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## 1 Introduction

This paper aims at two issues. One is the role of focus in Korean Accentual Phrase (henceforth AP) phrasing and the other is how this interacts with morpho-syntactic branching structures. Previous studies (Cho 1990, Kang 1992 and Jun 1993) have shown that focus influences AP phrasing in Korean. Focus creates a phrase boundary between the focused word and the preceding word and thus a focused word initiates a new AP. Further, focus changes the tonal pattern of an utterance by dephrasing all following words in the same Intonational Phrase.

This paper also examines F<sub>0</sub> and duration to determine the relationship between focus and morpho-syntax. Further, this paper evaluates the observation that focus creates a new AP between the focused word and its previous word and thus focus initiates a new AP.

## 2 The Study

This paper deals with the effect of focus on phrasing. Consider the following pairs from compounds and phrases, respectively.

- (1) a. [[toklip            undoŋ]        [kinyəmkwan]]  
          independence movement    memorial hall  
      b. [[yakan] [kolpi-    yənsi-pjaŋ]]  
          night    golf    practice-place  
      c. [[p'alkan    koŋchæk] [juin]]  
          red        notebook owner  
      d. [[jəki-n][sənsəŋ    pəŋki-p]]<sup>1</sup>  
          little    teacher    stipend

The examples given here are all semantically biased toward a predictable reading as is indicated with the branching in (1). If we place focus on the

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<sup>1</sup> [jəki-n] in Korean modifies the quantity noun. We cannot say [jəki-n saram] (little person). Therefore it unambiguously modifies 'stipend' here.

second element of these phrases, it may influence the AP phrasing in Seoul Korean.

Note that the second words are possible candidates of AP final nouns in (1a) and (1c), while they are AP initial in (1b) and (1d). Given the observation that focused groups tend to form an AP by itself, as observed in Kang 1992, we wonder whether these phrases or compounds are phrased differently under the focus condition.

### 3 Methods

#### 3.1 The Corpus and Subject

The corpus includes morpho-syntactic differences and focus differences as well. The corpus consists of three word with left branching (=LB-(X X) X)) and right branching (=RB-(X (X X))) structures. Given the syntactic level of branching, one is a lexical N consisting of three noun compounds and the other is a phrasal NP consisting of an adjective and two nouns as in (2a).

In addition, we investigate the effect of focus in both lexical and phrasal examples. The design of the corpus is the exactly the same except that the second word is narrowly focused in half of the tokens as in (2b). If speakers consistently phrase either right or left due to the effect of focus even though the expected phrasing should be opposite, this result would indicate that speakers are more affected by a semantic factor like focus than a morpho-syntactic structural factor.

- (2) a. Morpho-syntactic difference  
 Lexical level:  $[(\sigma\sigma)_N (\sigma\sigma)_N (\sigma\sigma\sigma)_N]_N$   
 Phrase level:  $[(\sigma\sigma)_{Adj} (\sigma\sigma)_N (\sigma\sigma)_N]_{NP}$

- b. Focus difference  
 Word 2 is narrowly focused in three word utterances.

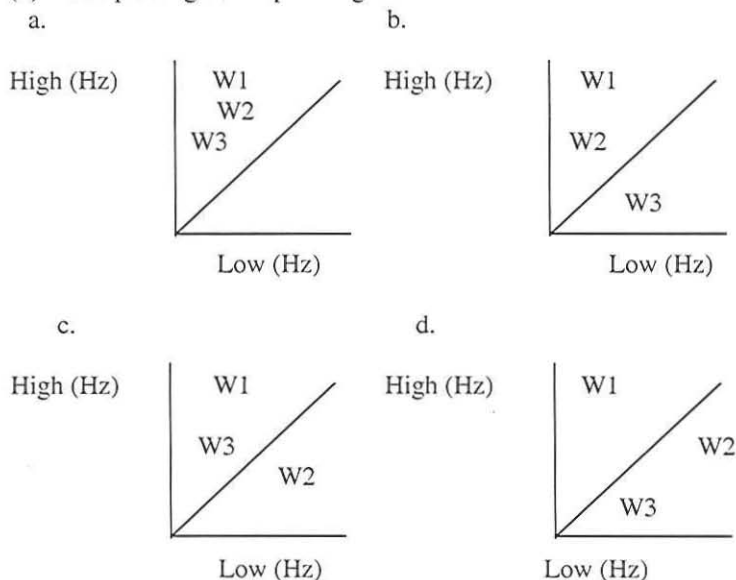
The target sentences and distracter sentences between a compound noun level and a phrase level are mixed together. The corpus used in this experiment is given in an appendix.

One male speaker SH, early twenties, and one female speaker SY, early thirties, participated in the experiment. All of them were speakers of the Seoul dialect.

### 3.2 Determining Phrasing

Onset F0 at the first syllable and peak F0 at the onset of second syllable are plotted against one another. When there is a rise during the first syllable, the second syllable peak point is higher than the onset point. In the following plots, these tokens will appear above the Onset=Peak line. If no rise occurs, tokens will appear below the Onset=Peak line. We assume, as in Jun 1993, that accentual phrases are marked by rises in F0 at the onset of the phrase.

(3) The plotting of AP phrasing



(3a) indicates that either LB or RB is phrased as 3 AP's with 3 rises:

[(W1)AP [(W2)]AP [(W3)]AP

(3b) indicates that either LB or RB is phrased like RB cases with 2 rises:

[(W1)]AP [(W2 W3)] AP

(3c) indicates that either LB or RB is phrased like LB cases with 2 rises:

[(W1 W2)]AP [(W3)]AP

(3d) indicates that either LB or RB is phrased as a single AP with 1 rise:

[(W1 W2 W3)]AP

Based on this schema, the scattergraphs are plotted according to the number of F0-rises of each word as in (3). Each onset and peak point of fun-

damental frequency in three-word sequence is on X-axis and Y-axis in Hz, respectively. On the plot, if the F0-rises of three words appear above the diagonal X=Y line where X and Y represent the onset and the peak F0 in a given word, this means that three words are phrased into three accental phrases as in (3a). If the F0-rises of Word 1 (=W1) and Word 2 (=W2) are above the X=Y while Word 3 (=W3) is below the X=Y, three words are phrased as [W1]AP[W2 W3]AP, which is analogous to RB cases as in (3b). The F0-rises of W1 and W3 are distributed above the X=Y, while W2 below the X=Y, three words are phrased [W1W2]AP[W3]AP like the structural LB cases as in (3c). The F0-rises of only W1 appear above the X=Y whereas those of W2 and W3 below the X=Y, three words are phrased as [W1 W2 W3]AP with a single AP as in (3d).

#### 4 Phrasing Results

Figure 1 and 2 plot F0-pattern for the focused LB tokens. Both lexical and phrasal LB tokens for speaker SY show the same phrasing pattern as RB cases. The F0-rises of W1 and W2 are above the X=Y line whereas those of W3 below the X=Y line in both levels.

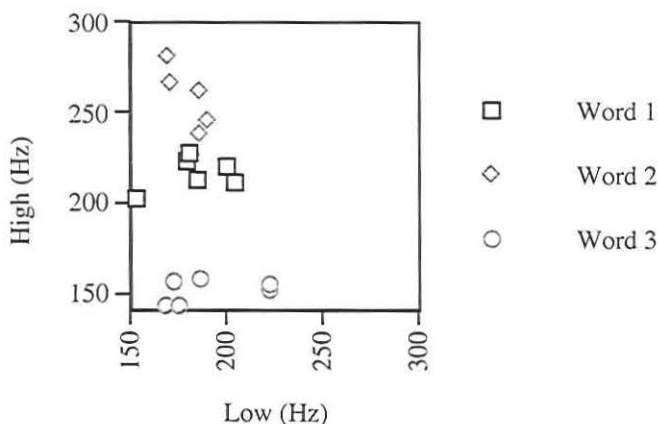


Figure 1: F0 at beginning of 2nd syllable of each word plotted against F0 at onset of each word for subject SY's LB lexical tokens.

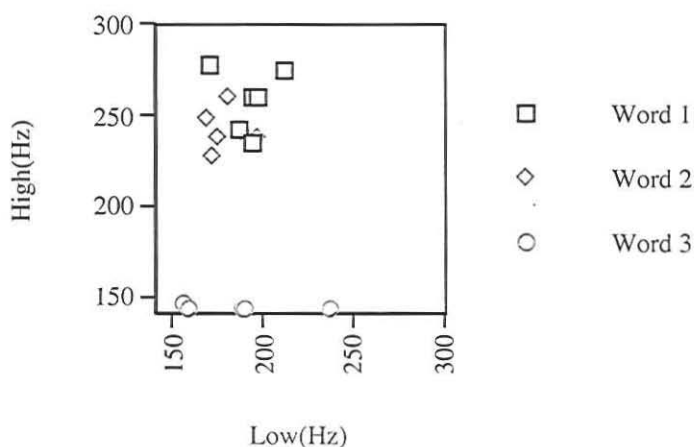


Figure 2: F0 at beginning of second syllable of each word plotted against F0 at onset of each word for subject SY's LB phrasal tokens.

Figures 3 and 4 plot LB tokens for speaker SH. Speaker SH also shows the same phrasing pattern as speaker SY. In both lexical and phrasal levels, all tokens are phrased like RB cases. F0-rises of the first two words are above the X=Y line whereas W3 below the X=Y on the plot.

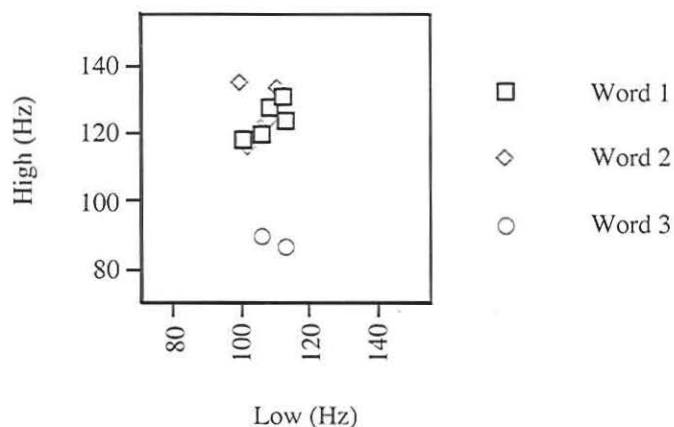


Figure 3: F0 at beginning of second syllable of each word plotted against F0 at onset of each word for subject SH's LB lexical tokens.

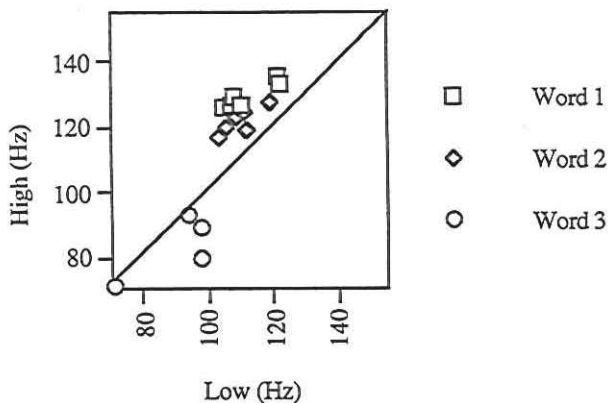


Figure 4: F0 at beginning of second syllable of each word plotted against F0 at onset of each word for subject SH's LB phrasal tokens.

RB structures are generally phrased the same as LB cases. However focus on RB tokens often results in the elimination of the phrase before the focused item resulting in a single AP with one F0-rise as in [W1W2W3]AP as apparent in Figure 5 for speaker SY and in Figure 6 for speaker SH.

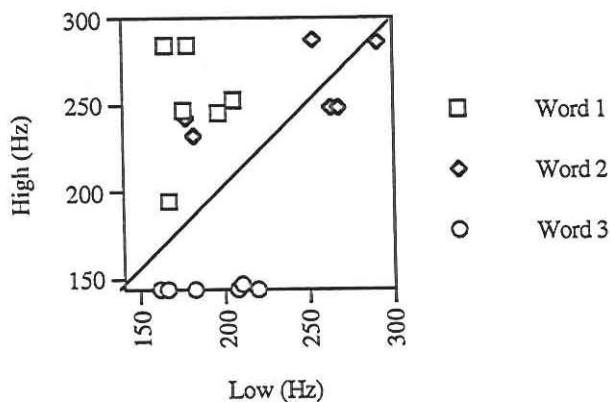


Figure 5: F0 at beginning of second syllable of each word plotted against F0 at onset of each word for subject SY's RB phrasal tokens.



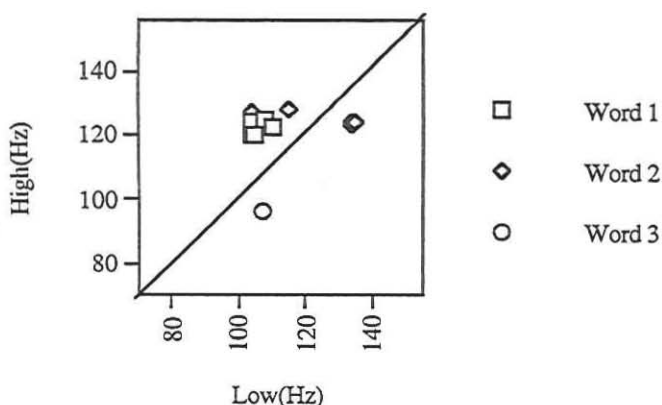


Figure 6: F0 at beginning of second syllable of each word plotted against F0 at onset of each word for subject SH's RB lexical tokens.

In sum, the semantic property of focus does affect phonological phrasing in that some RB tokens are phrased with a single AP domain, eliminating the phrase boundary before the focused item.

## 5 Measurements

### 5.1 Quantitative Measurements

The fundamental frequency at the onset of each word and at the highest F0 of each word that occurs near the onset of second syllable was measured. When this high F0 is missing, the F0 at the onset point of the second syllable was measured. Moreover, the duration between an onset point and an offset point of each word are measured along with the pause between words to investigate the interaction between focus and morpho-syntax.

### 5.2 Quantitative Results

Examination of F0 and duration shows that focus directly affects phonetic pitch and duration in a manner which is partially independent of the phrasing.

The LB or RB structural difference is completely merged together for speaker SY though there is a difference between LB and RB in absolute F0. This implies that the semantic property of focus plays a role to eliminate the morpho-syntactic difference. See Figures 7 and 8 below.

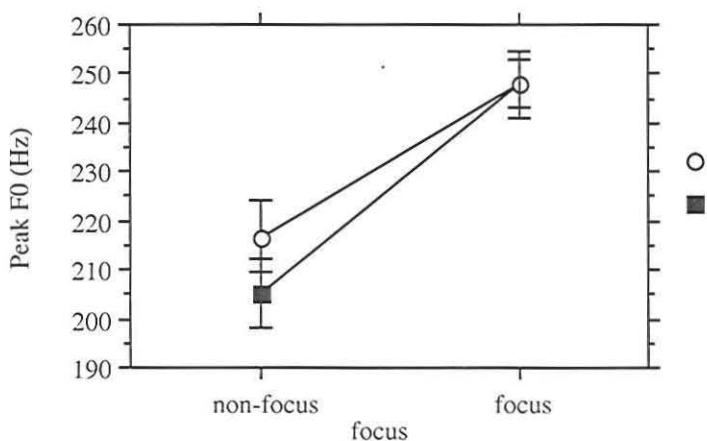


Figure 7: Speaker SY's branching and focus effect by word 2 pitch.

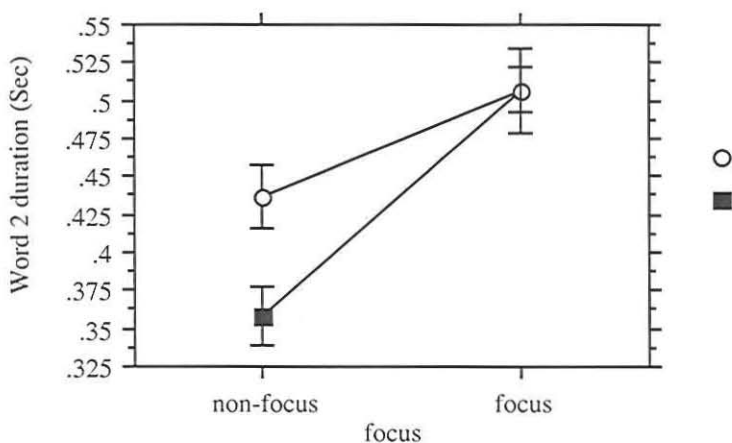


Figure 8: Speaker SY's branching and focus effect by Word 2 duration.

However, speaker SH shows that in Word 2 peak F0, focus affects RB structures though in Word 2 duration, focus overrides the morpho-syntactic branching difference. These effects are illustrated in Figures 9 and 10 below.

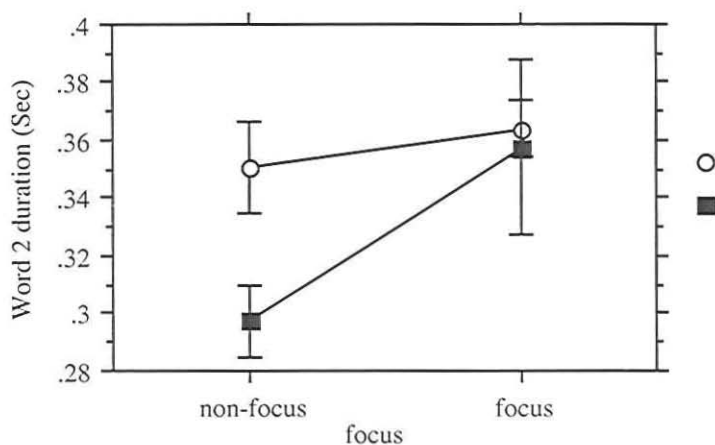


Figure 9: Speaker SH's branching and focus effect by Word 2 pitch.

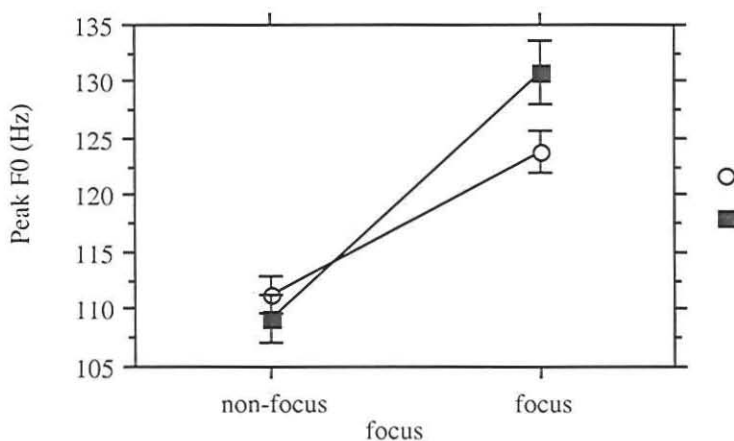


Figure 10: Speaker SH's branching and focus effect by Word 2 duration.

As such, the semantic property of focus interacts with morpho-syntax. The acoustic effect of morpho-syntactic structure tends to be overridden by the effect of focus though its effect is larger with RB structures (for one of the speakers). Both semantic and morph-syntactic properties, however, are reflected in the phonetic implementation of duration and F0.

## 6 Discussion and Conclusion

This paper indicates that the semantic property of focus affects phonological phrasing and it tends to override morpho-syntactic differences in phonetic use of F0 and duration.

Concerning Jun's (1993) and Kang's (1992) proposals that focus creates a phrase boundary between the focused word and the preceding word and thus a focused word initiates a new AP, the observation is basically right since all LB tokens are consistently phrased the same as RB cases. However, the majority of LB tokens, even without focus, are phrased as RB cases as in Lee 2000. Therefore this is not caused by the effect of focus. Here, the effect of focus is actually to eliminate an AP before the focused item. This effect is perhaps due to an elimination of competing accentual phrases enhancing the prominence of the focused item.

To conclude, the semantic focus affects the AP phrasing by adjusting the domain of the phonological phrase as in Jun 1993 and Kang 1992. However, a single AP in RB tokens is caused by the prefocal breaks caused either by tonally marked phrasing or by an unmarked pause before the focused item. Further focus directly affects F0 and duration and tends to override effects of syntactic branching in Seoul Korean

### Appendix: Focused Condition Sentence List

Classifying the data:

L/P: Lexical level vs. Phrasal level

LB/RB: Left branching vs. Right branching

(LLB) toklip kukka kinyəmkwan-i aniko (toklip untəŋ) (kinyəmkwan)  
 indep. nation memorial hall-Nom. not indep. move't memorial hall  
 'It is not an independent state memorial hall but it is an independence  
 movement memorial.'

(LRB) yakan noŋku yənsi-pjaŋ-i aniko (yakan)(kolpi- yənsi-pjaŋ)  
 nightbasketball prac.-place-Nom not night golf prac.-place  
 'It is not a night volleyball practice-place but a night golf practice-  
 place.'

(LRB) oitæ pulə yənkuso-ka aniko (oitæ) (yəŋə yənkuso)  
 PUFs French resear. Inst.-Nom not PUFs Eng. reser. inst.  
 'It is not Oydae French Institute but Oydae English institute.'

- (LRB) *yənsə kukə sinmunsa-ka aniko (yəntæ)(yəŋja sinmunsa)*  
 Yonse Kor. news.press-Nom. not Yonse Eng. news. press  
 'It is not a Yondae Korean newspaper press but a Yondae English newspaper press.'
- (LLB) *kajəŋ yesan saŋtamso-ka aniko (kajəŋ munje) (saŋtamso)*  
 family finance advice off.-Nom. not family affairs adv. office  
 'It is not a family finance advice office but a family affairs advice office.'
- (LLB) *jatoŋ kamsi kaloti-ŋ-i aniko (jatoŋ j(mhwa) (kaloti-ŋ)*  
 auto inspection stree-light-Nom. not auto extin.'ing street-light  
 'It is not an automatic inspector street light but an automatically extinguishing street light.'
- (PLB) *p'alkan polpen-i-y juin-i aniko (p'alkan koŋchæk) (juin)*  
 red ballpoint pen-Poss. owner-Nom. not red notebook owner  
 'It is not an owner of a red pen but an owner of red notebook.'
- (PLB) *tunŋki-n kapaŋ-i-y yəin-i aniko (tunŋki-n moja) (yəin)*  
 round bag-Poss lady-Nom. not round hat lady  
 'It is not a lady of a round bag but a lady of a round hat.'
- (PLB) *yepi-n Myəŋja- i-y kəlhon-i aniko (yepi-n yəŋhi-y) (kəlhon)*  
 pretty Myungja-Poss. marriage-Nom. not pretty Younghee marriage  
 'It is not a marriage of pretty Myungja but a marriage of pretty Younghee.'
- (PRB) *jəki-n sawən i-y poŋki-p-i aniko (jəki-n) (sənsəŋ poŋki-p)*  
 little clerk-Poss. stipend-Nom. not little teacher stipend  
 'It is not a small salary for an office worker but a small salary for a teacher.'
- (PRB) *p'alkan Yəŋsu- i-y moja-ka aniko (p'alkan) (Myəŋsu moja)*  
 red Youngsoo-Poss. hat-Nom not red Myungsoo hat  
 'It is not a red hat of Youngsoo but a red hat of Myungsoo.'
- (PRB) *yep'i-n pata-i-y yojəŋ-i aniko (yep'i-n) (supsoŋ yojəŋ)*  
 pretty sea-Poss. fairy-Nom not pretty forest fairy  
 'It is not a pretty sea fairy but a pretty forest fairy.'

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