

Null Epithet in *Tough*-Movement and Relative Clauses

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Cho, Jai-Hyoung. 1999. Null Epithet in *Tough*-Movement and Relative Clauses. *Linguistics*, 7-1, 33-50. This paper examines relative clauses and *tough*-movement clauses in Korean with regard to Weak Crossover (WCO) phenomena and demonstrates that the lack of WCO effects in Korean relative clauses and PP *tough*-movement clauses is due to a trace created by null operator movement, namely, a null epithet. It shows that the relative clauses in Korean involve null operator movement, which, as non-operator A'-movement, creates not a variable but a null epithet, and that the absence of WCO effects is ascribed to the null epithet, which is free from the WCO constraint. It demonstrates that Strong Crossover effects are yielded in relative clauses in Korean since the null epithet, being an R-expression, is subject to Binding Principle C. It further maintains that PP *tough*-movement clauses in Korean involve null operator movement; therefore, they do not show the WCO effect since they contain the null epithet created by null operator movement. (Ajou University)

1. Introduction

It is generally assumed that a *wh*-phrase moves to an operator position and there binds its trace as a variable: *wh*-phrases move into the Spec of CP in overt syntax or at LF. Then, the following sentences in (1), where a pronoun can be construed as a variable, have the LF representations, as shown in (2):

- (1) a. Who_i t_i dislikes his_i father?
b. Which student_i do you think t_i respects his_i teacher?

- (2) a. [_{CP} who_i [_{IP} t_i dislikes his_i father]]
 b. [_{CP} which student_i do [_{IP} you think [_{CP} t_i respects his_i teacher]]

In (2a) and (2b), the pronoun *his* is construed as a variable bound by the wh-phrases, *who* and *which student*, respectively.

In contrast to the sentence in (1), the bound construal of the pronoun is not available in (3). The ungrammaticality of the sentences in (3) is usually attributed to some formulation of Weak Crossover (WCO) (Wasow 1972, Reinhart 1976, Chomsky 1977, Higginbotham 1980, Saito and Hoji 1983, Koopman and Sportiche 1983, Haik 1984 and Safir 1984, among others). Now, let us consider the examples in (3) with their LF representations in (4):

- (3) a. * Who_i does his_i father dislike t_i?
 b. * Which student_i do you think his_i teacher like t_i?
 (4) a. * [_{CP} who_i does [_{IP} [_{NP} his_i father] dislike t_i]]
 b. * [_{CP} which student_i do [_{IP} you think [[_{NP} his teacher] like t_i]]]

In (4), neither the pronoun *his* nor the trace of the wh-phrase c-commands the other, and the unavailability of the intended variable binding of the pronoun is ascribed to what has been called WCO effects. In order to account for WCO effects, we assume the following constraint:

(5) WCO Constraint

When a pronoun P and a variable V are both A'-bound by the same Quantifier Q, V must c-command P at LF.

(See Reinhart (1976) or Lasnik and Stowell (1991)).

The constraint (5) can be schematized as in (6)

- (6) * [Op_i [... [... pronoun_i ...] ... t_i ...]]
 where neither the pronoun nor the variable c-commands the other.

Then, in (6), the trace *t_i* is a variable A'-bound by an operator such as a *wh*-phrase, and neither the pronoun nor the variable c-commands the other. Thus, the sentences in (3) are ruled out as WCO violations.

2. The Absence of WCO Effects in *Tough*-Movement Clauses in English

Lasnik and Stowell (1991) observe that there are constructions involving A'-binding where WCO effects do not arise, despite the fact that the constraint (5) is violated.¹⁾ One of those constructions is the

1) The constructions that do not yield expected WCO effects are illustrated as below:

(i) *Tough* Movement

- a. Which boy_i [t_i will be easy [NO_i [PRO to persuade his_i boss to vouch for e_i]]]
 b. Every book_i will be easy for you [NO_i [PRO to persuade its_i author to publicize e_i]]

(ii) Parasitic Gaps

- a. Who_i did you gossip about t_i [NO_i [despite his_i teacher's having vouched for e_i]]
 b. Which man_i [did you look at t_i [NO_i [before his_i wife had spoken to e_i]]]

(iii) Topicalization

- a. John_i [I believe his_i mother loves e_i]

tough-movement construction. Consider the following example:

- (7) a. Who_i t_i will be easy [to get [his_i mother] to talk to e_i]
 b. Which boy_i t_i will be easy [to persuade [his_i boss] to vouch for e_i]

Each sentence in (7) is structurally parallel to the standard type of WCO configuration; there is an operator that locally A'-binds both a pronoun *his* and a trace *e* and neither the pronoun nor the trace c-commands the other. They assume, essentially following Chomsky (1977;1981), that a null operator (NO) moves to the Spec position of CP of the infinitival complement of the *tough* adjective:

- (8) a. [_{CP} Who_i [_{IP} t_i will be easy [_{CP} NO_i [_{IP} PRO to get [his_i mother] to talk to e_i]]]]
 b. [_{CP} Which boy_i [_{IP} t_i will be easy [_{CP} NO_i [_{IP} PRO to persuade [his_i boss] to vouch for e_i]]]]

They attribute the lack of WCO effects in (8) to the semantically nonquantificational status of the operator, i.e., the null operator, in A'-position. They, therefore, propose a previously unrecognized syntactic type of trace: a null epithet sharing binding properties with names and definite descriptions, rather than with variables. Their theory is as follows:

- (9) Traces A'-bound by true Quantifier Phrases (QP) are variables and exhibit WCO effects, whereas traces A'-bound by non-Quantifier Phrases are null epithets and do not show WCO effects.

Based on the fact that scrambling of *wh*-phrases in Korean does not

b. This book_i [I would never ask its_i author to read e_i]

trigger WCO effects, I argued in Cho (1994) that scrambling in Korean leaves behind a null epithet, hence not exhibiting WCO effects, and differentiated operator movement from non-operator A'-movement:²⁾

- (10) (i) Operator movement moves a quantified NP to an operator position.
- (ii) Non-operator A'-movement moves a non-quantified NP to an operator position or any NP to a non-operator position.

It follows then that Wh-movement, which moves a quantified NP to an operator position, is classified as operator movement, whereas null operator movement, which moves a non-quantified NP to an operator position, and scrambling, which is movement to a non-operator A'-position, are classified as non-operator A'-movement.

3. Null Epithet in Relative Clauses in Korean

As discussed in the previous section, if null operator movement as non-operator A'-movement leaves behind not a variable but a null epithet, then, we expect WCO effects not to occur in constructions involving null operator movement.

3.1 Null Epithet and WCO

Lasnik and Stowell (1991) discuss WCO effects in relative clauses in English. While they disagree with Chomsky's (1982) judgement that WCO effects are fully absent in restrictive relative clauses in English, they claim that there is no WCO effect in appositive relative clauses:

- (11) a. Gerald_i, [who_j [his_i mother loves t_j]], is a nice guy.
- b. This book_i, [which_j [its_i author wrote t_j last week]], is

2) See Cho (1994) for more detailed discussion.

a hit.

As Jackendoff (1977) treated the appositive *wh*-phrase as a pronoun coreferential with the head NP, Lasnik and Stowell (1991) do not consider the appositive *wh*-phrase in (11) a true quantifier. Similarly, if the appositive *wh*-phrase is not a true quantified NP, the movement of the appositive *wh*-phrase is, according to the hypothesis (10), non-operator *A'*-movement, since the movement of the appositive *wh*-phrase is movement of a non-quantified NP to an operator position. Therefore, the trace in (11) is a null epithet and thus, WCO effects are not induced.

Now, if relative clauses in Korean involve null operator movement, WCO effects are expected not to show up in relative clauses. It has been maintained that in Korean, relativization is constrained by Subjacency and thus relative clauses involve a syntactic movement of a null operator (Hong 1985 and Yang 1988, among others):

- (12) a. * [_{CP} [hyengsa -ka [_{NP} [John -i e_i cukyesstanun]
 detective Nom Nom killed
 somwun] -ul mitkoissten]] yeca_i -ka salacyessta.
 rumour Acc believed woman Nom disappeared
 'The woman_i who a detective believed the rumour that John
 killed t_i disappeared.'
- b. * [_{CP} [John -i [_{PP} [Mary-ka e_i kkutnayci mothaysski]
 Nom Nom finish couldn't
 ttaymwuney] yencuhoy-ey kaci anassten]] swukcey_i -ka
 because concert to go didn't homework Nom
 maywu eryewessta.
 very was difficult
 'The homework_i which John didn't go to the concert
 because Mary couldn't finish t_i was very difficult.'

In Japanese or Korean, empty pronouns can be replaced by overt

pronouns, but traces created by movement, on the other hand, cannot be replaced by overt pronouns. With this reasoning, Saito (1985) argues that the gaps in Japanese topic constructions can be base-generated empty pronouns since they can be replaced by overt pronouns, but that the gaps in scrambling constructions must be traces created by movement because they cannot be replaced by overt pronouns. Thus, if the empty pronoun can be base-generated in the relative clause, then the overt pronoun is allowed in the position of the empty category. On the other hand, if the relative construction involves the syntactic movement of a null operator, then the overt pronoun can not appear in the position of the gap in question. Let us see what result is derived if we replace the gap in (12a) with an overt pronoun:

- (13) * [_{CP} [hyengsa -ka [_{NP} [John -i kunye_i-lul cukyesstanun]
 detective Nom Nom her Acc killed
 somwun] -ul mitkoissten]] yeca_i -ka salacyessta.
 rumour Acc believed woman Nom disappeared
 'The woman_i who a detective believed the rumour that John
 killed her_i disappeared.'

The ungrammatical sentence (13) shows that the gap in a relative clause is generated by null operator movement and hence, cannot be replaced by an overt pronoun. Then, the hypothesis that the syntactic movement of a null operator is involved in relative clauses is borne out.

Let us now consider whether or not WCO effects are present in relative clauses:³⁾

- (14) a. [_{CP} NO_i [_{IP} ku_i-uy anay -ka t_i kosohan]] John_i -i
 he Gen wife Nom sued Nom

3) Hong (1985) observed that WCO effects do not occur in Korean relative clauses.

- pepceng-ey an nathanassta.
 court at not showed up
 'John_i, who his_i wife sued t_i, did not show up at the court.'
- b. [_{CP} NO_i [_{IP} kutul_i-uy sensaynnim -i t_i ttayrin]] [John
 they Gen teacher Nom hit
 kwa Mary]_i -ka wulessta.
 and Nom cried
 '[John and Mary]_i, who their_i teacher hit t_i, cried.'

The pronoun, *ku* in (14a) and *kutul* in (14b), and the trace *t* are both A'-bound by the null operator and neither *t* nor the pronoun c-commands the other. However, WCO effects are not present, since the trace left by null operator movement, which moves a non-quantified NP to an operator position, is a null epithet and it does not participate in WCO effects. Therefore, the sentences in (14) support our hypothesis that null-operator movement, as non-operator A'-movement, creates a null epithet.⁴⁾

4) In this section, we accounted for the lack of WCO effects in English appositive relative clauses by maintaining that the movement of the appositive relative *wh*-phrase, as movement of a non-quantified NP to an operator position, does not trigger a WCO violation. However, some English speakers, including Lasnik and Stowell, judge that WCO effects show up in restrictive relatives in English, which is problematic for our hypothesis. Consider the following English sentence:

(i) * The man_i [who_i [his_i wife sued t_i]] did not come back.

If the restrictive *wh*-operator is a vacuous operator as the null operator is, then the WCO effect is expected not to occur in (i). Lasnik and Stowell (1991) claim that the reference of the full NP, e.g., *the man who his wife sued* in (i), is the intersection of the sets denoted by the head noun and the relative clause and thus, the restrictive *wh*-operator as in (i) may be a true QP ranging over a possibly non-singleton set distinguished from the reference of the head noun. However, Korean restrictive relative clauses do not clearly exhibit WCO effects,

not showed up

'John_i, who he_i criticized t_i, did not show up at the court.'

b. * [NP [CP NO_i [IP ku_i-ka [Mary-ka t_i kosohayssta-ko] malhan]]

he Nom Nom sued Comp said

John_i] -i pepceng-ey an nathanassta.

Nom court at not showed up

'John_i, who he_i said that Mary sued t_i, did not show up at the court.'

In (15), the trace *t* created by null operator movement is, according to our hypothesis, a null epithet and it is A-bound by the pronoun *ku-ka* 'he-Nom'. Thus, the sentences in (15) are ruled out by Binding Principle C because a null epithet is A-bound.⁵⁾

4. Null Epithet in *Tough*-Movement Clauses

We observed in section 3 that WCO effects are absent in Korean relative clauses which involve null operator movement. Another possible construction which involves null operator movement would be *tough*-movement clauses in Korean.

4.1 NP *Tough*-Movement Clauses

Takezawa (1987) shows that there are two derivations in Japanese *tough*-movement sentences, one by null operator movement in the case of NP/PP *tough*-movement clauses, and the other by making use of an

5) Saito (1985) points out that Permuter (1972) argues that gaps in relative clauses need not be produced by movement but can be base-generated empty pronouns in Japanese. However, if we suppose that the gaps in (15b) is the empty pronoun, i.e., *pro*, nothing would rule out the example (15b); *pro* is free in the embedded clause, the complement clause of the verb *said*, and thus Binding Principle B is satisfied.

empty pronoun without movement in the case of NP *tough*-movement clauses. In order to decide whether the gaps in *tough*-movement clauses in Korean are base-generated empty pronouns or traces created by null operator movement, we need to check whether they are constrained by Subjacency. Let us first consider NP *tough*-movement clauses:

- (16) a. i nonmwun_i -i kyoswu_j -eykey [e_j e_i ilki]
 this dissertation Nom professor for read
 swipta.
 is easy

'This dissertation is easy for a professor to read.'

- b. i nonmwun_i -i kyoswu_j -eykey [e_j [[e_k e_i ssun]
 this dissertation Nom professor for wrote
 haksayng_k]-ul phyengkaha-ki] eryepta.
 student Acc evaluate comp is hard

'This dissertation_i is hard for a professor to evaluate a student who wrote e_i.'

In (16b), the gap e_i does not show the Subjacency effect. Thus, the example (16b) indicates that gaps in NP *tough*-movement clauses can be base-generated empty pronouns. Then, NP *tough*-movement clauses cannot be used for a test to see whether traces created by null operator movement are subject to WCO effects.

4.2 Null Epithet in PP *Tough*-Movement Clauses

If NP *tough*-movement clauses can contain empty pronouns, we may consider another type of *tough*-movement clauses, i.e., PP *tough*-movement clauses. Let us now observe whether PP *tough*-movement clauses obey Subjacency:

- (17) a. ce hakkyo-lopwute_i-ka John_j-eykey [e_i e_i thoyhaktangha
 that school from Nom for get kicked out
 -ki] swuita.
 Comp is easy
 '[From that school]_i is easy for John to get kicked out e_i.'
- b. * ce hakkyo-lopwute_i-ka John_j-eykey [e_i [[e_k e_i
 that school from Nom for
 thoyhaktanghan] haksayng_k-eykey malkel-ki] eryepta.
 got kicked out student to speak Comp is difficult
 '[From that school]_i is difficult for John to speak to a
 student who got kicked out e_i.'

We can attribute the ungrammaticality of the sentence (17b) to the Subjacency effect that the gap e_i exhibits. Thus, the sentences in (17) indicate that the gaps in PP *tough*-movement clauses are traces created by null operator movement. Now, let us put an overt pro-form in the gap of PP *tough*-movement clause (17b) to see whether the gap in question is base-generated or created by movement:

- (18) * ce hakkyo-lopwute_i-ka John_j-eykey [e_i [[e_k
 that school from Nom for
 kukos-ulopwute_i; thoyhaktanghan] haksayng_k-eykey malkel
 there from got kicked out student to speak
 -ki] eryepta.
 Comp is hard
 '[From that school]_i is hard for John to speak to a
 student who got kicked out from there.'

As shown in (18), even after the gap e_i is replaced by an overt pro-form, i.e., 'overt pronoun + postposition (*kukos-ulopwute* 'from there')', the resulting sentence is still ungrammatical. However, both

the gap and the overt pronoun are allowed in NP *tough*-movement clauses, as shown below:

- (19) i nonmwun_i -i kyoswu_j -eykey [e_j [[e_k e_i /kukes_i-ul
 this dissertation Nom professor for it Acc
 ssun] haksayng_k]-ul phyengkaha-ki] erylpta.
 wrote student Acc evaluate comp is hard
 'This dissertation_i is hard for a professor to evaluate a student
 who wrote e_i/it_i.'

Then, the availability of both the empty category and the overt pronoun in (19) supports the hypothesis that the empty pronoun can be base-generated in the case of NP *tough*-movement clauses. On the other hand, the unavailability of overt pro form, i.e., 'overt pronoun + postposition', as in (18) further confirms our hypothesis that the syntactic movement of a null operator is involved in PP *tough*-movement clauses.

If PP *tough*-movement clauses involve null operator movement, these constructions would be represented as follows:

- (20) a. Seoul-eyse_i-ka (John_j-eykey) [CP NO_i [e_j t_i sal] ki]
 Seoul-in Nom for live Comp
 swipta.
 is easy
 '[In Seoul]_i is easy for John [NO_i [PRO to live e_i]]'
- b. ce unhayng-ulopwute_i-ka (John_j-eykey) [CP NO_i [e_j t_i
 that bank-from Nom for
 ton -ul pilli] ki] erylpta.
 money Acc borrow Comp is hard
 '[From that bank]_i is hard for John [NO_i [PRO to borrow
 money e_i]].'

Before checking whether WCO effects are present in PP *tough*-movement clauses, let us first examine whether there exist WCO effects in *wh*-question constructions involving PPs:

- (21) a. * John -i [[e_k sip nyen ceney kukos-eyse_i salassten]
 Nom ten years ago there-in lived
 salam_k]-eykey [PRO tasi enu tosi-eyse_i salla -ko]
 person Dat again which city-in live Comp
 seltukhayss-ni?
 persuaded-Q
 'John persuaded the person who lived there_i ten years ago
 to live [in which city]_i again?'
- b. * John -i [[e_k sip il ceney kukos-ulopwute_i ton -ul
 Nom ten days ago there-from money Acc
 pillin] salam_k]-eykey [PRO tasi enu unhayng-ulopqute_i
 borrowed person Dat again which bank-from
 ton -ul pillila -ko] seltukhayss-ni?
 money Acc borrow Comp persuaded-Q
 'John persuaded the person who borrowed money there_i ten
 days ago to borrow money [from which bank]_i again?'

We can attribute the ungrammaticality of the sentences in (21) to WCO effects. The subcategorized PPs containing *wh*-operators, *enu toshi-eyse* 'which city-in' in (21a) and *enu unhayng-ulopwute* 'which bank-from' in (21b), undergo *Wh*-movement to the Spec position of CP at LF, leaving behind variables. Then, variables and overt proforms are both A'-bound by *wh*-phrases, and neither variables nor overt proforms, *kukos-eyse* 'there-in' in (21a) and *kukos-ulopwute* 'there-from' in (21b), c-command the other. Therefore, WCO effects show up in *wh*-question constructions involving PPs. The fact that the prepositional phrase is involved in WCO effects is also shown by the following English examples:

- (22) a. * [To whom_i]_j did his_i mother give the book t_j?
 b. * [On whose_i table]_j did his_i mother put the book t_j?

In (22), the prepositional phrase containing the *wh*-operator coindexed with the pronoun is moved to the operator position by *Wh*-movement. We may ascribe the ungrammaticality of the sentences in (22) to WCO effects.

Then, let us observe whether WCO effects are present or absent in PP *tough*-movement clauses, which involve null operator movement:

- (23) a. enu tosi-eyse_i-ka (John_j-eykey) [_{CP} NO_i [e_j [[e_k sip
 which city-in Nom for ten
 nyen ceney e_j/kukos-eyse_i salassten] salam_k]-eykey
 years ago there-in lived person Dat
 [PRO tasi t_i salla -ko] seltukah] -ki] swip-ni?
 again live Comp persuade Comp is easy-Q
 '[In which city]_i is easy for John [NO_i [to persuade the
 person who lived there_i to live t_i again]]?'
- b. enu unhayng-ulopwute_i-ka (John_j-eykey) [_{CP} NO_i [e_j [[e_k
 which bank-from Nom for
 sip il ceney e_j/kukos-ulopwute_i ton -ul billin] salam_k]
 ten days ago there-from money Acc borrowed person
 -eykey [PRO tasi t_i ton -ul pillila -ko] seltukha]
 Dat again money Acc borrowed Comp persuade
 -ki] ereyp-ni?
 Comp is hard-Q
 '[From which bank]_i is hard (for John) [NO_i [to persuade the
 person who borrowed money there_i to borrow money t_i
 again]]?'

The empty category *e*/*overt pro* form, *kukos-eyse_i* 'there-in' in (23a) and *kukos-ulopwute_i* 'there-from' in (23b), and the trace *t_i* are both A'-bound by the null operator, and neither the trace *t_i* nor the empty

category/overt pro form c-commands the other. But, WCO effects are absent, because the trace created by null operator movement is not a true variable but a null epithet and thus it is free from WCO effects.

Consequently, PP *tough*-movement clauses provide further evidence for our proposal that null operator movement, as non-operator A'-movement, creates a null epithet.

5. Conclusion

In this paper, we examined the relative clauses and *tough*-movement clauses in Korean with regard to WCO phenomena, and demonstrated that the absence of WCO effects in Korean relative clauses and PP *tough*-movement clauses is due to a null epithet created by null operator movement. It was shown that relative clauses in Korean involve null operator movement, which, as non-operator A'-movement, creates not a variable but a null epithet, and that the lack of WCO effects is attributed to the null epithet, which is immune from the WCO constraint. It was observed that SCO effects are yielded in relative clauses in Korean since the null epithet, as an R-expression, is subject to Binding Principle C. It was also observed that the gaps in NP *tough*-movement clauses in Korean can be either base-generated empty pronouns or traces created by null operator movement whereas the syntactic movement of a null operator is involved in PP *tough*-movement clauses (cf. Takezawa 1987). It was further maintained that PP *tough*-movement clauses in Korean do not yield WCO effects since they contain the null epithet.

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