and vinegar." by a New Zealand English speaker





An utterance "Can you do that?" pronounced by different subjects





An utterance "Can you do that?" pronounced by different subjects





An utterance "Can you do that?" pronounced by different subjects





An utterance "Do you want a coke?" pronounced by different subjects





An utterance "Do you want a coke?" pronounced by different subjects





An utterance "Do you want a coke?" pronounced by different subjects





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1. Can he do that?	0.011029	0.063067
2. Do you want a coke?	-0.00214	0.037469
3. Can he follow us?	0.003914	0.01183

1. Physiological constraints:

How much can the speech organs hold for one breath of utterance?

If this is true, should there be language-specific? What about Mandarin Chinese or other dialects in this area?

- 2. Declination is one of the prosodic features specific to certain languages, e.g., English, German, etc.
- 3. To know this should be helpful in determining whether our students pick up the prosody of English.



The length of the averaged time for reading each of the following sentences (in seconds)

- 1. The temperature is very low today.
- 2. Finally he begins to make sure of himself.
- 3. At first it is not easy for him to be casual in dress, informal in manner, and confident in speech.
- 4. That's what I want to see.
- 5. Little by little he learns what kind of clothing is usually worn here to be casually dressed for classes.

Sentences	(1)	(2)	(3)	(4)	(5)
MSs	2.646	3.194	6.634	1.728	6.618
AESs	1.847	2.339	5.616	1.147	5.42
Difference	0.799	0.845	1.018	0.581	1.198



... the shorter the distance to for the base line (*b*) to reach the top, the steeper the slope will be (*a*). That is to say, the shorter line *b* is, the steeper line *a* will be (Liu, 2007).



Figure 4. The two graphs show that a^1 is steeper than a^2 because b^1 is shorter than b^2 .



Consonant Acoustics

Consonant Acoustics: Aerodynamic effects 1

During speech, the lung pressure (below the glottis) is higher than atmospheric pressure. The difference in pressures is very small - only 10 cm H₂O out of 1030 cm H₂O. This causes air to flow out of the lungs, through the vocal tract, and out of the mouth (unless something blocks the flow of air).



The subglottal pressure during speech is about 1040 cm H2O, slightly above the atmospheric pressure indicated by the grey line. Sensimetrics Series in Human Communication: Speech Production & Perception. (1994-1997).

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Consonant Acoustics

Consonant Acoustics: Aerodynamic effects 2

We will concentrate on pressures relative to atmospheric pressure, since the difference between the subglottal pressure and the atmospheric pressure is what causes air to flow through the vocal tract. During speech, the subglottal pressure is about 10 cm H2O above atmospheric pressure.



The atmospheric pressure outside the vocal tract is our reference level.

Here, the supraglottal pressure is the same as the atmospheric pressure. ATMOSPHERIC PRESSURE

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The subglottal pressure during speech is about 10 cm H2O above atmospheric pressure.

ATMOSPHERIC PRESSURE Sensimetrics Series in Human Communication: Speech Production & Perception. (1994-1997).

