The Essential Components of the Relevancy Condition
on Internally Headed Relatives in Korean

Abstract: This paper aims to identify the essential factors that determine the interpretability of sentences that instantiate the Internally-Headed Relative Clause (IHRC) construction in Korean and, by extension, in Japanese. More specifically, it revisits the Relevancy Condition, which has been posited as a construction-specific pragmatic condition on the construction since Kuroda 1976-77, and proposes a more valid rendition thereof as a novel generalization to be formalized in future research. The upshot of the proposal is that, for a sentence instantiating the IHRC construction to be interpretable, the embedded clause’s content must bear either a temporal intersection or an inferential relation to the embedding clause’s content. Applying this generalization, I will classify IHRCs into the temporal type and (ii) the inferential type, depending on their semantic and pragmatic relation to the embedding clause’s content. It will be shown that the two types of IHRCs differ in their truth-conditions, and, furthermore, their interpretive behavior is paralleled by that of free adjuncts in English. This parallel will be taken to suggest that the interpretability condition on the IHRC construction is a reflex of a more general principle that governs the interpretation of complex clause structures that lack an overt connective.
1 Introduction

In recent linguistic theorizing, the interplay between grammatical factors and pragmatic factors in deriving the meaning of a sentence has been a central topic of inquiry (e.g., Potts 2005, Noveck and Sperber 2006). This paper addresses this issue by investigating factors governing the interpretability of sentences instantiating the Internally-Headed Relative Clause (IHRC) construction in Korean and, by extension, in Japanese.¹


In terms of its form, the IHRC construction differs from the EHRC construction in that the head noun of an IHRC occurs internal to it, as opposed to

¹ In this paper, ‘interpretability’ is used as a cover term for ‘grammaticality’ and ‘acceptability’. This means that ‘(un)grammaticality’ and ‘(un)acceptability’ will be used interchangeably abstracting away from their differences.
external to it (and hence the name), and the RC is always followed by a grammatical category *kes* or *no*, which is best analyzed as a pronominal or a determiner (Chung and Kim 2003, M.-J. Kim 2005 for *kes*; Shimoyama 1999 for *no*). This formal difference between the two types of RC constructions can be illustrated by comparing (1) and (2). Here, the head nouns of the RCs are highlighted, roman subscripts indicate co-indexation and ‘e’ indicates a gap.

(1) **The EHRC construction in Korean:**

Jinho-nun [[*e* _i_ tomangka-n]-un _totwuk_]-ul capassta.

J.-Top [[ _ run.away-Imprf]-Rel _thief_]-Acc caught.

‘Jinho caught a/the thief who was running away.’

(2) **The IHRC construction in Korean:**

Jinho-nun [[_totwuk_]-i _tomangka-n]-un _kes_]-ul capassta.

J.-Top [[_thief-Nom run.away-Imprf]-Rel _kes_]-Acc caught.

‘A/the thief was running away and Jinho caught him (= the thief).’

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2 In this paper, the following abbreviations are used for transcribing the Korean and Japanese data:

Acc: accusative case; Aux: auxiliary; Comp: complex predicate marker; Conj: conjunction;
Dat: dative case; Decl: declarative sentence; Gen: genitive case; Loc: locative particle; Neg: Negation; Nom: nominative case; Impr: Imperfective aspect; Prf: perfective aspect; Pst: past tense
Rel: relative marker; Top: topic.
In terms of its meaning, the IHRC construction differs from the EHRC construction in that it is subject to a pragmatic condition, which is most widely known as the Relevancy Condition given in (3).

(3) The Relevancy Condition (Kuroda 1976-77, 1992: 147)

For a pivot-independent relative clause [i.e. an IHRC] to be acceptable, it is necessary that it be interpreted pragmatically in such a way as to be directly relevant to the pragmatic content of its matrix clause (my emphasis).

Descriptively speaking, the Relevancy Condition dictates that an IHRC bear a “tight” semantic relation to the embedding clause, despite the fact that it occurs as part of an argument of the embedding predicate. The effect of this condition is illustrated by the contrast between (4) and (5). In view of (3), (4) is interpretable but (5) is not because, in the latter, the embedded clause describes an event that is temporally remote from the event described by the embedding clause, rather than simultaneous with it, and hence the IHRC bears less direct relevance to the embedding clause’s pragmatic content.
‘There was an apple on the table and John picked it up.’

Intended: ‘There was an apple on the table \textit{yesterday} and John picked it up \textit{today}.’

Notice that the Relevancy Condition does not apply to the EHRC construction, as shown by the grammaticality of (6), in contrast to the ungrammaticality of (5).
imposing the relevancy condition on the IHRC construction has proved to be effective in capturing the well-known context-sensitivity of the construction and cross-individual variability in grammaticality judgments. But this approach has also been subject to various criticisms. One criticism is that the notion ‘relevancy’ is not precise enough to provide a principled way of determining the interpretability of sentences (e.g., Fuji 1998, Y.-B. Kim 2002). Another criticism is that, despite it generality, the condition has empirical limitations (more on this in Section 2). Yet another criticism is that this approach does not address the more fundamental question of why such a pragmatic condition applies to the IHRC construction but not to the EHRC construction.

Due to these criticisms, attempts have been made to restate the Relevancy Condition in more formal terms (e.g., Fuji 1998, Y. Kim 2002). These works have shown that not only pragmatic factors but also semantic factors play an important
role in determining the interpretability of sentences instantiating the IHRC construction. But they have not as yet succeeded in offering an interpretability condition that captures the full spectrum of data. Consequently, authors tend to resort to Kuroda’s original condition when explaining away the discourse-sensitivity of the construction (e.g., Shimoyama 1999, Chung and Kim 2003).

Given this state of affairs, there are at least three outstanding questions surrounding the IHRC construction even if we limit our attention to its semantics and pragmatics:3

(i) Is it possible to formulate a more theoretically satisfactory definition of ‘relevancy’?

(ii) Can a more valid generalization than the Relevancy Condition be framed?

(iii) What is the source of this construction-specific interpretability condition called the Relevancy Condition?

3 The formal property of the IHRC construction has also been found to be challenging, since it is not clear how a noun phrase that occurs inside a RC is interpreted as an argument of the embedding predicate. Recently, however, this problem has received a relatively satisfactory solution which postulates an E-type pronoun as the mediator between the head noun of an IHRC and the embedding predicate (e.g., Hoshi 1995, Shimoyama 1999, Kim 2005). By contrast, the semantic and pragmatic property of the IHRC construction is yet to receive a satisfactory account.
This paper is an attempt to take up these questions and propose answers to them. The gist of the proposal is that what underlies the Relevancy Condition on the IHRC construction is the need to establish a temporal or an inferential link between two event descriptions and thereby subordinate one event description to the other. On the basis of this observation, a new typology of IHRCs will be proposed, which classifies IHRCs into two types, depending on whether they receive a temporal or an inferential interpretation relative to the content of the embedding clause, i.e., the clause that immediately dominates an IHRC. I demonstrate that a crucial difference between the two types of IHRC is whether the embedded clause, i.e., the clause inside an IHRC, describes a temporary state that holds at the time of the event described by the embedding clause and this state describes the state of the semantic head of the IHRC. Another important finding of this research will be that the interpretive behavior of IHRCs is paralleled by that of free adjuncts in English.\footnote{It will also be shown that IHRCs parallel non-restrictive RCs in English and Dutch as well but the discussion will be presented in a footnote, rather than in the text. See footnote 18.} I take this parallel to suggest that the Relevancy Condition is a reflex of a more general principle that governs the interpretation of complex clause structures that lack an overt connective (see Fabricius-Hansen 2006 for a good survey of such constructions). This principle is at work, because, in order for two event descriptions to be conjoined without a connective, there has to be either a temporal overlap or an inferential relation...
established between them; otherwise interpreting the sentence will be too much strain on the hearer’s part.

The remainder of this paper is organized as follows: in section 2, I identify the essential components of ‘relevancy’ by reviewing three existing analyses of the semantic/pragmatic property of the IHRC construction including Kuroda’s seminal work (Kuroda 1976). Section 3 is devoted to proposing a more valid description of the factors that govern the interpretability of sentences instantiating the IHRC construction. Section 4 presents additional arguments for the proposed generalization, including the interpretive parallel between the IHRC construction and other subordinate constructions. Section 5 summarizes and concludes the paper.

2 What counts as ‘relevancy’?

2.1 Kuroda’s (1976) answer

Although Kuroda (1976) does not offer a precise definition of relevancy, he shows concrete ways in which the Relevancy Condition can be satisfied. The condition can be satisfied, for instance, if (i) the embedded clause’s event time is simultaneous with the embedding clause’s event time, (ii) the two events share the same location, or (iii) the embedded clause’s content is ‘motivationally’ or ‘purposively’ relevant to the embedding clause’s subject. These three ways of satisfying the Relevancy Condition have been called, respectively, (i) the
Simultaneity Condition, (ii) the Co-locationality Condition, and (iii) the Purposiveness Condition, by Fuji (1998). For expository convenience, these labels are also adopted here.

We may begin by examining how each sub-condition of the Relevancy Condition works. The effect of the Simultaneity Condition has already been illustrated by the contrast between (4) and (5): unlike (4), (5) is judged ungrammatical, because the event described by the embedded clause is not simultaneous with the event described by the embedding clause.

The effect of the Co-locationality Condition is illustrated by (7). In this sentence, the embedded clause describes an event that occurred at some time yesterday and the embedding clause describes an event that occurred at some time today. But the sentence is nevertheless judged acceptable because the two events involve the same physical location. That is, the apple that Mary put on the table yesterday stayed there until John came along and picked it up today.

(7) John-un [[Mary-ka ece sakwa-lul thakca-ey J.-Top [[M.-Nom yesterday apple-Acc table-Loc

noh-a twu-∅-n kes]-ul onul mekessta.

put-Comp Aux-Prf]-rel k[es]-Acc today ate

‘Mary put an apple on the table yesterday and John ate it today.’

(adapted from Kuroda’s (9), p. 148)
Finally, we can illustrate the workings of the Purposive Condition by comparing (8) and (9). According to Kuroda, the two sentences differ in their acceptability because, while (8) can be interpreted in such a way that the embedded clause’s content is ‘purposively’ or ‘motivationally’ related to the matrix clause’s content, such an interpretation is unavailable for (9). That is, John’s awareness of someone approaching him with an evil purpose may give him a strong motivation to be violent, but his awareness of someone coming to visit him from a remote place does not necessarily do so.5

(8) John\textsubscript{j}-un [[Bill-i ku\textsubscript{j}-lul kongkyekha-lye-ko J.-Top [[B.-Nom he-Acc attack-intend-Comp chac-a o-∅]-n kes]-ul ttayli-e nwphiessta. visit-Comp come-Prf]-Rel kes]-Acc hit-Conj floored

‘Bill came to attack John and John floored him.’

(adapted from Kuroda 1992: 151, (18))

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5 It is important to note that (9) is anomalous rather than ungrammatical. It can be judged acceptable or grammatical if, for instance, the discourse participants know that John has a mental problem which makes him rather aggressive at times. This suggests that the interpretability of the IHRC construction is highly discourse-sensitive, going beyond the realm of grammar.
Given these facts, it seems that the Relevancy Condition is by and large concerned with satisfying the three sub-conditions either individually or collectively. This raises the question of why satisfying these sub-conditions should matter.

Kuroda offers a sensible answer to this question. He says that satisfying the three conditions matters because the IHRC construction is concerned with making the two events described by the embedded and embedding clauses form a superordinate event either in the physical domain or in the consciousness of a protagonist of the event described by the embedding clause (Kuroda 1992: 151). In the light of these remarks, satisfying the Simultaneity or the Co-locationality condition can be viewed as a way of forming a superordinate event in the physical.
domain and satisfying the Purposiveness Condition can be viewed as a way of forming a superordinate event in the cognitive domain of a relevant individual, be it the subject of the embedding clause or the speaker or hearer of the discourse.

This way of approaching the Relevancy Condition leads us to see why the three subconditions figure as its most prominent manifestations. It also provides a broader perspective on the whole phenomenon. Given this, there is little doubt that the Relevancy Condition offers genuine insight into what regulates the interpretability of sentences instantiating the IHRC construction. As it stands, however, this condition has several empirical problems. One is that, despite its generality, it does not cover all cases. For instance, it cannot account for the contrast between (10) and (11) below. Given the discourse context, the two sentences score the same with respect to the three sub-conditions of the Relevancy Condition: first, they both violate the Simultaneity Condition. Second, they equally satisfy or dissatisfy the Co-locationality Condition, as it is not clear whether the two events described by the embedded and the embedding clauses involve the same location or not. Third, both sentences satisfy the Purposiveness Condition because the embedded clauses’ contents seem to give a strong enough motivation for the embedding clauses’ agent to perform the action he did. These tallying results predict them to be equally grammatical or ungrammatical, contrary to fact.
Context for (10-11): John had a fight with Mary. He lost the fight, so he wanted to do something to upset her.

(10) John-un onul [[Mary-ka ece inhyeng-ul J.-Top today [[M.-Nom yesterday doll-Acc mantul-∅]-un kes]-ul nayta peliessta.

street-Loc-Prf]-rel kes]-Acc took and threw away.

‘Mary made a doll yesterday and John threw it away today.’

(11) *John-un onul [[Mary-ka ece inhyeng-ul J.-Top today [[M.-Nom yesterday doll-Acc halwu congil kaci-ko nol-∅]-un kes]-ul day long have-Comp play-Prf]-Rel kes]-Acc nayta peliessta.

took and threw away.

‘Mary played with a doll all day yesterday and John threw it away today.’

The fact that the Relevancy Condition alone cannot account for the contrast between (10) and (11) suggests that it merits a revision even if one were to continue resorting to it. In addition, it also raises the following questions:
(i) Are there identifiable components of relevancy other than simultaneity, co-locationality, and purposiveness?

(ii) When can these three sub-conditions override each other and why?

In the next two sections, I review two recent attempts to improve upon Kuroda’s analysis, namely, Y.-B. Kim 2002 and Fuji 1998. I show that these works have made a significant step forward but still fall short of explaining the full richness of the phenomenon.

2.2 Y.-B. Kim’s (2002) Revised Relevancy Condition

Yong-Beom Kim claims that ‘relevancy’ can be restated as a set of meaningful relations between the two events described by the embedded clause and the embedding clause. He offers (12) as a reformulation of Kuroda’s Relevancy Condition (3). For referential convenience, I will call it the Revised Relevancy Condition.
(12) **Revised Relevancy Condition (Y. Kim 2002: 558, (40))**

An event \(e\) is relevant to some other event(s) \(e'\), iff

(i) \(<e, e'> \in R_m\), where \(R_m\) is a set of relations retrievable from the background knowledge of the discourse participants,

(ii) the predicates denoting \(e\) and \(e'\) share arguments which are pragmatically conspicuous w.r.t. \(r_m (r_m \in R_m)\), and

(iii) the speaker is attuned to \(r_m\).

According to Y.-B. Kim, the types of ‘pragmatically conspicuous arguments’ shared by the two events can vary according to the aspectual properties of the predicate of the embedded clause, which I will call the embedded predicate for short. If the embedded predicate is an activity verb in Vendler’s (1967) or Dowty’s (1979) classification, the pragmatically conspicuous argument will be the spatio-temporal argument in the sense of Kratzer (1995). Roughly speaking, this means that the two events described by the embedded clause and the embedding clause must occur at the same time, in the same location. On the other hand, if the embedded predicate is an achievement or an accomplishment verb, the prominent argument will be a ‘resultant theme,’ which is defined as an object that results from the culmination of the event described by the embedded clause. This means that when the embedded event contains a resultant theme, it
needs not have the same spatio-temporal argument with the embedding event (pp. 556-8).

Y.-B. Kim’s analysis is attractive in several ways. First, by defining relevancy as a binding relation or some type of argument-sharing between two events, it offers a more explicit description of the phenomenon than that which Kuroda’s analysis offers.

Second, it shows that the lexical aspect of the embedded predicate matters in interpreting sentences embedding IHRCs. In so doing, it provides a way to account for the contrast between sentences like (10) and (11), which was problematic for Kuroda’s analysis: (11) is unacceptable because the embedded verb is an activity type and yet the two events described by the embedded clause and the embedding clause do not share the spatio-temporal arguments. By contrast, (10) is good because the embedded predicate is an accomplishment type and hence the two events can be linked by the resultant theme, namely, the doll.

Y.-B. Kim’s analysis also correctly predicts that if the embedded aspect of (11) is changed from perfect to progressive, as in (13), the sentence will be judged acceptable. This is because the embedded clause will now describe an event that is on-going at the time of the event described by the embedding clause and hence the two events share the spatio-temporal arguments.
(13) John-un onul [[Mary-ka inhyeng-ul kaci-ko
J.-Top today [[M.-Nom doll-Acc have-Comp
no-n]-un kes]-ul ppayassa-se
play-Imprf]-Rel kes]-Acc confisticate-Conj
nayta peliessta.
took and threw away.

‘Today Mary was playing with a doll and John
confisticated it from her and threw it away.’

These facts clearly show that Y. Kim’s analysis has several merits. But it
also has several weaknesses. First, just like Kuroda’s original condition, the
Revised Relevancy Condition is also stipulated solely to capture the peculiar
properties of the IHRC construction. Second, it incorrectly predicts that, when the
embedded verb is an activity verb, the sentence will be acceptable only if the
embedded clause describes an on-going event that is simultaneous with the matrix
event. At first glance, this prediction appears to be correct, as suggested by the
unacceptability of (14), whose embedded predicate is an activity verb, namely,
tali- ‘to run’ and whose embedded aspect is perfective.

**hug-Pst-Decl**

Intended: ‘Mary ran on the playground and (after that) John hugged her.’

It turns out, however, that the restriction on the tense/aspect of the embedded clause depending on its predicate can be lifted if the embedding verb inherently carries a ‘V-ed X for Y-ing kind of interpretation’ such as is yatanchi- ‘scold’ or chingchanha- ‘praise’. To illustrate, consider (15). Here, the IHRCs are embedded under yatanchi- ‘scold’ and the sentences are judged interpretable regardless of the tense/aspect of the embedded clause—that is, be it imperfective or perfective.6

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6 The sentences in (15) also have an interesting semantic difference, which is essentially due to the aspectual differences between the embedded clauses: as suggested by the presence or absence of the parentheses around ‘for that’ in the English translations, whereas (15a) can be felicitous even if Mary’s running on the playground is not the reason for John’s scolding her, (15b) will be felicitous only if a cause-effect relation holds between the two events. I will revisit this phenomenon in Section 3.3.1 and offer an account of it.
Sentences in which *yatanchi*–‘scold’ type verbs occur as the embedding predicate pose yet another challenge for Y.B. Kim’s analysis. The author observes that individual-level predicates in the sense of Carlson (1977) such as *yengliha* ‘be smart’ will not occur as the embedded predicate, as illustrated by (16).7

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7 A similar observation has also been made by C. Lee (2001), Matsuda (2002), and M. Lee (2004), among others. But this observation turns out to be only partially valid, as we will see shortly.
Under Y. Kim’s analysis, the ungrammaticality of (16) can be explained as follows: in this sentence, the embedded predicate, i.e., *yengliha*–‘smart,’ is not an accomplishment or an achievement type. Hence, the only way in which the sentence can be acceptable is to make the embedded clause and the matrix clause share the spatio-temporal arguments. But the predicates of the two clauses differ in their “levels”: one is individual-level and the other is stage-level. Therefore, the eventualities described by the two clauses belong to different spatio-temporal locations, i.e., the mental domain and the physical domain, respectively, making the whole sentence judged grammatical (p. 557).

Although this explanation sounds sensible, it does not apply to cases where the embedding verb is a *yantanchi*–‘scold’ or *chingchanha*–‘praise’ type, as illustrated in (17) and (18).
(17) John-un [[Mary-ka Bill-ul top-∅]-un kes]-ul
J.-Top [[M.-Nom B.-Acc help-Prf]-Rel kes]-Acc
chingchan-ha-ess-ta.
praise-do-Pst-Decl

‘Mary helped Bill and John praised her for that.’

(18) John-un [[Mary-ka nwun-i yeppu-∅]-un kes]-ul
J.-Top [[M.-Nom eye-Nom pretty-Imprf]-Rel kes]-Acc
chingchan-ha-ess-ta.
praise-do-Pst-Decl

‘Mary has pretty eyes and John praised her for that.’

Under Y. Kim’s analysis, the grammaticality of (18) is unexpected because, just as in (16), the embedded clause of this sentence contains an individual-level predicate, namely, nwun-i yeppu ‘have pretty eyes’, and the matrix clause contains a stage-level predicate, namely, chingchanha- ‘praise,’ so the eventualities described by the embedded and the matrix clauses are predicted to reside in different spatiotemporal locations.

The lesson we learn from the foregoing discussion is that a proper semantic or pragmatic account of the IHRC construction needs to answer the following questions, in addition to those left unanswered by Kuroda’s analysis:
(i) Why does the lexical aspect of the embedded predicate matter in interpreting sentences embedding an IHRC?

(ii) Why is there no restriction on IHRCs when they are embedded under ‘praise’ or ‘scold’ type verbs?

2.3 Fuji’s (1998) Precedence Adjacency Condition

The primary goal of Fuji’s analysis was to re-examine Kuroda’s Simultaneity Condition and Co-locationality Condition, based on the Japanese data, and to derive their effects via a formal semantic mechanism. Fuji claims that Kuroda’s Simultaneity Condition needs to be restated as the Precedence Adjacency Condition (PAC) given in (19). He further maintains that the Co-locationality Condition follows from the PAC and thus can be dispensed with.

(19) Precedence Adjacency Condition (PAC) (Fuji 1998: (12)):

The event of the IHRC temporally precedes and is adjacent to the event of the main clause.

In order to derive the effects of the PAC, Fuji proposes a “double-quantifier raising (QR) analysis” within a temporal semantic framework of Discourse Representation Theory proposed by Kamp and Reyle (1993). Under this analysis, the embedded clause’s content becomes connected to the embedding
clause’s content via the morpheme no (corresponding to kes in Korean) by virtue of the fact that it means something like as soon as or immediately after in English. Due to the temporal operator-like semantics of no, the IHRC+no string introduces a Discourse Representational Structure (DRS) and since this string needs to combine with another DRS-denoting object, it raises and adjoins to the matrix IP at LF, which is the closest category that introduces a DRS.

When applied to the Japanese sentence (20), this analysis produces the LF structure given in (21). Here, ec is used as shorthand for an empty category and the numbers inside the square brackets match those inside the DRSs in (22).8

(20) Boku-wa [[onnanoko-ga kotira-ni yattekita-∅] no]-ni
dekuwasita.

‘A girl came here, and immediately after that I came across her (here).’

(Fuji 1998: 83, (6))

8 Regarding the indexation mechanism adopted for the LF structure (21), Fuji makes several rather complex assumptions, based on the pronominal agreement and proximate binding proposed by Bittner and Hale (1996) and the index percolation proposed by Grimshaw (1991), but I will not discuss them here.
The LF structure of (21):

(Fuji 1998: 83, (18))

Turning now to the truth-conditions for (20) derived by this analysis, the LF structure (21) generates three DRSs, namely, K1, K2, and K3, which are introduced by IP$_{10}$, no, and the lower IP$_1$, respectively. These DRSs combine with each other via dynamic conjunction, yielding a larger DRS, as depicted in (22). This larger DRS will be true if the truth-conditions given in (23) are met.
(22) **The semantic computation for (21) (Fuji 1998: 85, (19)):**

a. The DRS for (20) based on the LF structure (21)

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\[ x_1, t_{10}, e_{10} \]
\[ [1] \text{girl}(x_1) \land [5] e_{10} \supset e_1 \land [6] x_2 = i \]
\[ [2] t_{10} < t_0 \land [7] t_1 < t_0 \]
\[ [3] \text{come.here}'(e_{10}) \land [8] \text{come.across}'(e_1)(x_1)(t_1) \]
\[ [4] T(e_{10}) \subseteq t_{10} \land [9] T(e_1) \subseteq t_1 \]
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b. The schematic diagram of the relevant situation

(23) **The truth-conditions of (20) (based on Fuji 1998: 84):**

(i) There is an individual \( x_1 \), a time period \( t_{10} \), and an event \( e_{10} \) such that \( t_{10} \) precedes the speech time \( t_0[2] \), \( e_{10} \) is an event of \( x_1 \)'s coming here[3], where \( x_1 \) is a girl[1], and the time of \( e_{10} \) is included in \( t_{10}[4] \);
(ii) there is an event \( e_1 \) such that the event \( e_{10} \) is anterior and adjacent to \( e_1 \) [5];

(iii) there is an individual \( x_2 \), a time period \( t_1 \) such that \( x_2 \) is the speaker[6], \( t_1 \) precedes the speech time \( t_0 \) [7], \( e_1 \) is an event of \( x_2 \)’s coming across \( x_1 \) [8], and the time of \( e_1 \) is included in \( t_1 \) [9].

Fuji’s double-QR analysis provides a more explanatory account of the IHRC construction than Kuroda’s and Y. Kim’s analyses. First, it derives, rather than stipulates, the effects of the Simultaneity Condition posited in Kuroda’s analysis by treating the IHRC + no (or kes) string as a type of temporal quantifier phrase that is headed by an operator-like element no (or kes).

Second, by motivating an LF-raising of an IHRC, it accounts for why an IHRC + no string bears a “tight” semantic relation to the embedding clause even though it is located inside a noun phrase that is selected by the embedding predicate. This is because the string has the semantics of a temporal adverbial modifier and hence restricts the time of the event described by the embedding clause, just as an adjoined temporal modifier such as as soon as would.

Third, this analysis explains why the IHRC construction, but not the EHRC construction, is subject to the Precedence Adjacency Condition. This is because only the former involves the grammatical element no (or kes in Korean),
which links the embedded clause’s content to the embedding clause’s content by establishing a temporal precedence and adjacency relation between them.

Finally, Fuji’s analysis provides a formal tool with which to predict the acceptability of sentences instantiating the IHRC construction in Japanese and, by extension, in Korean. More concretely, it offers a relatively principled way of accounting for why the grammatical aspect of the embedded clause affects the interpretability of the whole sentence. To see this, compare (24) and (25), which are identical except for the aspect of the embedded clauses.

(24) *John-wa  kesa  [[Mary-ga kinoo  ringo-o
J.-Top  this.morning [[M.-Nom yesterday  apple-Acc
sara-no  ue-ni  oita-∅]  no]-o  totta.
sara-no  ue-ni  oita-∅]  no]-o  totta.
plate-Gen  top-on  put-Rel]  Det]-Acc  picked.up

Intended: ‘Mary put an apple on a plate yesterday and after that John picked it up this morning.’
‘Mary had put an apple on a plate yesterday and after that John picked it up this morning.’

To my knowledge, the contrast between sentences like (24) and (25) was noted first by Kuroda (1976-77, 1992: chapter 3). According to Kuroda, (25) is judged acceptable because we can assign a “purposive” relation to the two events expressed by the embedded and the matrix clauses by interpreting the sentence as something like ‘Mary put the apple on a plate with the awareness that the effect of her act would later be beneficial for John in some way or other.’ (24) is judged unacceptable, by contrast, because no such purposive relation can be assigned to the embedded clause’s content with respect to the matrix clause’s content. This explanation sounds appealing on an intuitive level, but it does not generalize to other cases. So, from a theoretical point of view, it is not fully satisfactory.

According to Fuji, the contrast between the two sentences arises because the embedded clauses have a different tense/aspect. The embedded tense/aspect of (24) is simple past and hence the embedded clause describes a past event which does not temporally adjoin to the event described by the matrix clause. On the
other hand, the tense/aspect of (26) is pluperfect (although he did not use this term) and thus the embedded clause describes a result state in the sense of Kamp and Reyle (1993), which temporally precedes and adjoins to the matrix clause’s event time. This is depicted in (26), where $e_{10}$ refers to the event of Mary putting the apple on a plate, $e_{20}$ refers to the result state of the apple being on the plate, and $e_1$ refers to the event of John picking up the apple from the plate.

\[(26) \text{ Temporal relation between the events described by (25)}\]

\begin{center}
\begin{tikzpicture}
\node at (0,0) {\text{T(e}_{10}\text{)}};
\node at (2,0) {\text{T(e}_{20}\text{)}};
\node at (4,0) {\text{T(e}_{1}\text{)}};
\node at (-1,0) {t_{10}};
\node at (1,0) {t_{1}};
\node at (3,0) {t_{0}};
\node at (-1,-0.5) {t_{10}};
\node at (1,-0.5) {t_{1}};
\node at (3,-0.5) {t_{0}};
\node at (-1,-1) {(yesterday)};
\node at (1,-1) {(this morning)};
\end{tikzpicture}
\end{center}

(Fuji 1998: (21b))

Given these merits, there is no doubt that Fuji’s formal semantic analysis of the IHRC construction is a promising line to pursue. However, there are still at least two problems with this analysis. One is that it assigns too specific interpretations to IHRCs with respect to their embedding clauses’ contents, namely, a temporal precedence and adjacency relation and, consequently, it
cannot readily deal with cases where the embedded clause does not necessarily receive such an interpretation. To illustrate, consider (27-29).

(27) precedence without immediate adjacency:


make-Prf]-Rel kes]-Acc \underline{today} drink-Pst-Decl

‘Mary made liquor \underline{ten years ago} and John drank it \underline{today}.’

(28) causation without temporal adjacency:

John-un [[Bill-i \textit{cinancwu-ey} kesionmal-ul J.-Top \textit{last week} lie-Acc ha-∅-n kes]-ul \textbf{onul} yatanchi-ess-ta.

do-Prf]-Rel kes]-Acc \underline{today} scold-Pst-Decl.

‘Bill told a lie \underline{last week} and John scolded him for that \underline{today}.’
(29) concession with temporal adjacency being irrelevant:

John-un [[Bill-i yelpen-ina kesicmal-ul
J.-Top [[B.-Nom tentimes-as many as lie-Acc
ha-∅]-n kes]-ul yatanchi-ci ahn-ess-ta.
do-Prf]-Rel kes]-Acc scold-ci Neg-Pst-Decl

‘Bill told a lie as many as ten times and yet John didn’t scold him.’

Sentences (27) and (28) pose a similar problem for Fuji’s analysis, as they are both judged interpretable, despite the fact that there is a long interval between the events described by the embedded and the matrix clauses. Sentence (27) presents yet another problem, which is shared by (29). Here, the embedded clause receives a causal or a concessive interpretation with respect to the matrix clause’s content but Fuji’s analysis has little to say about such cases.

The existence of sentences like (27-29) suggests that the relation that can hold between the two events described by the embedded and the embedding clauses of the IHRC construction cannot be reduced to a temporal precedence and adjacency relation. Therefore, we need a more flexible semantic analysis of the IHRC construction which captures the interpretive variability of sentences depending on the discourse context, the embedded predicate’s aspeectual properties, and the matrix predicate’s semantics.
The other problem with Fuji’s analysis concerns the relation between the Co-locationality Condition and the PAC. Under this analysis, it is simply assumed that the effects of the former can be treated as side-effects of the latter. But there are cases where a sentence is judged acceptable even though only one of the two conditions is satisfied. To see this, consider (30) and (31). Here, the Co-locationality Condition is violated and yet the sentences are nonetheless grammatical.

(30) **Context:** A thief broke into a bank and stole money. Then he rapidly left the bank and went to the nearby park. But the police were already waiting for him in the park. So the thief got arrested immediately after he got to the park.

Kyengchal-un   [[totwuk-i unhayng-ese ton-ul
Police-Top      [[thief-Nom bank-Loc money-Acc
hwumchi-∅]-n kes]-ul kongwon-ese chephoha-ess-ta.
steal-Prf]-Rel   kes]-Acc park-Loc arrest-Pst-Decl

‘The thief stole money at the bank and the police caught him in the nearby park.’
(31) Context: John has a teenaged daughter named Mary. Mary has this bad habit of shoplifting. One day John went to the mall with Mary and he happened to spot her stealing a doll at the shop. But he didn’t scold her on the spot so that she won’t feel humiliated in public.

John-un [Mary-ka *sangcem-eyse* inhyeng-ul hwumchi-∅]-n
J.-Top [M.-Nom *store-Loc* doll-Acc steal-Prf]-Rel
kes-ul *cip-eyse* yatanchi-ess-ta.
kes]-Acc *house-Loc* scold-Pst-Decl

‘Mary stole a doll at the store and John scolded Mary at home.’

The interpretability of these sentences clearly shows that the Co-locationality Condition cannot be considered a mere side-effect of the PAC. It also makes us wonder whether the two conditions can ever be collapsed into one and, if not, what the precise relation between them is.

2.5 Summary

In this section, I have reviewed three analyses that aim to account for what regulates the interpretability of the IHRC construction, namely, Kuroda 1976-77, Y. Kim, and Fuji 1998. We have seen that each of these analyses offers important insights into the phenomenon. Kuroda’s analysis suggests that what is at the heart
of determining the interpretability of sentences instantiating the IHRC construction is whether the two events described by the embedded clause and the embedding clause form a superordinate event. Y. Kim’s analysis demonstrates that the interpretability of sentences is affected not merely by pragmatic factors but also by semantic factors such as the lexical aspect of the embedded predicate. Finally, Fuji’s analysis derives some of the effects of the Relevancy Condition in a compositional manner by treating the morpheme no (or kes) as a temporal operator that connects the embedded clause’s content to the embedding clause’s content. It also shows that the grammatical aspect of the embedded clause affects the interpretability of sentences.

We have also seen that each of the three analyses leaves several significant questions unanswered, which can be summarized as follows:

(i) Why is the interpretability of sentences affected by both pragmatic factors and grammatical factors?

(ii) Why are IHRCs exempt from any kind of constraint when they are embedded under ‘praise’ or ‘scold’ type verbs?

(iii) What is the range of possible interpretations for an IHRC? Can they be classified in any systematic manner?

(iv) When do non-temporal interpretations become available for an IHRC?
When can the three sub-conditions of the Relevancy Condition override each other and why?

In the next section, I develop a new analysis that attempts to answer these questions.

3 A new analysis

I would like to argue that the pragmatic condition that has been assumed to hold for the IHRC construction is essentially about ensuring that the embedded clause’s content is either temporally or inferentially related to the embedding clause’s content. By a temporal relation, I mean a temporal intersection relation; by an inferential relation, I mean a cause-effect or a concessive relation. I further argue that the construction is subject to such a condition because it has a complex clause structure wherein one clause is subordinate to another, despite the absence of an overt connective. This means that, unlike Fuji (1998), I do not treat no and kes as disguised temporal operators. Instead, I follow Hoshi (1995), Shimoyama (1999), and M.-J. Kim (2005) and treat them as instantiations of E-type anaphora, whose descriptive content is provided by the head noun of an IHRC.

The proposed view on the pragmatic condition on the IHRC construction draws on Kuroda’s insight that what is at stake in interpreting the IHRC construction is to ensure that the two events described by the embedded and the
embedding clauses form a superordinate event in the physical domain or in the cognitive domain of a relevant individual. Under the present analysis, when the two events are temporally related, they form a superordinate event in the physical domain, and when they are inferentially related, they form a superordinate event in the cognitive domain.

Below, I spell out this proposal. For convenience, I will call it a novel interpretability condition on the IHRC construction and illustrate its effects. But this should not be taken as an attempt to impose a new condition on the construction; rather, it should be taken as an attempt to propose a valid descriptive generalization that can serve as a basis for a more formal semantic and pragmatic treatment of the construction in the future.

3.1 A novel interpretability condition on the IHRC construction

I propose (32) as a more factually accurate rendition of the Relevancy Condition and its variants, namely, the Revised Relevancy Condition and the Precedence and Adjacency Condition. The new condition has two sub-conditions and postulating the two sub-conditions has an effect of classifying IHRCs into two types, namely, the temporal type and the inferential type. We will see below that this two-way typology of IHRCs encompasses all of the apparent other types of IHRCs and is based upon truth-conditional differences between temporal IHRCs and inferential IHRCs.
A novel interpretability condition on the IHRC construction

Sentences that embed IHRCs in Korean (and in Japanese) can be interpretable iff either a temporal or an inferential link can be readily established between the embedded clause’s content and the embedding clause’s content.

a. A temporal link is established iff (i) the embedded clause describes a temporary state that holds at the time of the event described by the embedding clause, (ii) the semantic head of the IHRC is an argument of the embedded predicate, and (iii) the intended semantic head of the IHRC is in this state.

b. An inferential link is established iff (i) the embedded clause’s content stands in either a cause-effect or a concessive relation to the embedding clause’s content and (ii) the semantic head of the IHRC is an argument of the embedded predicate.

If a sentence embedding an IHRC satisfies (32a), then the IHRC will be classified as temporal. That is, it will be interpreted like a ‘while’ clause that restricts the content of the embedding clause. If a sentence embedding an IHRC satisfies (32b), then the IHRC will be classified as inferential. This means that it will be interpreted like a ‘because’ clause or an ‘although’ clause that modifies
the embedding clause. Given this classification, it may appear that a temporal IHRC and an inferential IHRC differ from each other only in their interpretation. According to (32), however, there is another important difference between them: while the head noun of a temporal IHRC has to receive a thematic role from the embedded predicate and also be in a temporary state that is described by the embedded clause, it suffices that the head noun of an inferential IHRC receives a thematic role from the embedded predicate.\footnote{Shimoyama (2002) also observes that the intended head noun of Japanese IHRCs must bear a thematic role that is assigned by the embedded predicate (p. 143). But she does not point out that the semantic head of an IHRC can vary according to whether it receives a temporal interpretation or an inferential interpretation.}

In the subsequent sections, I show more in detail how temporal IHRCs and inferential IHRCs are interpreted. In so doing, I account for why both pragmatic and semantic factors play a role in determining the acceptability of sentences instantiating the IHRC construction.

3.2 The behavior of temporal IHRCs

According to (32), for an IHRC to receive a temporal interpretation, it is crucial that it embeds a temporary state description. Since embedding a temporary state description is such an important requirement for a temporal IHRC, I would like to begin this by outlining what I take to be temporary state descriptions.
3.2.1 What describes temporary states?

I assume that there are two types of temporary states, (i) lexical and (ii) grammatical, and they hold true of different types of sentences.

Lexical states are assumed to be described by stage-level intransitive predicates in the sense of Carlson (1977) such as *sulphu*- ‘feel/be sad’ and *paykophu*- ‘feel/be hungry,’ which are defined as describing spatio-temporal slices of individuals.\(^{10}\) It is further assumed that what they describe holds true of their highest arguments. For instance, the predicate *sulphu*- ‘feel/be sad’ assigns two thematic roles, theme and experiencer, but its denotation holds true of the experiencer, which is the higher argument between the two and hence is the highest argument of the predicate.

Grammatical states are described by aspect phrases. According to Parsons (1990), progressive sentences such as *John is throwing a ball* describe *in-progress states* and perfect sentences with telic predicates such as *John has thrown a ball onto the roof* describe *target states*. In-progress states hold true while the events

\(^{10}\) When the predicate of the embedded clause of a sentence instantiating the IHRC construction is a stage-level verb that is also transitive, then the sentence will be interpretable only when the embedded clause has progressive aspect and hence it describes an in-progress state or it has perfect aspect and hence it describes a target state of the direct object. Since I treat sentences whose embedded clauses have progressive aspect as describing grammatically temporary states, I will treat cases where the embedded predicate is a transitive verb separately from cases where it is an intransitive verb.
described by the sentential predicates are in progress. Target states begin to hold immediately after the event described by the sentence has culminated. Parsons does not discuss of whom in-progress states hold true. But I posit that they hold true of every individual that participates in the event described by the sentence, because when an event is in progress, every event participant presumably undergoes certain developmental stages. When it comes to target states, Parsons posits that they describe the state of the direct object, not the state of the agentive argument, after the event described by the sentence has culminated.\footnote{Kamp and Reyle (1993) call this state a result state but I adopt Parsons’ terminology here.} For instance, the sentence *John has thrown a ball onto the roof* describes the state of the ball after the event of John’s throwing the ball has culminated, namely, its being on the roof. This state is considered temporary because it ceases to hold when the ball is removed from the roof (Parsons 1990: 234-5).

The properties of these three different types of temporary states are summarized in Table 1.
Table 1. The taxonomy of states

<table>
<thead>
<tr>
<th>STATE</th>
<th>PROPERTIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td></td>
</tr>
<tr>
<td>Stage of an</td>
<td>Denoted by stage-level intransitive predicates: e.g., <em>be</em></td>
</tr>
<tr>
<td>individual</td>
<td><em>hungry.</em></td>
</tr>
<tr>
<td></td>
<td>Attributes a property to the highest argument of the predicate.</td>
</tr>
<tr>
<td></td>
<td>Holds temporarily during a contextually salient interval.</td>
</tr>
<tr>
<td>In-progress</td>
<td>Arises from a progressive sentence: e.g., <em>Mary is running.</em></td>
</tr>
<tr>
<td>state</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Holds true of all individuals that participate in the ongoing event described by the sentence.</td>
</tr>
<tr>
<td></td>
<td>Holds as long as the event is in progress.</td>
</tr>
<tr>
<td>Target-state</td>
<td>Arises from a perfect sentence with a telic predicate: e.g., <em>Mary has thrown a ball onto the roof.</em></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Holds true of an internal argument or incremental theme of the event described by the sentence.</td>
</tr>
<tr>
<td></td>
<td>Holds temporarily after the culmination of the event.</td>
</tr>
</tbody>
</table>
3.1.2 Illustration

When the embedded clause contains a stative stage-level predicate, the sentence will be interpretable as long as the semantic head of the IHRC has the property denoted by the embedded predicate, because it will meet the condition (32a). This is borne out, as illustrated by (33). In this sentence, the embedded predicate wuwulha ‘feel depressed’ is a stative stage-level predicate and the semantic head of the IHRC Mary is the highest argument of this predicate. The embedded clause describes a temporary state of Mary and this state holds at the time of the embedding event. Hence the sentence is predicted to be interpretable.

(33) John-un Mary-ka wuwulha-un kes-ul
     J.-Top M.-Nom feel.depressed-Rel kes-Acc
tallayssta.

comforted

‘Mary felt depressed and John comforted her.’

When the embedded clause describes an in-progress state, the sentence is predicted to be interpretable regardless of the semantic head of the IHRC, as long as it bears a thematic role in the eventuality described by the embedded clause. In fact, the semantic head can even be a plural individual that consists of more than one event participant, as illustrated by (34). As the English translations show, this
sentence can receive as many as three readings depending on the discourse context.

(34) **Context:** Sophie is a cat that likes to play with dolls but her owner John doesn’t like it when she does that.

```plaintext
John-un [[Sophie-ka inhyeng-ul halwu congil
J.-Top [[S.-Nom doll-Acc day long
kaci-ko no-n]-un kes]-ul nayta peliessta.
```

have-Comp `play-Imprf]-Rel kes]-Acc took it and threw away.

‘Sophie was playing with a doll and John threw it/ her/ them away.’

The availability of the plural individual reading for (34), where `kes` refers to both Sophie and the doll, is evidenced by the fact that a floated quantifier `twul ta` ‘both’ can be inserted into the sentence, as shown in (35).
It is important to note that when the embedded clause’s aspect is changed to perfective, the interpretability of the sentence degrades remarkably, as shown in (36).

Intended: ‘Sophie played with a doll and John threw it away.’
The above sentence is not so good because the embedded sentence does not describe a temporary state that holds at the time of the embedded event and hence the IHRC cannot receive a temporal interpretation. Given this, the only way to make sense of the sentence is to assign an inferential interpretation to the IHRC. But such an interpretation is not readily available in a neutral context. The sentence is judged only marginally acceptable even if we imagine that it was uttered in a context where John got upset with Sophie because she played with a doll all day long, so he did something to punish her. This suggests that even though the discourse context may affect the interpretability of sentences instantiating the IHRC construction, it only has a limited effect. We will come back to this topic in the next section.

Let us now turn to cases where the embedded clause describes a target state. According to the proposed generalization, when the embedded clause describes a target state, the sentence is predicted to be interpretable only if the head noun of the IHRC is the direct object of the embedded predicate (unless the IHRC can readily receive an inferential interpretation). We can illustrate such a case by reconsidering (25), which is a Japanese sentence taken from Fuji 1998. In this sentence, ringo ‘apple’ is the direct object of the embedded clause and since the embedded predicate is telic and pluperfect, the embedded clause is assumed to describe a target state of the apple after the culmination of the event in which Mary put it on a plate. Since the intended head noun of the IHRC is ringo ‘apple’,
and it is in a temporary state that holds at the time of the embedded event, the sentence is predicted to be acceptable.

(25) John-wa kesa [[Mary-ga kinoo ringo-o
J.-Top this.morning [[M.-Nom yesterday apple-Acc
sara-no ue-ni oite-oita] no]-o totta.
plate-Gen top-On put-Prf] Det]-Acc picked.up

‘Mary had put an apple on a plate yesterday and after that John picked it up this morning.’

We obtain an identical pattern with the corresponding Korean sentence, as illustrated by (37).

(37) John-un onul achim [[Mary-ka ece
J.-Top this.morning [[M.-Nom yesterday
sakwa-lul cepshi-ey noh-a twu-∅]-un
apple-Acc plate-Loc put-Comp Aux-Prf]-Acc
kes-ul cip-e tullessta.
kes-Acc pick-Comp carried

‘Mary had put an apple on a plate yesterday and after that John picked it up this morning.’
It is important to note that, given the descriptive generalization (32), (37), and also (25), would be judged ungrammatical if the intended head noun is Mary and Mary is taken to be the name of a cat. This is because, being the agent of the event described by the embedded clause, Mary is not in a target state that holds at the time of the embedding event. This prediction is borne out, as the ungrammaticality of (38) shows.

(38) *John-un onul achim [[Mary-ka ece J.-Top this morning [[M.-Nom yesterday sakwa-lul cepshi-ey noh-a twu-∅]-un kes-ul apple-Acc plate-Loc put-Comp Aux-Prf]-Acc kes-Acc cip-e tullessta.
pick-Comp carried

‘Mary had put an apple on a plate yesterday and John picked her up this morning (from wherever she was).’

The proposed analysis can readily account for why sentences are judged acceptable when the embedded sentence’s content is linked to the embedding clause’s content via a resultant theme in the sense of Y.-B. Kim (2002). As mentioned above, a resultant theme is defined as an entity in a beginning state that results from the culmination of the event described by the embedded clause (Y.
Kim 2002: 556-7). Under our analysis, what is defined as a resultant theme by Y.-B. Kim is defined as an incremental theme that is in a target state. Hence any sentence whose embedded event contains a resultant theme is predicted to be judged interpretable.

We can extend this analysis to so-called change relatives. Change relatives are called as such because they describe the change of a state in an object. They have been treated separately from IHRCs in the literature because they do not contain an overt NP that is interpreted as their head noun (Tonosaki 1993, Kitagawa 2005). To illustrate, take (39) and (40). According to our intuitions, what John ate in the events described by these sentences are dried persimmons and dried fish, respectively. But the embedded clauses of these sentences do not contain the NPs that refer to them. Notice that the NPs *hongsi* and *nal sayngsen* cannot be the semantic head noun, since they mean ‘very ripe and soft red persimmon’ and ‘raw fish,’ respectively.

(39) John-un [[Mary-ka *hongsi*-lul mal-li-∅]-n
J.-Top [[M.-Nom **ripe.persimmon**-Acc dried-Cau-Prf]-Rel
kes]-ul mekessta.
kes]-Acc ate
‘Mary dried a ripe persimmon and John ate it (= the dried persimmon).’
In light of the proposed analysis, this seemingly peculiar property of change relatives is no longer peculiar, however, because sentences (39) and (40), in fact, perfectly fit the descriptive generalization offered in (32): their embedded clauses instantiate the causative-inchoative construction in which the verbs are derived from related adjectives with the “cause to become ADJ” meaning (Parsons 1990: 120) and the semantic head nouns of the IHRCs bear the role of an incremental theme that is in a state that results from the culmination of the event described by the embedded clause. This analysis is more formally represented in (41) and (42), in which $e$ ranges over events and $s$ ranges over states and $Cul$ is shorthand for ‘culminates.’

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The highlighted parts correspond to the incremental themes.

---

12 These logical structures are based on Parsons’ (1990) a treatment of causative-inchoatives (pp. 121-123). See also Dowty (1979) for a similar treatment of causatives.
(41) The logical structure of the embedded clause of (39):
\[
\exists e [\text{Cul}(e) \land \text{dry}(e) \land \text{Agent}(\text{Mary})(e) \land \exists e' \exists x [\text{Cul}(e') \land \\
\text{Theme}(x)(e) \land \text{ripe_persimmon}(x) \land \text{CAUSE}(e, e') \land \exists s [\text{Being-dried}(s) \land \text{Theme}(x)(s) \land \text{Hold}(s) \land \text{BECOME}(e', s)]]]
\]

(42) The logical structure of the embedded clause of (40):
\[
\exists e [\text{Cul}(e) \land \text{cook}(e) \land \text{Agent}(\text{Mary})(e) \land \exists e' \exists x [\text{Cul}(e') \land \\
\text{Theme}(x)(e) \land \text{raw_fish}(x) \land \text{CAUSE}(e, e') \land \exists s [\text{Being-cooked}(s) \land \\
\text{Theme}(x)(s) \land \text{Hold}(s) \land \text{BECOME}(e', s)]]]
\]

Given these logical structures, we can conclude that change relatives are, in fact, a sub-type of IHRCs and hence there is no need to put them under a different category.

3.2 The behavior of inferential IHRCs

Let us now turn to examining how the proposed condition (32b) captures the way in which inferential IHRCs are interpreted. But let me first spell out how inferential relations are established between the embedded clause and the embedding clause.
3.2.1 How inferential relations are established

As mentioned above, I posit that there are two types of inferential relations, a cause-effect relation and a concessive relation. A cause-effect relation can be most readily inferred to hold between the contents of the embedded clause and the embedding clause when the embedding predicate inherently carries ‘a V-ed X for doing Y’ kind of interpretation. This explains why sentences tend to be judged acceptable when the embedding predicate is a ‘praise/scold’ type. This relation can also be assigned when the embedded clause’s content is judged to provide a direct reason for the embedding clause’s content. On the other hand, a concessive relation can be established when there is some sort of contrast between the contents of the embedded clause and the embedding clause or the embedding clause’s content comes as a surprise, given the embedded clause’s content.

Under the proposed analysis, a temporal link is established by grammatical components such as the lexical and grammatical aspect of the embedded predicate, whereas an inferential link is established by the combination of semantic factors and pragmatic factors such as the lexical semantics of the embedding predicate’s semantics, the discourse context, and the discourse participants’ world knowledge. This accounts for why there are cases in which sentences embedding IHRCs are judged fine even though there is no temporal intersection or immediate temporal adjacency holding between the contents of the embedded clause and the embedding clause, as illustrated in (27-29). This is
because, in such cases, language users are likely to accommodate by assigning an inferential relation between the contents of the embedded and the embedding clauses such as a cause-effect and a concession relation.

3.2.2 Illustration

To see how a cause-effect relation is assigned to the contents of the embedded clause and the embedding clause, respectively, consider (43-45). Here, the embedding predicates are ‘praise’-type and hence each sentence can readily receive a ‘V-ed X for doing Y’ kind of interpretation. For this reason, the sentences are judged grammatical despite the fact that there is no temporal intersection between the contents of the two clauses, as in (43-44), and the embedded clause contains an individual-level predicate, as in (45).

(43) John-un Bill-i cinancwu-ey kesicmal-ul
    J.-Top B.-Nom last week lie-Acc
    ha-∅-n kes-ul onul yatanchi-ess-ta.
    do-Prf-Rel kes-Acc today scold-Pst-Decl

‘Bill told a lie last week and John scolded him for that today.’
(44) John-un Mary-ka wuntongcang-ul yel-pen
    J.-Top M.-Nom playground-Acc ten-times
    talli-∅-n kes-ul sang-ul cwu-ess-ta.
run-Prf-Rel kes-Acc prize-Acc give-Pst-Decl

‘Mary ran on the playground ten times and John awarded her for that.’

(45) John-un Mary-ka yengliha-∅-n kes-ul
    J.-Top M.-Nom smart-Imprf-Rel kes-Acc
    sikihay-ss-ta.
envy-Pst-Decl

‘Mary is smart and John envied her for that.’

Note that these sentences can be uninterpretable if we change the embedding predicates to something that does not readily induce a cause-effect relation, as illustrated in (46-48). Unlike their counterparts in (43-45), the embedding predicates of these sentences do not inherently carry a ‘V-ed X for
doing Y’ interpretation and, consequently, the sentences are not judged acceptable.13

The proposed analysis predicts that if the embedding predicate is a ‘praise’ or ‘scold’ type, then the sentence will be interpretable regardless of the embedded clause’s content. But, as Yong-Beom Kim points out (personal communication), when the embedded clause contains the remote past marker –te, the sentence cannot be judged acceptable even if it is embedded under a ‘praise’ type verb. To illustrate, consider (i).

(i) *John-un Mary-ka inhyeng-ul (phyensayng-tongan) kaci-ko
   J.-Top M.-Nom doll-Acc (all.her.life-for) carry-Conj
   nol-(ass)-te-n kes-ul yatanchi-ess-ta.
   Play-(Pst)-(Remote.Pst)-Rel kes-Acc scold-Pst-Decl

   Intended: ‘Mary had played with a doll (for her all life) and John scolded her for that.’

The unacceptability of (i) indeed presents a problem to the present analysis (and in fact all existing analyses of the construction). Currently, I do not have a solution to this problem. But I suspect that it may stem from the fact that the presence of –te in the sentence implicates that Mary is no longer alive and hence it will not be possible for John to scold her for some past action done by her. Alternatively, it may be that the tense expressed by –te is too remote a past to be relevant to the embedding clause’s tense. I leave a more thorough investigation of this topic to future research.
The contrast between sentences (43-45) and (46-48) suggests that when there is no temporal link between the embedded clause and the embedding clause,
the embedding predicates’ semantics plays a crucial role in determining the interpretability of sentences. But this does not mean that it is the only determinant that is at work; a cause-effect relation can also be coerced if a linguistic expression that brings out such an effect is added to the embedding clause or the embedded clause. For instance, we can improve upon the acceptability of sentences (46-48) if we add an adjunct to the embedding clause that strongly suggests that the embedded clause’s content was the cause of the adjunct’s content, as shown in (49-51). In (49), Bill’s telling a lie made John almost want to kill him by hitting him so hard.\(^{14}\) In (50), Mary’s running in the playground ten times made John worry that she might be thirsty, so he gave her water. In (51), Mary’s being intelligent made John hate her, so he pinched her to release his anger or hatred.

\[
(49) \quad \text{John-un \quad Bill-i \quad cinancwu-ey \quad kesiwmal-ul} \\
\quad \text{J.-Top \quad B.-Nom \quad last week \quad lie-Acc} \\
\quad \text{ha-Ø-}n \quad \text{kes-ul \quad onul \quad \text{cwuk-tolok \quad ttayliessta.}} \\
\quad \text{do-Prf-Rel \quad kes-Acc \quad today \quad \text{die-so.that \quad hit}} \\
\quad \text{‘Bill told a lie last week and John hit him today so that he would die.’}
\]

\(^{14}\) My apologies for this gruesome example but, unfortunately, it is not so easy to make these points without involving somewhat violent examples.
‘Mary ran on the playground ten times and John gave water to her for fear of her being thirsty.’

‘Mary is smart and John pinched her because he hated her for that.’

Similarly, it is also possible to improve upon the acceptability of a sentence, albeit slightly, by changing the embedded clause’s content in such a way that it gives a stronger motivation for the agent of the embedding event. This is illustrated by (52) and (53). Imagine that the sentences in (52) were uttered in a context where John was upset with Mary, so wanted to do something to hurt her feelings. Interpreted against this background, (52b) is judged better than (52a),

(50) John-un Mary-ka wuntongcang-ul yel-pen
     J.-Top M.-Nom playground-Acc ten-times
     talli-∅-n kes-ul e_i mok-malulkkapoa
     run-Prf-Rel kes-Acc ___ thirsty-for.fear.of
     mwul-ul cwuessta.
     water-Acc gave.

(51) John-un Mary-ka yengliha-∅-n kes-ul e_i
     J.-Top M.-Nom smart-Imprf-Rel kes-Acc ___
     miwe-se kocipessta.
     hate-because pinched.

‘Mary ran on the playground ten times and John gave water to her for fear of her being thirsty.’

‘Mary is smart and John pinched her because he hated her for that.’
because Mary’s cherishing a doll can give John a stronger motivation to throw it away than her liking it just a little. Similarly, if (53) were uttered in a context where a mafia organization wanted to punish one of its members named Sam for some wrong-doing he did. In this context, (53b) would be judged better than (53a), because Sam’s revealing a top secret of the organization could be inferred to give them a stronger motivation to kill him than his revealing merely an ordinary secret.

(52)a.  ??John-un Mary-ka inhyeng-ul akki-n-un
      J.-Top M.-Nom doll-Acc care.for-Imprf-Rel
      kes-ul peliessta.
      kes-Acc threw.away

      Intended: ‘Mary likes a doll and John threw it away.’

b.  (?)John-un Mary-ka inhyeng-ul kkumccikhi-to
      J.-Top M.-Nom doll-Acc intensely-as.much.as
      akki-n-un kes-ul peliessta.
      care.for-Imprf-Rel kes-Acc threw.away

      ‘Mary cherishes a doll very much and John threw it away.’
The pattern that emerges from the above paradigms accords well with Kuroda’s (1976) observation that sentences tend to be judged acceptable if the embedded clause’s content is “motivationally” or “purposively” related to the matrix clause’s content, as we saw above in the contrast between (8) and (9). But we need not write a separate condition such as the purposive condition to capture this, because it falls out rather naturally from the constraint proposed in (32b).

Turning now to illustrate a case where a concessive relation is assigned between the embedded clause’s content and the embedding clause’s content,
consider (54) and (55). Here, given the embedded clause’s content, the embedding clause’s content is a bit unexpected. This is evidenced by the fact that the embedding clause can contain discourse particles such as -eya ‘only’ and -to ‘even’, which convey the speaker’s surprise at the sentence’s content.¹⁵ This rather unexpected content of the embedding clause relative to the content of the embedded clause enables the discourse participants to assign a concessive interpretation to the IHRCs and thereby to accept the sentences as grammatical.

(54) John-un Mary-ka sip-nyen-cen-ey swul-ul  
    J.-Top M.-Nom ten-year-before-Loc liquor-Acc  
    mantul-Ø-un kes-ul onul(-eya) mashi-ess-ta.  
    make-Prf-Rel kes-Acc today(-only) drink-Pst-Decl  

‘Mary made liquor ten years ago and John drank it (only) today.’

(55) John-un Bill-i cinancwu-ey kesicmal-ul ha-Ø-n  
    J.-Top B.-Nom last week-Loc lie-Acc do-Prf-Rel  
    kes-ul yatanchi-ci(-to) ahn-ess-ta.  
    kes-Acc scold-ci(-even) Neg-Pst-Decl  

‘Bill told a lie last week and yet John didn’t (even) scold him.’

¹⁵ Perhaps not surprisingly, the particle -to ‘even’ can also occur as a polarity marker.
3.3 Summary

In this section, I have proposed that what is at the heart of interpreting sentences instantiating the IHRC construction is to establish either a temporal or an inferential link between the contents of the embedded clause and the embedding clause. In so doing, I have suggested that, despite the well-known interpretive variability or indeterminacy of their interpretations, the possible interpretations IHRCs can receive fall into two types, namely, temporal and inferential. A temporal link is established when a set of more or less semantic conditions are met; an inferential link is established when a set of more or less pragmatic conditions are met. This explains why both pragmatic factors and semantic factors seem to play a role in determining the interpretability of sentences instantiating the IHRC construction, as we saw in section 2.

4. Further arguments for the two-way classification of IHRCs

In this section, I provide additional arguments for classifying IHRCs into the temporal type and the inferential type. Furthermore, I show that the interpretive behavior of the IHRC construction parallels, albeit partially, that of the free adjunct construction (and also the non-restrictive RC construction) in English.
4.1 Truth-conditional differences between temporal and inferential IHRCs

A first argument for classifying IHRCs into two types is that there are truth-conditional differences between sentences depending on whether the IHRC instantiates the temporal type or the inferential type. To see this, compare (56) and (57). These two sentences are alike in that they both have a ‘praise’ type verb yatanchi- ‘scold’ occurring as the embedding verb. But they are different from each other in that while the embedded clause of (56) has progressive aspect and hence describes an in-progress state holding at the time of the embedding event, the embedded clause of (57) has perfective aspect with an atelic predicate and hence describes neither an in-progress state nor a target state. Importantly, this aspectual difference gives rise to different interpretive possibilities: as the English translations show, while a causal interpretation is obligatory for the IHRC in (57), it is only optional for the IHRC in (56). That is, whereas (57) can be verified only if John scolded Mary because she watched TV, (56) can be true even if John scolded Mary while she was watching TV, because she did something undesirable, say, fighting with her younger brother Bill.
(56) John-un Mary-ka thelepi-lul po-ko
J.-Top M.-Nom television-Acc watch-Comp
iss-n-un kes-ul yatanchi-ess-ta.
exist-Imprf-Rel kes-Acc scold-Pst-Decl
Ppossible reading 1: ‘Mary was watching television and John scolded her for that.’
Ppossible reading 2: ‘Mary was watching television and John scolded her for doing something else (e.g., for having fought with her brother).’

(57) John-un Mary-ka thelepi-lul po-∅-un kes-ul
J.-Top M.-Nom television-Acc watch-Prf-Rel kes-Acc yatanchi-ess-ta.
scold-Pst-Decl
Possible reading: ‘Mary (had) watched television and John scolded her for that.’
Impossible reading: ‘Mary (had) watched television and John scolded her for something else (e.g., for having fought with her brother).’
Under the present analysis, the contrast between the two sentences is expected for the following reason: in (56), the embedded clause describes a temporary state that holds at the time of the event described by the embedding clause, so the IHRC receives a ‘while’ interpretation. This makes the IHRC interpreted as a circumstantial modifier of the embedding clause, giving the whole sentence interpreted as ‘John scolded Mary for doing something while she was watching TV.’ However, the IHRC can also receive a ‘because’ clause interpretation as well, because the embedding verb is a ‘scold’ type, so an inferential link can be readily established between the contents of the embedded clause and the embedding clause.

By contrast, in the case of (57), the embedded clause does not describe a temporary state that holds at the time of the embedding clause. This eliminates the possibility of establishing a temporal link between the contents of the two clauses. Hence, the only way in which we can interpret the sentence is to assign an inferential relation to the contents of the two clauses. Essentially, this amounts to interpreting the IHRC as a ‘because’ clause, rather than a ‘while’ clause, making the entire sentence interpreted as ‘John scolded Mary because she watched TV.’

16 Chisato Kitagawa informs me that a similar contrast is obtained by Japanese IHRCs as well. For instance, the following two Japanese sentences exhibit the same truth-conditional difference as (56) and (57). I thank him for supplying this information and the data:
(i)  John-wa Mary-ga terebi-o mite i-ru no-o sikat-ta.
   J.-Top M.-Nom TV-Acc watching be-Imprf no-Acc scold-Pst
   Reading 1: ‘Mary was watching television and John scolded her for that.’
   Reading 2: ‘Mary was watching television and John scolded her for doing something else (e.g., for having fought with her brother).’

(ii) John-wa Mary-ga terebi-o mi-ta no-o sikat-ta.
    J.-Top M.-Nom TV-Acc watch-Pst no-Acc scold-Pst
    Possible reading: ‘Mary (had) watched television and John scolded her for that.’
    Impossible reading: ‘Mary (had) watched television and John scolded her for something else (e.g., for having fought with her brother).’

17 Marcel den Dikken has pointed out to me that non-restrictive relative clauses in English and Dutch seem to exhibit a parallel behavior as well. For instance, the two sentences in (i) show the same kind of interpretive differences as (56) and (57).

(i)  a. John scolded Mary, who was watching TV.
     b. John scolded Mary, who had been watching TV.

While (ia) does not necessarily imply that John’s scolding Mary was caused by her watching TV, in (ib), there is an undeniably strong cause-effect relation between the two events. This contrast suggests that, while the non-restrictive relative in (ia) can easily support a ‘while’-type reading, (ib) does not.

In the literature, IHRCs in Korean (and Japanese) have been analyzed as non-restrictive RCs on the basis of the fact that they do not reduce the denotation of the semantic head noun and they
The truth-conditional difference between the two sentences can be further confirmed by the contrast between (58) and (59). Here, a phrase specifying the reason for John scolding Mary is inserted. Notice that, unlike (58), (59) is hard to assign an interpretation to.

(58) John-un Mary-ka thelepi-lul po-ko
      J.-Top M.-Nom television-Acc watch-Comp
      iss-n-un kes-ul Bill-kwa ssawuess-ta-mey
    exist-Imprf-Rel kes-Acc B.-Acc fight-Decl-say
          yatanchi-ess-ta.
scold-Pst-Decl

‘Mary was watching television and John scolded her for having fought with Bill.’

instead tend to modify the event described by the embedding clause (Jung 1995, Shimoyama 1999, C. Kitagawa 2005). Given this non-restrictive RC analysis of IHRCs, the parallel between their interpretive behavior and that of non-restrictive RCs in English does not come as a sheer surprise. Although the parallel merits further investigation, this observation strongly suggests that the IHRC construction in Korean and Japanese is not such an “exotic” construction. It further suggests that there is a systematic correlation between the interpretation of a non-restrictive RC and the aspect of the clause that is embedded within a RC.
4.2 Different behaviors in subordination

There is perhaps a less direct but equally compelling reason for treating temporal IHRCs and inferential IHRCs separately and it comes from the way in which ordinary subordination works. Descriptively speaking, while non-temporary state descriptions can be subordinated to other sentences only when there is an inferential link between them, there is no such restriction on temporary state descriptions; they can bear either an inferential or a temporal relation to the superordinate clause. To illustrate, consider (60-61).

(60) a. *When John is handsome, I feel jealous of him
        b. Because John is handsome, I feel jealous of him.

(61) a. When John left, I cried
        b. Because John left, I cried.
The contrast between (60a) and (61b) shows that a permanent state description ‘John being handsome’ can only be inferentially related to the embedding clause’s content. That is, it can be selected for by because but not by when. On the other hand, the sentences in (61) show that a temporary state description ‘John left’ can be linked to the matrix clause’s content either temporally or inferentially. It is important to note that the difference between these sentences parallels what we just saw in (56) and (57), suggesting that there is reason to treat subordinate clauses differently depending on the type of eventualities they describe.

4.3 Parallels with free adjuncts in English

A third argument for treating temporal IHRCs separately from inferential IHRCs comes from a striking parallel between the IHRC construction and the free adjunct construction in English. The two constructions behave alike in at least two respects.

First, just as the semantic relation between an IHRC and the embedding clause can be inherently indeterminate, the relation between free adjuncts and their superordinate clauses can also vary depending on the discourse context (Kuroda 1976-77, 1992, and Shimoyama 2002: 123-4, fn. 29). To see this, consider the following examples. (What is inside the parentheses is considered a less prominent relation that can hold between the free adjunct and the matrix clause in a neutral context.)
(62) simultaneity (or circumstance)

Walking out of the house, John hit his hand against on the wall.

(63) temporal precedence (or causation)

Having given it full consideration, John did not favor an open convention.

(64) circumstance (or causation)

Listening to the radio, John fell asleep.

(65) concession (or circumstance)

Suffering from a severe cold, John helped other people to move.

The other important parallel between IHRCs and free adjuncts is that they can both be classified into two types based upon the kind of state the embedded clause describes, despite the wide array of interpretations they appear to receive depending on the discourse context. IHRCs can be classified into temporal and inferential types, as we have seen thus far. Similarly, free adjuncts can be classified into weak and strong types, as proposed by Stump (1985). Weak free adjuncts contain stage-level predicates and strong free adjuncts contain individual-level predicates in the sense of Carlson (1977), which are essentially
temporary state descriptions and non-temporary state descriptions, respectively. The two types of free adjuncts exhibit quite different interpretive behaviors. While a weak free adjunct interacts with quantificational elements which occur in the matrix clause, a strong free adjunct does not.

To see how a free adjunct interacts with a modal auxiliary that occurs in the matrix clause, consider (66). Here, the matrix clauses contain would. What is interesting about these sentences is that, while the free adjunct of the (b) sentence is interpreted as an if-conditional and thus serves as the first argument of would, the free adjunct of the (a) sentence does not. Rather, it is interpreted like a because-clause. Since the only difference between the two sentences lies in the free adjuncts’ predicate types, namely, individual-level vs. stage-level, we have reason to treat free adjuncts differently depending on their predicate types.

(66) a. Being a master of disguise, Bill would fool everyone.
   b. Wearing that hat, Bill would fool everyone.

   (Stump 1985: 53, (9); my emphases)

Consider now the sentences in (67). Here, the matrix clauses of both sentences contain the relative frequency adverb (or an adverb of quantification) sometimes but the free adjuncts contain different types of predicates: the one in
(a) contains an individual-level predicate whereas the one in (b) contains a stage-level predicate. Again, an interesting semantic difference emerges which is analogous to what we just saw in (66). While the adjunct of (67b) interacts with the frequency adverb by serving as its restrictor, the adjunct of (67a) does not. This is because it again receives a because-clause-like interpretation.

(67) a. **Being a sailor**, John sometimes smokes a pipe.
   
   b. **Lying on the beach**, John sometimes smokes a pipe.

   (Stump 1985: 185, (241); my emphases)

Finally, consider the sentences in (68). Here, the matrix clauses of both sentences contain no overt quantificational element but the free adjuncts receive rather different interpretations. While the adjunct of (68a) is interpreted like a because-clause, that of (68b) is interpreted like a whenever-clause. This interpretive difference arises because the matrix clauses of these sentences contain an implicit generalization operator and, while the adjunct of the (b) sentence interacts with it, the adjunct of the (a) sentence does not.

(68) a. **Being a businessman**, John smokes cigars.
   
   b. **Lying on the beach**, John smokes cigars.

   (Stump 1985: 191, (294) & (293), respectively; my emphases)
These facts clearly show that there is a systematic difference between free adjuncts describing temporary states and those describing non-temporary states. Furthermore, they suggest that the seemingly peculiar interpretive behavior of the IHRC construction, namely, the correlation between the type of state the embedded clause describes and the interpretation/interpretability of the entire sentence, is not so peculiar after all. Given that there is no genetic link between Korean/Japanese and English, it is plausible that this property is a universal one, which is shared by complex clause constructions in which two event descriptions are connected to each other via some sort of relativization or nominalization, despite the absence of an overt connective.

5 Summary and conclusion

In this paper, I have taken up the question of how grammatical factors and language users’ inferences work together in interpreting sentences instantiating the IHRC construction in Korean (and Japanese). I have shown that the interpretability of such sentences is determined by the combination of three main factors: (i) whether the embedded clause describes a temporary state that holds at the time of the event described by the embedding clause, (ii) what is intended to be the head noun of the IHRC, and (iii) whether a cause-effect or a concessive relation can be readily inferred to hold between the contents of the embedded clause and the embedding clause. The first factor explains why the
lexical aspect and the grammatical aspect of the embedded predicate play a role in interpreting sentences embedding IHRCs. The other two factors account for why the interpretation/interpretability of the IHRC construction is so notoriously discourse-sensitive.

In addition to making these proposals, I have also demonstrated that there is a striking parallel between the IHRC construction and the free adjunct construction in English: in both constructions, the type of state described by the subordinate clause affects the interpretive possibilities of the entire sentence. This parallel suggests that the Relevancy Condition on the IHRC construction is not merely a construction-specific pragmatic condition; it may well be a manifestation of a more universal principle that governs the interpretation of complex clause constructions wherein two event descriptions are integrated with each other in the absence of an overt connective. It is my hope that future research will elucidate the precise nature of this constraint and the compositional process via which two event descriptions form a superordinate event description while bearing either a temporal or an inferential relation to each other.

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