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Prosodic realization of syntactic phrase and clause boundaries in Tokyo Japanese

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Summary

- A production experiment comparing phonetic realizations of syntactic phrase vs. clause boundaries
- The results corroborate earlier findings on the mapping of syntactic phrases to phonological phrases
- They do not support the claim by Match Theory [1] that syntactic clauses are mapped to intonational phrases
- Instead, a few subjects' data show consistent mapping of topic phrases to intonational phrases.

Background

- Syntax–prosody mapping in Tokyo Japanese [2]
 - At each syntactic phrase left boundary, there is an f_0 -boost (= phonetic cue for φ)
- Match Theory [1]
 - Syntactic phrases map to a phonological phrases (φ)
 - Syntactic clauses map to an intonational phrases (i)
- Phonetic cues for intonational phrase (i) in Japanese [3]
 - larger pitch rises at the onset of i
 - obligatory pauses at the end of i

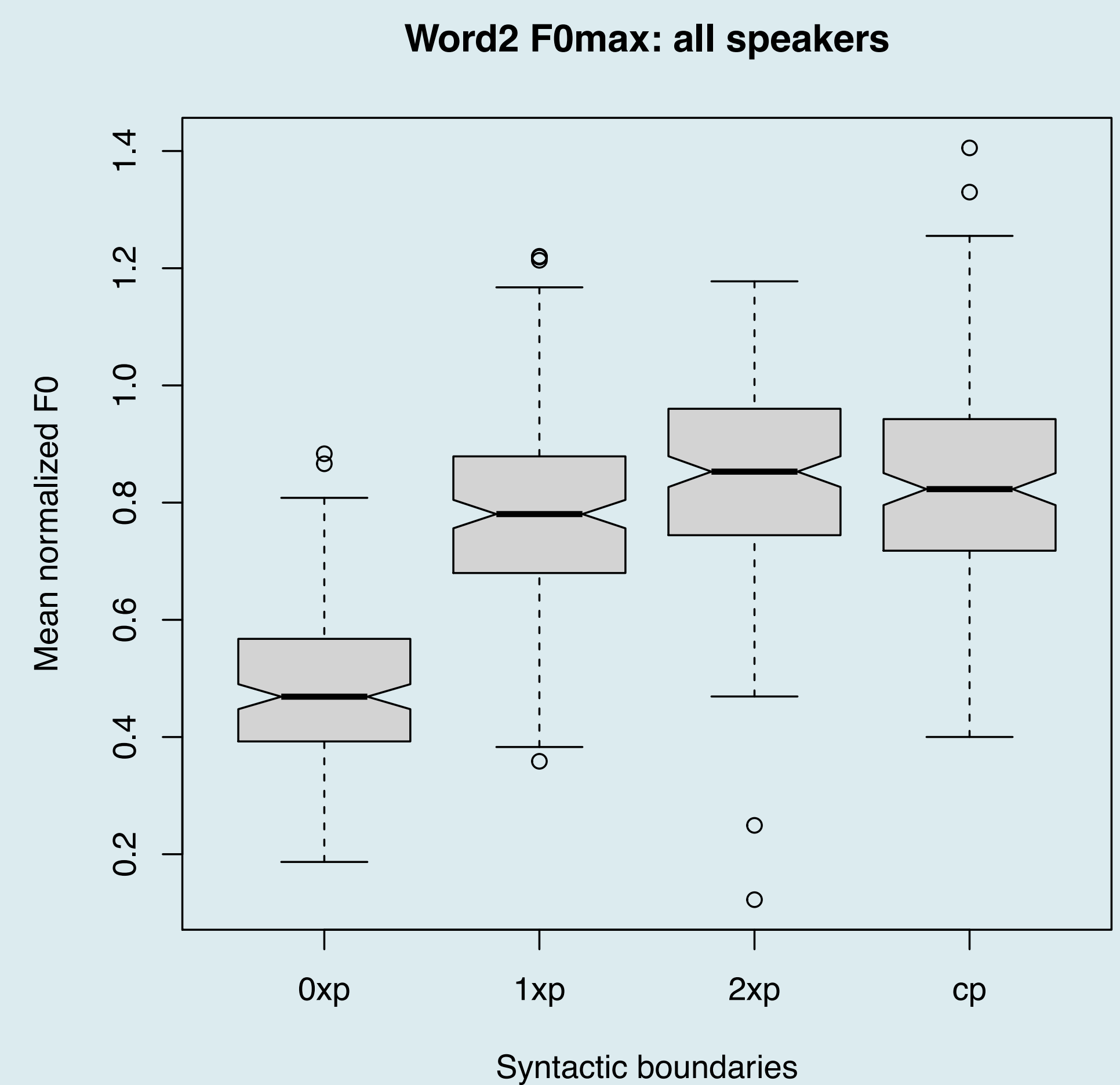
Methodology

- 14 native speakers of Japanese (♀9, ♂5) as subjects
- Four conditions (0xp, 1xp, 2xp, cp) with 4 lexical items each, plus 192 filler sentences
- Each subject read all the stimuli three times, in three pseudo-randomized orders
- A total of 672 samples of the target sentences (14 speakers × 4 conditions × 4 items × 3 repetitions)

Stimuli

- Conditions are varied w.r.t. the number and the type of syntactic boundary before the target word (= Word2 *Naoya*)
- (1) No XP boundary (0xp)
[_{NP} Yuuta-to **Naoya**-wa] [_{VP} imooto-o paatii-ni maneita]
Y.-and N.-TOP sister-ACC party-to invited
'Yuta and Naoya invited their sisters to the party.'
 - (2) One XP boundary (1xp)
Yuuta-wa [_{VP} **Naoya**-o [_{NP} imooto-no paatii-ni] maneita]
Y.-TOP N.-ACC sister-GEN party-to invited
'Yuta invited Naoya to his sister's party.'
 - (3) Two XP boundaries (2xp)
Yuuta-wa [_{VP} [_{NP} **Naoya**-no imooto-o] paatii-ni maneita]
Y.-TOP N.-GEN sister-ACC party-to invited
'Yuta invited Naoya's sister to the party.'
 - (4) Clause boundary (cp)
Yuuta-wa [_{CP} **Naoya**-ga imooto-o paatii-ni maneita to] omotteita
Y.-TOP N.-NOM sister-ACC party-to invited that believed
'Yuta believed that Naoya invited his sister to the party.'

Results (all speakers)



- More phrase boundaries (0<1<2) → higher f_0 -max
 - The data corroborate earlier findings [x]
- No significant difference between 1xp/2xp and cp
 - No sign of i -boundary at clause boundary

Pauses after word1/2: all speakers

	Word1		Word2	
0xp	5.4% (9)	-to 'and'	72.6% (122)	-wa 'TOP'
1xp	36.3% (61)	-wa 'TOP'	53.0% (89)	-o 'ACC'
2xp	38.7% (65)	-wa 'TOP'	17.3% (29)	-no 'GEN'
cp	41.7% (70)	-wa 'TOP'	33.9% (57)	-ga 'NOM'

Table: Percentages (and counts) of pauses after Word 1 and Word2 and particles attached to Word1/2 in each condition, data taken from all speakers (tokens per condition = 168)

- In cp (i.e., with a clause boundary), no significant increase of pause frequency after word1
 - No sign of i -boundary at clause boundary

Results (inter-speaker variation)

Pauses after word1/2: speakers 11f, 12f and 14f

	Word1		Word2	
0xp	0.0% (0)	-to 'and'	100.0% (36)	-wa 'TOP'
1xp	75.0% (27)	-wa 'TOP'	36.1% (13)	-o 'ACC'
2xp	80.6% (39)	-wa 'TOP'	25.0% (9)	-no 'GEN'
cp	100.0% (36)	-wa 'TOP'	11.1% (4)	-ga 'NOM'

Table: Percentages (and counts) of pauses after Word 1 and Word2 and particles attached to Word1/2 in each condition, data from speakers 11f, 12f, and 14f (tokens per condition = 36)

- Pauses are consistently inserted after a topic marker *-wa*, rather than at a clause boundary.
 - Suggests the mapping of discourse structure to i

Selected References

- [1] H. Kubozono, *The Organization of Japanese Prosody*. Kuroosio Publishers, 1993. [2] E. Selkirk, "The syntax-phonology interface," in *The Handbook of Phonological Theory*, 2nd ed., 2011, pp. 435–484. [3] S. Kawahara & T. Shinya, "The intonation of gapping and coordination in Japanese: Evidence for intonational phrase and utterance," *Phonetica*, vol. 65, no. 1–2, pp. 62–105, 2008.