

## An experimental approach to syntax-prosody mapping in Korean

This study examines the patterns of prosodic disambiguation of syntactic ambiguity in Korean and provides an account based on a direct syntax-prosody mapping. A complex DP consisting of a relative clause (RC) and two noun phrases (NP1, NP2) such as (1) is syntactically ambiguous.

- (1) [pucilenha-n]<sub>RC</sub> [namhaksayng-uy]<sub>NP1</sub> [nuna]<sub>NP2</sub>  
 diligent-COMP male-student-POSS older-sister
- a. low attachment reading: [[[pucilenha-n]<sub>RC</sub> [namhaksayng-uy]<sub>NP1</sub>]<sub>DP1</sub> [nuna]<sub>NP2</sub>]<sub>DP2</sub>  
 ‘the older sister of the diligent male student’
- b. high attachment reading: [[pucilenha-n]<sub>RC</sub> [[namhaksayng-uy]<sub>NP1</sub> [nuna]<sub>NP2</sub>]<sub>DP1</sub>]<sub>DP2</sub>  
 ‘the diligent older sister of the male student’

Previous research on such complex DPs noted that the edge of RC was often marked by a stronger prosodic boundary than other word boundaries, marking a domain called *intermediate phrase* (Jun 2005). However, the precise association between different readings and prosodic patterns has not been systematically investigated.

In this study, I assume a direct syntax-prosody mapping (e.g., Match Theory in Selkirk 2011), which proposes that (1a) and (1b) derive different prosodic structures in terms of *phonological phrase* ( $\phi$ ) as in (2a) and (2b), respectively. Considering recent study results that an edge of *non-minimal*  $\phi$  ( $\phi_{\text{non-min}}$ ;  $\phi$  dominating other  $\phi$ ) is associated with a distinct or a stronger degree of prosodic pattern than *minimal*  $\phi$  ( $\phi_{\text{min}}$ ;  $\phi$  not dominating other  $\phi$ ) (Elfner 2015, Elordieta 2015), I hypothesize that also in Korean an edge of  $\phi_{\text{non-min}}$  is associated with a stronger prosodic boundary than that of  $\phi_{\text{min}}$ . This hypothesis predicts that NP1-NP2 boundary will be realized as a stronger prosodic boundary in (2a) (shaded), while RC-NP1 boundary will be realized as a stronger boundary in (2b) (shaded). Moreover, a cumulative effect is predicted when there are more than one edges of  $\phi_{\text{non-min}}$  coinciding at a boundary (cf. Elordieta 2015).

- (2) a. low attachment reading: (((pucilenha-n) $_{\phi}$  (namhaksayng-uy) $_{\phi}$ ) $_{\phi}$  (nuna) $_{\phi}$ ) $_{\phi}$   
 b. high attachment reading: ((pucilenha-n) $_{\phi}$  ((namhaksayng-uy) $_{\phi}$  (nuna) $_{\phi}$ ) $_{\phi}$ ) $_{\phi}$

In order to test this hypothesis, a production experiment was conducted with 12 syntactically ambiguous phrases. The stimuli consisted of three types as shown in (3) to see how the edges of  $\phi_{\text{non-min}}$  in different positions were matched with different patterns of prosodic boundaries. Twelve Korean native speakers produced each stimulus with paraphrases that facilitate different attachment readings, yielding 216 utterances in total.

- (3) a. Type A: [ VP ]<sub>RC</sub> [ N1 ]<sub>NP1</sub> [ N2 ]<sub>NP2</sub>  
 b. Type B: [ VP ]<sub>RC</sub> [ [ ADJ ]<sub>AP</sub> N1 ]<sub>NP1</sub> [ N2 ]<sub>NP2</sub>  
 c. Type C: [ VP ]<sub>RC</sub> [ N1 ]<sub>NP1</sub> [ [ ADJ ]<sub>AP</sub> N2 ]<sub>NP2</sub>

Table 1 summarizes the results of the experiment. First, it was confirmed that a word boundary was realized as a stronger prosodic boundary (signified by either pause, pitch reset, or final lengthening) significantly more often when there was a left or right edge of  $\phi_{\text{non-min}}$  than when there was no edge of  $\phi_{\text{non-min}}$  ( $p < .001$ ). A cumulative effect was also found, with coinciding right edges of  $\phi_{\text{non-min}}$  associated with a stronger prosodic boundary more often than a single right edge ( $p < .001$ ).

Table 1. Presence of  $\phi_{\text{non-min}}$  edges and percentages of strong prosodic boundaries

Type	A		B		C	
	low attachment	high attachment	low attachment	high attachment	low attachment	high attachment
RC-NP1 boundary	none 12.5%	1 left edge 50.0%	1 left edge 50.0%	2 left edges 62.5%	none 12.5%	1 left edge 66.7%
NP1-NP2 boundary	1 right edge 79.2%	none 16.7%	2 right edges 91.7%	1 right edge 29.2%	1 left, 1 right edge 91.7%	1 left edge 25.0%

Overall, these results verify the prediction based on a strict syntax-prosody mapping about how syntactic ambiguity is resolved by prosody in Korean. Unlike the previous analysis with intermediate phrase, the proposed analysis correctly predicts the two experimental results: 1) the mapping between syntactic and prosodic boundaries and 2) the cumulative effect of boundaries, by subcategorizing recursive  $\phi$  into  $\phi_{\text{min}}$  and  $\phi_{\text{non-min}}$  and attributing a stronger boundary to an edge of  $\phi_{\text{non-min}}$ . It moreover obviates the need for a language-specific prosodic category such as intermediate phrase and thus contributes to maintaining a universal prosodic hierarchy.

## References

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