

This paper uses experimental methodology to compare two theoretical analyses of the alternation in Korean object control and to support the analysis of control as movement.

Korean shows a productive case alternation in object control (1). Two syntactic analyses have been proposed to explain Korean control. The control as A-movement analysis (Monahan 2003) argues the unpronounced element in Pattern 2 cannot be *pro* or PRO due to binding theory and PRO-Theorem violations (2a, b). Therefore, pattern 2 requires a movement analysis. In this analysis, Pattern 1 and Pattern 2 differ minimally in which element of the movement chain, head (Pattern 1) or tail (Pattern 2), gets pronounced (3). Pattern 2 illustrates backward control (BC).

The alternative analysis of Pattern 2 relies on the presence of a coindexed null pronominal (Cormack & Smith 2004). In this analysis, the overt DP in the embedded clause is coindexed with *pro* in the matrix. To avoid Principle C violations, the embedded clause is scrambled to a position higher than *pro*, thus obviating Principle C (4). In this analysis, therefore, Pattern 3 shows the backward relationship.

Previous experimental studies have shown that cataphoric relations take longer to process than anaphoric relations (Gordon & Hendrick 1997). Likewise, scrambling is argued to increase processing cost due to an additional filler-gap dependency (Ueno & Kluender 2003). Therefore, the control as A-movement analysis predicts Pattern 2 and 3 should be more difficult to process than Pattern 1. In contrast, the coindexed *pro* analysis predicts Pattern 3 should be most difficult, and Pattern 1 the easiest (5).

Two experiments were conducted to test which of the two analyses is correct. First, a corpus search was conducted (Sejong Corpus 2002). Pattern 2 appears as frequently as Pattern 1 (97 vs. 98 occurrences). Therefore, frequency is not a factor.

Second, a self-paced reading time study was conducted using Pattern 1, 2 and 3 (n=40 per condition, 23 subjects) (6). Because of the different word order in Pattern 3 compared with the other two constructions, reading times of W7 to W10 were collapsed into one region for comparison. Pattern 2 was processed significantly more slowly than the other conditions. No significant difference was found between Pattern 1 and 3. Further comparison between Pattern 1 and 2 revealed a significant slowdown at W7 and W10 in Pattern 2.

The results support the control as A-movement analysis. It correctly predicted that Pattern 2 is more difficult to process than Pattern 1, providing evidence for BC. We argue that Pattern 3 did not incur heavier processing cost because of the ease of the scrambling condition in the experiment (Nakayama 1995). We further argue that while slower RT at W7 in Pattern 2 may be due to clause-boundary effects (Miyamoto 2002), the effect at W10 is unambiguously due to BC, as the parser back-associates the overt controller with the gap.

The existence of BC is consistent with analyses of control as movement (Hornstein 2003, Polinsky & Potsdam 2002). This study thus supports a movement analysis of control.

- (1) Pattern 1 John-NOM Mary_i-ACC [_i to leave] persuaded
 Pattern 2 John-NOM _j [Mary_i-NOM to leave] persuaded
 Pattern 3 John-NOM [_i to leave] Mary_i-ACC persuaded
- (2) a. John-nom *pro*_i [Mary_i-nom to leave] persuade → Condition C violation
 b. John-nom PRO_i [Mary_i-nom to leave] persuade → Condition C & PRO-Theorem violation
- (3) Analysis 1: A-movement (Hornstein 2003, Polinsky and Potsdam 2002, Monahan 2003)
 Pattern 1: forward control
 Chelswu-NOM Yenghuy-ACC ~~Yenghuy-NOM~~ quit-COM persuaded
 Pattern 2: backward control
 Chelswu-NOM ~~Yenghuy-ACC~~ Yenghuy-NOM quit-COMP persuaded
 Pattern 3: scrambled forward control
 Chelswu-NOM ~~Yenghuy-NOM~~ quit-COMP Yenghuy-ACC persuaded
- (4) Analysis 2: Coindexed *pro* (Cormack & Smith, 2004)
 Pattern 1: forward coindexing
 Chelswu-NOM Yenghuy_i-ACC [*pro*_i-NOM store-loc go-tolok] persuaded
 Pattern 2: forward coindexing with scrambling
 Chelswu-NOM [Yenghuy_i-NOM store-loc go-tolok]_j [*pro*_i-ACC] t_j persuaded
 Pattern 3: backward coindexing with scrambling
 [Chelswu-NOM [*pro*_i-NOM store-loc go-tolok]_j Yenghuy_i-ACC t_j persuade]]
- (5) Predictions

	A-movement		Coindexed <i>pro</i>	
	backward	scrambling	backward	scrambling
Pattern 1				
Pattern 2	√			√
Pattern 3		√	√	√

(6) Target sentence: ‘The marketing dept. of the production persuaded the heroine to appear on a popular talk show to advertise the movie.’

ku	yenghwasu-uy	hongpothim-i	yenghwa	hongpo-lul	wuyhay
that	production-POSS	marketing_dept-NOM	movie	advertising-ACC	for
W1	W2	W3	W4	W5	W6

a) Forward/ b) Backward control

a)	yecwuinkong _i -ul	[t _i	inki	thokhusho-ey	naka-tolok]	sultukhay-ss-ta
b) t _i	[yecwuinkong _i -i		inki	thokhusho-ey	naka-tolok]	sultukhay-ss-ta
	heroine-ACC/NOM		popular	talk_show-to	go-COMP	persuade-PST-DECL
	W7		W8	W9	W10	W11

c) Scrambled forward control

[t _i	inki	thokhusho-ey	naka-tolok] _j	yecwuinkong _i -ul	t _j	sultukhay-ss-ta
	popular	talkshow-to	go-COMP	heroine-ACC		persuade-PST-DECL
	W7	W8	W9	W10		W11

Cormack, A., & Smith, N. 2004. Backward Control in Korean and Japanese. *UCL Working Papers in Linguistics 16*. **Gordon, P., & Hendrick, R. 1997.** Intuitive Knowledge of Linguistic Co-Reference. *Cognition*. 62, 3. **Hornstein, N. 2003** On control. In *Minimalist Syntax*, ed. R Hendrick: 6-81. Blackwell, Oxford. **Monahan, P. 2003.** Backward object control in Korean. *WCCFL 22*. **Miyamoto, E. T. 2002.** Case markers as clause boundary inducers in Japanese. *JPR*, 31, 4. **Nakayama, M. 1995.** Scrambling and Probe Recognition. *Japanese Sentence Processing*, eds. R. Mazuka & N. Nagai. Hillsdale, NJ: Lawrence Erlbaum Association. **Polinsky, M., & Eric, P. 2002.** ‘Backward Control’, *Linguistic Inquiry* 33. **Ueno, M., & Kluender, R. 2003.** Event-related brain indices of Japanese scrambling. *Brain & Language*, 86.