



**An acoustic study of clear vowel vs.
nasal vowel in Pwo Karen: an
implication to tonogenesis theory**

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Objectives

- To attest tonogenesis theory
- To investigate fundamental frequency; F0 in Hz
- voiceless consonant + clear vowel
- voiced consonant + clear vowel
- voiceless consonant + nasal vowel
- voiced consonant + nasal vowel

Methods

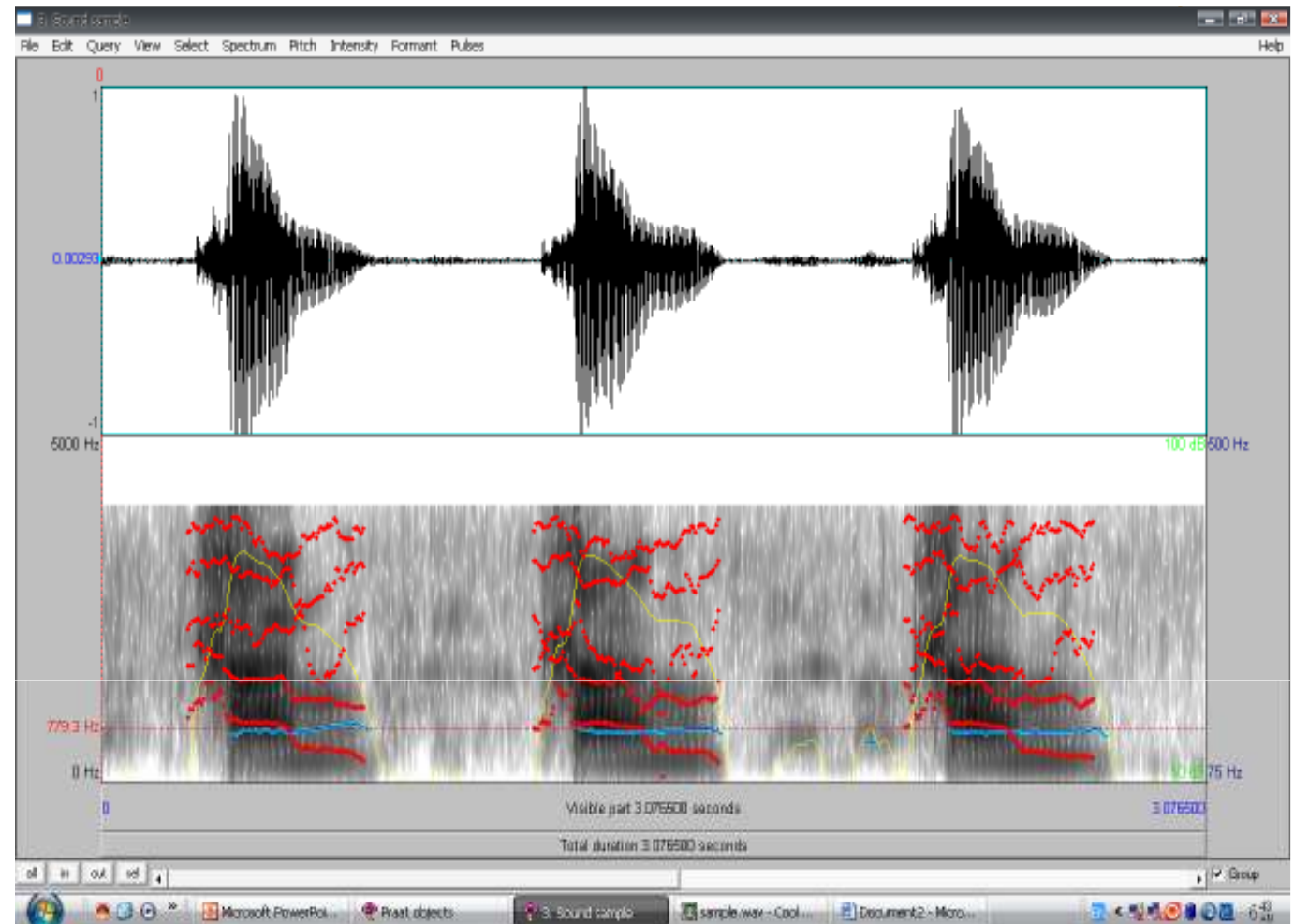


- Test tokens
 - voiceless and voiced with mid tone
 - pa vs. ba 7 pairs
 - paꞤ vs. baꞤ 7 pairs (756 tokens)

- Informants
 - 3 males and 3 females

 - Divided into 3 age groups : 60 (old), 40-35 (mid), 20 (young)

– Praat



– Duration, F0: Normalization in 3 points 0%, 50%, 100%

Theoretical background



- internal factors
 - initial consonants
 - final consonants
 - vowel quality
 - long vowel > low F0 > low tone
 - short vowel > high F0 > high tone
- external factors
 - language contact

Theoretical background



- the effect of initial consonant voicing on the F_0 values
- voiceless initial consonants (vl) increase F_0 values and voiced initial consonants (vd) decrease F_0 values

- - - - -

- voiceless consonants give birth to high tones
- voiced consonants give birth to low tones
- vocal cords tension, cricothyroid muscles



An acoustic study of clear vowel vs. nasal vowel

Vowel Quality	Duration	Intensity	F0	F1	F2
สระก้องธรรมดา (clear vowel) [V]	น้อย	มาก	น้อย	มาก	ไม่แน่นอน
สระนาสิก (nasal vowel) [Ṽ]	มาก	น้อย	มาก	น้อย	

(Amelot and Rossato, 2007; Jones, 2005; Ladefoged, 2003; Pickett, 1998; Whalen and Baddor, 1989;

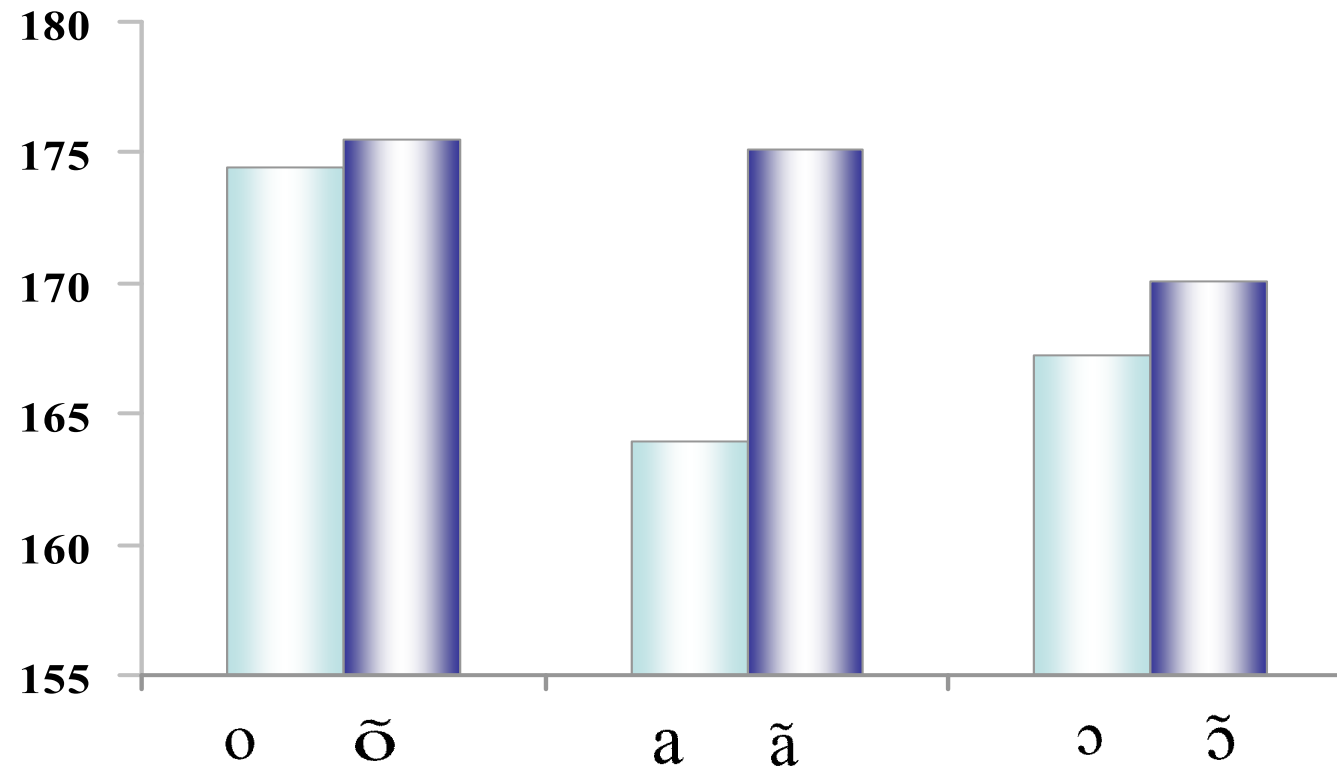
กุสุมา ภาสกร, 2543; กัญญาวิรัตน์ ตี๋ยมวันทอง, 2551, etc.)

Li (1977) nasal vowels behave like the voiceless consonants

- tongue position, higher level for nasal vowel and lower level for clear vowel



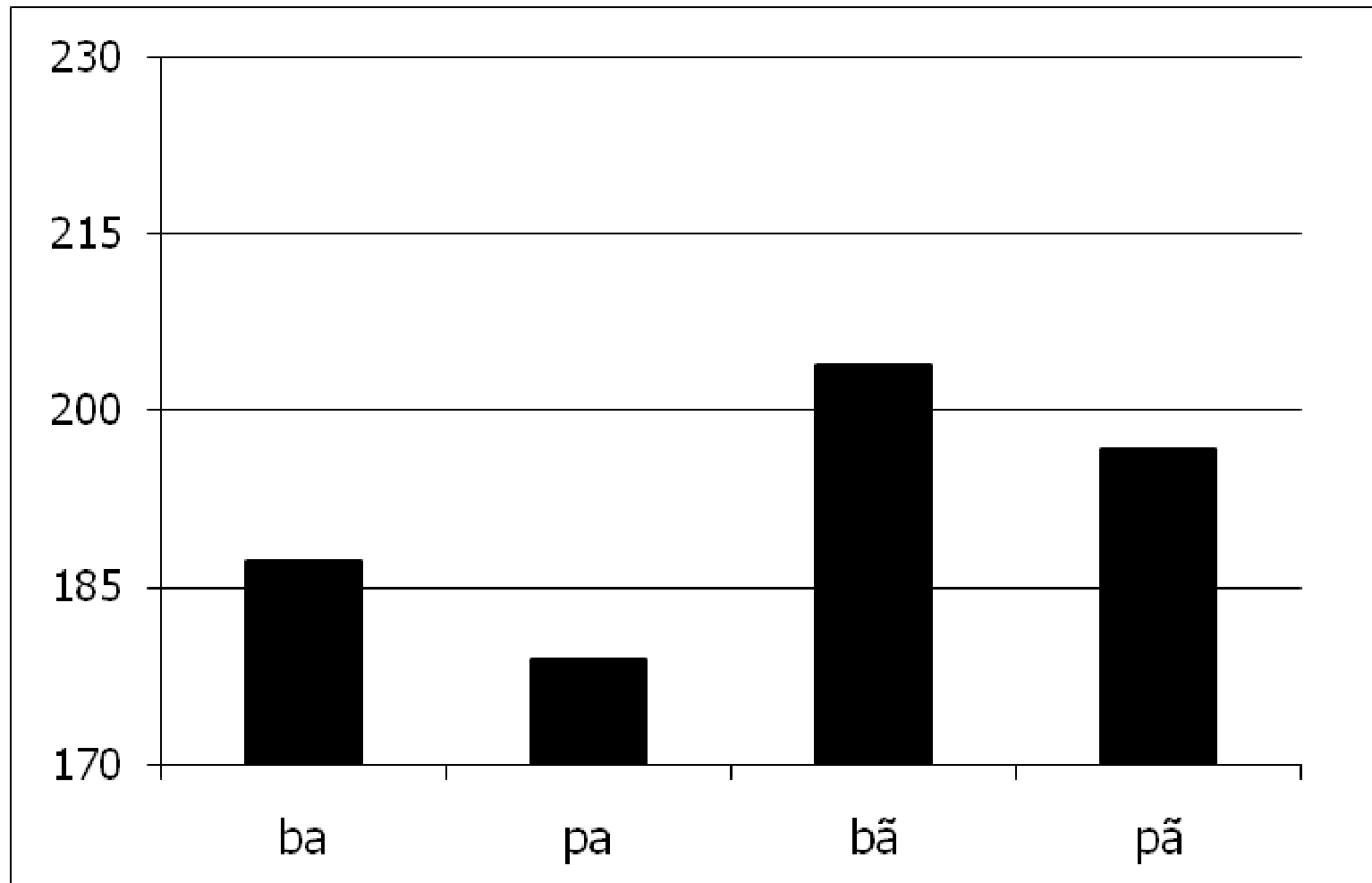
- F_0 : Nasal vowels are higher than clear vowels.



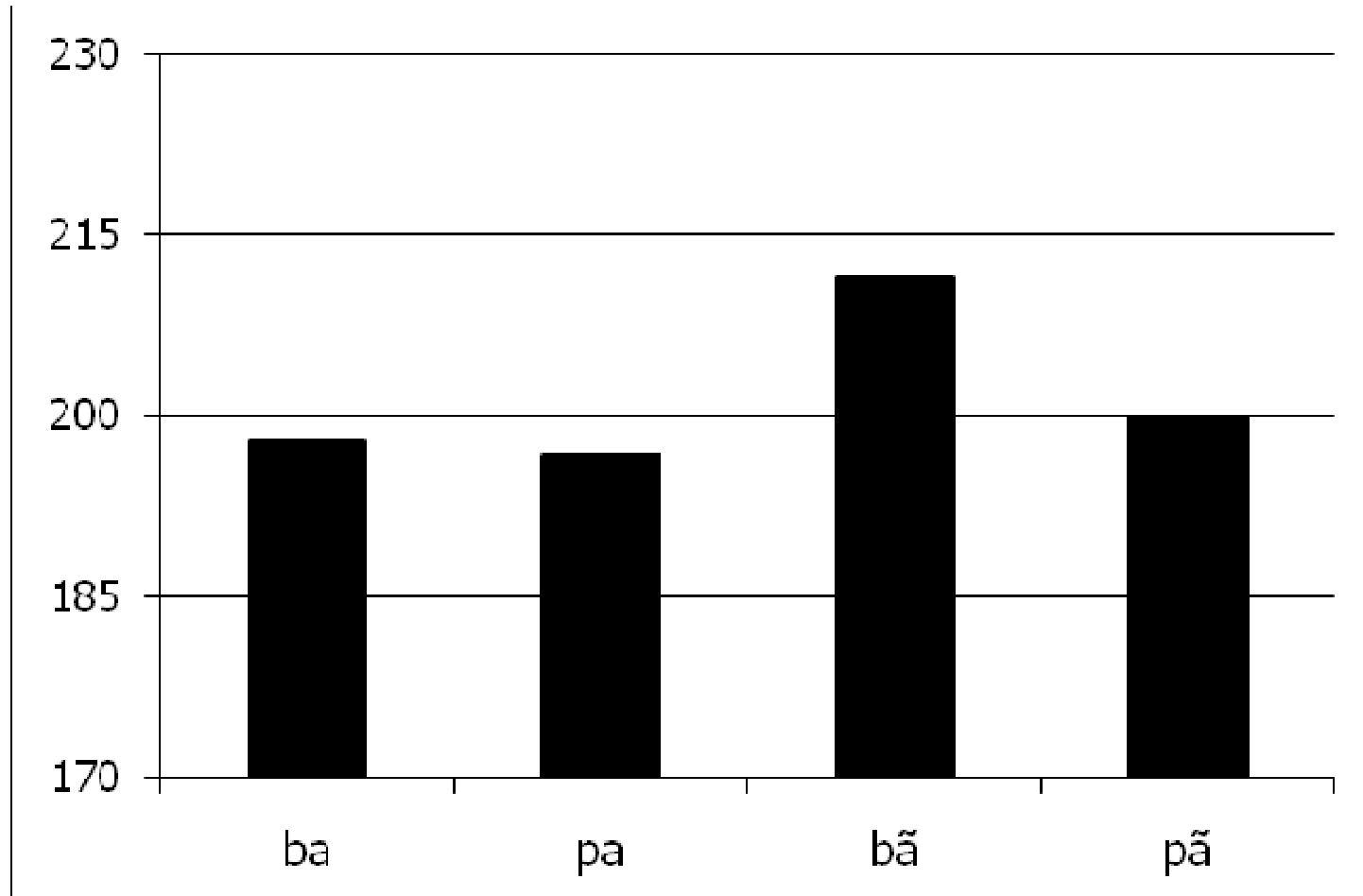
Implication:

- Previous research can be generalized.

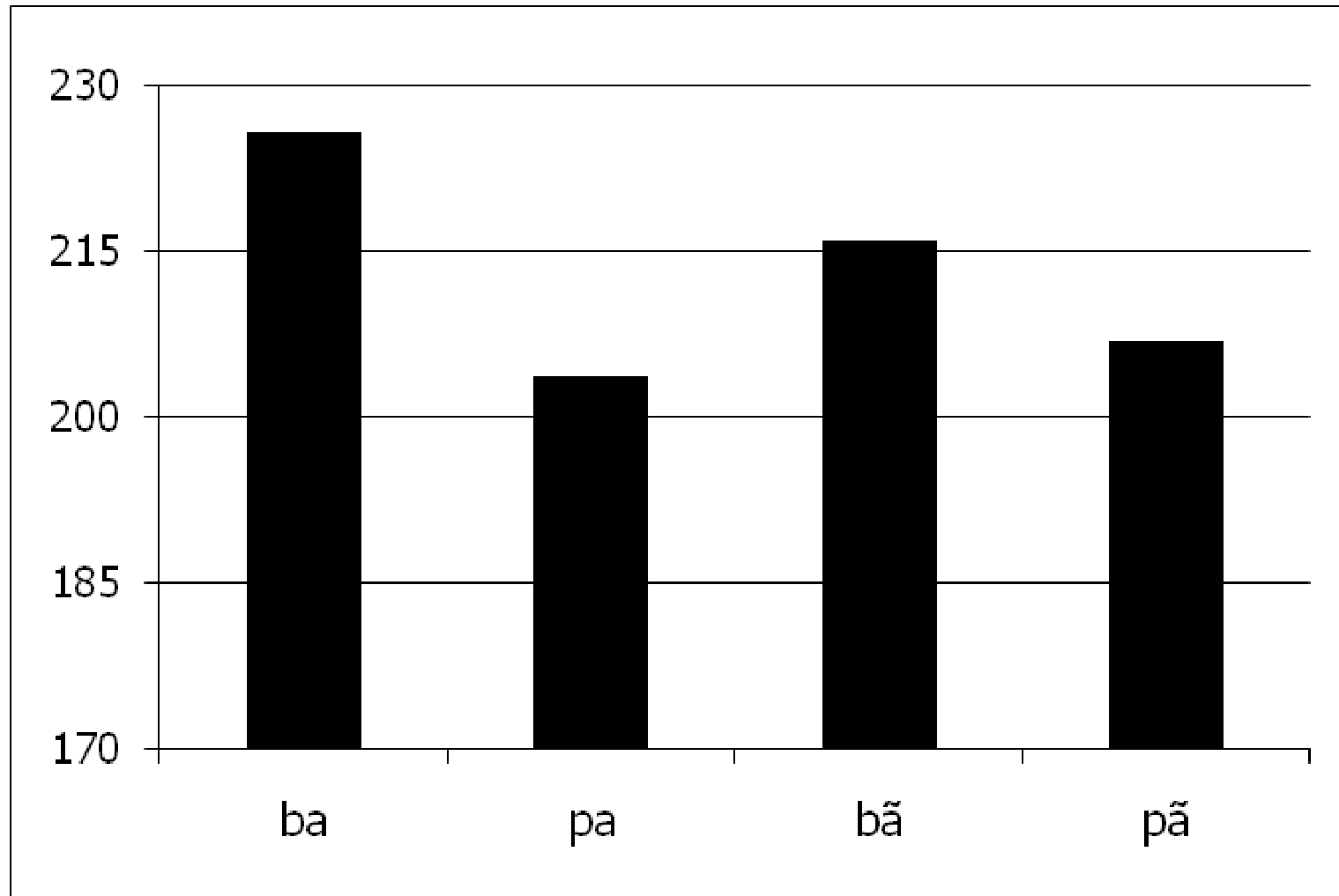
The old group



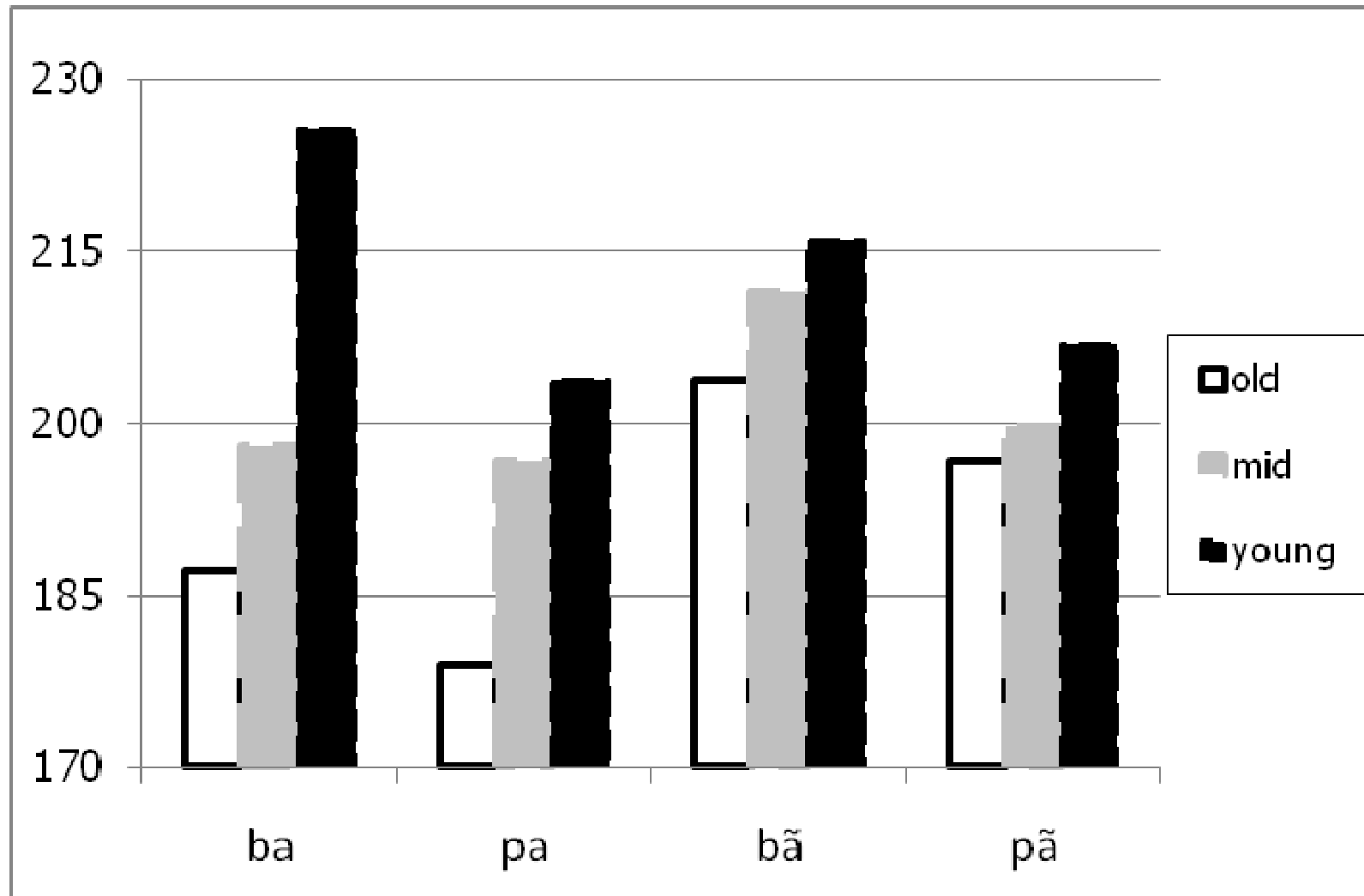
The middle age group



The young group



An implication to tonogenesis theory



Discussion and conclusion



- the same uncommon phenomenon in voicing effect in a dialect of Beijing (Li, 1977)
- uncertain about the cause
- Duration
- $F1 \text{ ba, } \tilde{a} < F1 \text{ pa, a}$

ขอขอบคุณ



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