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Towards a Unified Account of Resultative Constructions in Korean

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Abstract

This paper discusses predicative resultative constructions in Korean and argues that they are actually a kind of clausal resultative construction (see the two types of resultatives in Wechsler and Noh, 2001). In particular, I propose the following hypotheses: (i) the resultative predicate, X-*key*, is morpho-syntactically an adverb rather than an adjective, (ii) X-*key* forms a fully saturated clause (i.e., result clause) (sometimes with the predication subject omitted), and (iii) the result clause is a complement of the main verb in a resultative sentence. Based on these properties, a unified analysis of the resultative constructions is formalized in Head-driven Phrase Structure Grammar (HPSG) (Pollard and Sag, 1994; Sag *et al*., 2003).

1 Introduction

This paper discusses what is referred to as predicative resultative constructions in Korean, exemplified in (1a), and argues that they are in fact a kind of clausal resultative construction like (1b) (see the different types of resultatives in Wechsler and Noh, 2001). It is normally understood that in (1a) the resultative predicate *ppalkah-key* 'red-Key' is predicated of the matrix object *mwun-ul* 'door-Acc' in a controlled structure. In (1b), however, the nominative NP *sinpal-i* 'shoes-Nom' and the resultative predicate *talh-key* 'threadbare-Key' constitutes a fully saturated result clause (Wechsler and Noh, 2001: 404). Despite some differences (e.g., (in)transitivity of the verb), these two sentences share the notion of resultative: as a result of the event denoted by the main verb, an argument undergoes a change of state denoted by the result predicate.

(1) a. *ku-ka mwun-ul ppalkah-key*
he-Nom door-Acc red-Key
chilhay-ss-ta
paint-Pst-Dec
'He painted the door red.'
b. *ku-ka* [*sinpal-i talh-key*]
he-Nom shoes-Nom threadbare-Key
talli-ess-ta.
run-Pst-Dec
'He ran so that (his) shoes became threadbare.'

There have been various clausal analyses of Korean resultative expressions such as that in (1a) in the literature (see Shim and den Dikken, 2007; Shibagaki, 2011 for TP adjunct analysis, Son, 2008 for small clause complement analysis, and Nakazawa, 2008 for adverbial clause adjunct account of Japanese resultatives). While I agree with the general idea that the resultative predicate forms a clause, particularly I propose the following hypotheses in this paper: (i) the resultative predicate, X-*key*, is morpho-syntactically an adverb rather than an adjective, (ii) X-*key* forms a fully saturated clause, result clause (sometimes with the predication subject omitted), and (iii) the result clause is a complement of the main verb. A unified analysis of the resultative constructions is then cast in the framework of Head-driven Phrase Structure Grammar (HPSG) (Pollard and Sag, 1994; Sag *et al*., 2003).

2 Adverb vs. adjective

It is generally assumed in the literature that at least some resultative predicates are adjective (see, e.g., Wechsler and Noh, 2001: 420). However, in this section I provide three pieces of evidence supporting the claim that resultative predicates in Korean are adverb, but not adjective.

2.1 Coordination

Coordinated conjuncts are known to basically belong to the same syntactic category and the resultative predicate, Adj(ective)-*key*, [1] can be coordinated with a typical adverb modifying manner of action, as illustrated in (2) (cf. Wechsler and Noh, 2001). When the positions of the conjuncts in (2) are exchanged, the sentences are also grammatical, as expected.

(2) *Tom-i* *changmwun-ul*
Tom-Nom window-Acc
[*ppalkah-key* *kuliko*
red-Key and
chenchenhi / *kupha-key*] *chilhay-ss-ta.*
slowly / urgent-Key paint-Pst-Dec
'Tom slowly/urgently painted the window red.'

This coordination suggests that the resultative predicate is an adverb. Note, however, that according to Wechsler and Noh (2001: 410) a similar coordination like (3) sounds so weird that it is ungrammatical.

(3) ?*Tom-i* *changmwun-ul* [*ppalkah-key*
Tom-Nom window-Acc red-Key
kuliko *wancenhi*] *chilhay-ss-ta*.
and completely paint-Pst-Dec
'Tom completely painted the window red.'

I agree that the sentence in (3) sounds a little awkward, but it is at least marginally acceptable to some native speakers of Korean I consulted with. Based on the minimal pairs between the sentences in (2) and (3), we may hypothesize that the awkwardness of the coordination in (3) is derived from the degree adverb, *wancenhi* 'completely'. The sentence in (3) can have multiple meanings depending on whether the scale related to the degree adverb is the area of the window or the redness: the whole window was painted completely or the window was painted completely red. I do not go into detail about what exactly causes the differences between (2) and (3). What is important here is the fact that generally coordinations of a manner adverb and a resultative predicate, Adj-*key*, are permitted in Korean as in (2).

Some people may say that since many languages allow coordination of unlike categories, the coordination in (2) does not necessarily support the claim that the Adj-*key* is adverb. In fact, as illustrated in (4a), the NP *a Republican* and the AP *proud of it* are coordinated in English even though they belong to different syntactic categories (Beavers and Sag, 2004: 54) and similarly for the Korean coordination in (4b).

(4) a. Jan is [a Republican and proud of it].
b. *ku-nun* [*ttokttokha-ko* (*kuliko*)
he-Top smart-and and
yakwusenswu-i-ta].
baseball.player-Cop-Dec
'He is smart and a baseball player.'

However, it is important to keep in mind that not every unlike categories can be coordinated. Then, we must look into whether typical adverbs can be coordinated with any non-adverb. In (5) the conjuncts are *wh*-words and the coordinations of NP and AdvP are allowed in both English and Korean (see Whitman, 2004).

(5) a. [What and how] did Tom eat?
b. *Tom-i* [*mwues-ul* *kuliko*
Tom-Nom what-Acc and
ettehkey] *mek-ess-ni?*
how eat-Pst-Que
'What and how did Tom eat?'

However, if the conjuncts are not *wh*-word, such a coordination is not permitted in both English and Korean, as illustrated in (6).

(6) a. *Tom ate [the pie and quickly].
b. **Tom-i* [*phai-lul* *kuliko*
Tom-Nom pie-Acc and
chenchenhi] *mek-ess-ta.*
slowly eat-Pst-Dec
(lit.) 'Tom ate the pie and slowly.'

It appears that if adverbs are not *wh*-words, the adverbs can be coordinated only with adverbs. Unless a counterexample to this generalization is found, the coordinations in (2) can be used as

[1] There is an issue about whether lexemes like *ppalkah-* 'red' are adjective or stative verb in Korean (see, e.g., Yeo, 2008). I just assume here that they are adjectives since it seems irrelevant for the problem discussed in this paper. What is important here is which syntactic category resultative predicates (i.e., X-*key*) belong to.

evidence for the claim that the Adj-*key* is syntactically an adverb.

2.2 Modification of degree adverb

The Adj-*key* is parallel to clear adverbials with respect to degree adverb modification. The degree adverb *acwu* 'very' can appear either before or after a predicative adjective which it modifies:

(7) a. *soy-ka* [*acwu mwukep-ta*].
metal-Nom very heavy-Dec
'The metal is very heavy.'
b. *soy-ka* [*mwukep-ta acwu*].
metal-Nom heavy-Dec very
'The metal is very heavy.

Although (7a) is more natural than (7b), (7b) can be also used in a colloquial context. By contrast, when *acwu* 'very' modifies an adverb, it must appear before the adverb:

(8) a. *ku-ka* [*acwu chenchenhi*] *kel-ess-ta.*
he-Nom very slowly walk-Pst-Dec
'He walked very slowly.
b. **ku-ka* [*chenchenhi acwu*] *kel-ess-ta.*
he-Nom very slowly walk-Pst-Dec
(int.) 'He walked very slowly.

Based on this clear syntactic difference between adjective and adverb, we can now test whether the Adj-*key* is really adverb or adjective as follows:

(9) a. *ku-ka soy-lul* [*acwu*
he-Nom metal-Acc very
maykkunha-key] *twutulki-ess-ta*.
smooth-Key hammer-Pst-Dec
'Tom hammered the metal very smooth.'
b. **ku-ka soy-lul* [*maykkunha-key*
he-Nom metal-Acc smooth-Key
acwu] *twutulki-ess-ta*.
very hammer-Pst-Dec
(int.) 'Tom hammered the metal very smooth.'

In (9b) the degree adverb *acwu* 'very' cannot appear after the resultative predicate. This common property shared by manner adverb and Adj-*key* supports the claim that the Adj-*key* of a resultative construction is syntactically an adverb rather than adjective.

2.3 Morphological property

The topic marker -(*n*)*un* and delimiters like -*man* 'only' cannot be attached to predicative adjectives, but to adverbs, as shown in the following:

(10) a. *ku cha-ka mwukep*(**-un*/**-man*)*-ta*.
the car-Nom heavy(-Top/-only)-Dec
'The car is heavy.'
b. *ku-ka pwucilenhi*(*-nun*/*-man*)
he-Nom diligently(-Top/-only)
talli-ess-ta.
run-Pst-Dec
'He diligently ran.'

Just like adverbs, the Adj-*key* can have the topic marker or a delimiter:

(11) *ku-ka mwun-ul kem-key*(*-nun/-man*)
he-Nom door-Acc black-Key(-Top/-only)
chilhay-ss-ta.
paint-Pst-Dec
'He painted the door black.'

These morphological properties also indicate that the Adj-*key* is morpho-syntactically an adverb.

2.4 Participant-oriented adverb

If the resultative predicates are adverb rather than adjective, we should also claim that some adverbs take their predication subject to form a clause, which looks unusual. However, this unusualness does not constitute a convincing counter-argument to the adverbial analysis of resultative predicates. The Adj-*key* seems to belong to what is known as participant-oriented adverb (see Geuder, 2000; Himmelmann and Schultze-Brendt, 2005; Shibagaki, 2011). Unlike pure manner adverbs (*slowly* or *quickly*) describing how an action is performed, participant-oriented adverb (e.g., the 'resultative adverb' *heavily* in *They loaded the cart heavily* from Geuder, 2000: 69) characterizes an argument participant. Consider the following contrast:

(12) a. Tom loaded the cart heavily. So the cart became heavy. / #That is, the action of loading the cart was heavy.
b. Tom loaded the cart slowly. That is, the action of loading the cart was slow. / #So the cart became slow.

In (12a) *heavily* does not modify the action of loading the cart, but it describes a result state of the cart. In (12b) *slowly* modifies the action of loading the cart, but it does not describe a result state of the cart. Just like the English participant-oriented adverbs, the Adj-*key* of a resultative construction adds more information to an argument rather than to an action. Summarizing, we can say that the Adj-*key* serves as a resultative predicate characterizing a result state normally associated with the referent of the matrix object, albeit the Adj-*key* is morpho-syntactically an adverb like English resultative adverbs.

3 *Pro*-dropped clause vs. control

In this section I support the view that the Adj-*key* in (1a) forms a *pro*-dropped clause (a fully saturated clause), rather than a controlled structure (see, e.g., Shibagaki, 2011), with further evidence. In (13) the nominative NP *pancwuk-i* 'dough-Nom' appears and this functions as the predication subject of the resultative predicate, *napcakha-key* 'flat-Key' (cf. Wechsler and Noh, 2001).

(13) ?*Luke-ka pancwuk-ul pancwuk-i*
Luke-Nom dough-Acc dough-Nom
napcakha-key twutulki-ess-ta.
flat-Key pound-Pst-Dec
'Luke pounded the dough so that it became flat.'

Although the sentence in (13) sounds a little awkward, this awkwardness can be ascribed to the two contiguous NPs referring to the same referent. When the two NPs are separated as in (14a), the sentence sounds much better. In addition, when the accusative object is omitted as in (14b), the sentence sounds fine (see similar examples in Shim and den Dikken, 2007; Shibagaki, 2011), although the sentence only with the accusative NP (*Luke-ka pancwuk-ul napcakha-key twutulki-ess-ta*) is the most natural.

(14) a. *pancwuk-i napcakha-key Luke-ka*
dough-Nom flat-Key Luke-Nom
yelsimhi pancwuk-ul twutulki-ess-ta.
diligently dough-Acc pound-Pst-Dec
'Luke diligently pounded the dough so that it became flat.'

b. *Luke-ka pancwuk-i napcakha-key*
Luke -Nom dough-Nom flat-Key
twutulki-ess-ta.
pound-Pst-Dec
'Luke pounded the dough so that it became flat.'

Furthermore, the honorification marker *-si* (which targets nominative subject, but not accusative object functioning as notional subject) can be attached to a resultative predicate as in (15) (cf. Son, 2008), supporting the view that the nominative predication subject of the resultative predicate is omitted in the sentence.

(15) *nochin-ul pyenanha-si-key*
old.parents-Acc comfortable-Hon-key
pongyang-to mosha-ko...
support-also not.do-and
'I could not even support my old parents so that they were comfortable, and...'
(*Pioneer*, a novel by Kwangswu Lee)

The omitted nominative NP of a resultative construciton is normally interpreted as if it refers to the same referent of the matrix object, as illustrated in some examples above. However, it can also refer to the matrix subject as in (16a) or something not appearing in the sentence as in (16b). The referent of the omitted NP in (16b) is recoverable from the context in which the sentence is uttered.

(16) a. *Luke-ka chelphan-ul himtul-key*
Luke-Nom iron.plate-Acc tired-Key
twutulki-ess-ta.
hammer-Pst-Dec
'Luke hammered the iron plate so that he was tired.'

b. *Luke-ka chelphan-ul sikkulep-key*
Luke-Nom iron.plate-Acc noisy-Key
twultulki-ess-ta.
hammer-Pst-Dec
'Luke hammered the iron plate so that the whole house/the iron plate was noisy.'

In summary, the availability of the nominative predication subject of a resultative predicate supports the claim that the resultative predicate heads a result clause.

4 Complement vs. adjunct

I show in this section that result clause headed by Adj-*key* is a complement of the main verb (cf. Sells, 1996; 1998; Shim and den Dikken, 2007; Shibagaki, 2011). In the following *do-so* test, the Adj-*key* must not appear in the second sentence, suggesting that the Adj-*key* in the first sentence is a complement of the main verb:

(17) *Tom-i ppalkah-key changmwun-ul*
Tom-Nom red-Key window-Acc
chilhay-ss-ta. kuliko Alice-to
paint-Pst-Dec and Alice-also
(**ppalkah-key*) *kulay-ss-ta.*
red-Key do.so-Pst-Dec
'Tom painted a window red. And Alice did so, too.'

Shim and den Dikken (2007) argue that since the Adj-*key* can be "stranded" in an example like (18), it should be an adjunct.

(18) *Bill-i Sarah-lul ttayli-ess-ko*, *na-nun*
Bill-Nom Sarah-Acc hit-Pst-and I-Top
ku-ka aphu-key kulay-ss-ta-ko
he-Nom in.pain-Key do.so-Pst-Comp
sayngkakhay.
think
'Bill hit Sarah, and I think he did so (so that she is) in pain.'

However, since *kulay-* 'do.so' in (18) should correspond to the combination of the object and the verb in the first clause, the grammaticality of the following clause does not necessarily show that the Adj-*key* in the second clause is an adjunct.

Shim and den Dikken (2007) also tries to support the adjunct status of the Adj-*key* with the fact that it can be "iterated" with an adverb as in (19).

(19) *Tom-i changmwun-ul chenchenhi*
Tom-Nom window-Acc slowly
ppalkah-key chilhay-ss-ta.
red-Key paint-Pst-Dec
'Tom slowly painted the window red.'

However, they did not discuss an alternative account: (i) it is possible in (19) that the adverb *chenchenhi* 'slowly' modifies the combination of the Adj-*key* (complement) and the verb (head); the accusative object is also a complement of the verb, but in Korean binary branching (rather than ternary structure) seems to be more plausible due to scrambling (see Kim, 2004), or (ii) in Korean the coordination *kuliko* 'and' can be omitted and it may also be omitted in (19) (compare (19) to (2)). If the Adj-*key* is really adjunct and can be iterated, two Adj-*key* expressions should be able to occur around the verb of a sentence just like the adverbial adjuncts in (20a). But this is not the case as in (20b). This contrast can be accounted for if the Adj-*key* is complement: since the verb requires one Adj-*key* expression as a complement, the two Adj-*key* expressions is not permitted. Note that since the verb in (20b) appears in between the two Adj-*key* expressions, they cannot be coordinated.

(20) a. *Tom-i changmwun-ul chenchenhi*
Tom-Nom window-Acc slowly
takk-ass-ta cosimsulep-key.
clean-Pst-Dec careful-Key
'Tom slowly cleaned the window carefully.'
b. **Tom-i changmwun-ul ppalkah-key*
Tom-Nom window-Acc red-Key
chilhay-ss-ta yeyppu-key.
paint-Pst-Dec beautiful-Key
(int.) 'Tom painted the window red and beautiful.'

Nakazawa (2008) argues that the Japanese resultative predicate would be adjunct, since it can be coordinated with an adverbial adjunct. That is, if the Japanese resultative predicate is assumed to be complement, the coordination of complement and adjunct would cause a theoretical burden. However, we can find other cases where different syntactic functions (complement or adjunct) are coordinated like (21) in Korean (and in other languages such as English, e.g., *How and what does John eat?* from Whitman, 2004: 404).

(21) *Tom-i* [*halwu-tongan kuliko cal*]
Tom-Nom one.day-for and well
cinay-ss-ta.
live-Pst-Dec
(lit.) 'Tom lived well for one day.'

In (21) the temporal adverbial *halwu-tongan* 'for one day' is adjunct, but *cal* 'well' is the

complement of the verb, *cinay-* 'live' (which can be verified by some tests like *do-so* test).[2] Thus this kind of coordination does not pose a serious challenge to the complement status of the Adj-*key* expression, although how to account for such the coordination is an interesting question (see more in Whitman, 2004). Summarizing, the *do-so* test and some syntactic property lead us to conclude that the result clause headed by a resultative predicate should be a complement of the main verb of a resultative construction.

5 Some consequences

If the resultative constructions in Korean are like English clausal resultative constructions in terms of having a result clause, it is expected that they allow various kinds of resultative predicates like English clausal resultatives. In fact, both weak and strong resultatives (see Washio, 1997 for the notions) are allowed in Korean (see also Wechsler and Noh, 2001: 411-412):

(22) *Hank-ka ku soy-lul napcakha-/*
Hank-Nom the metal-Acc flat-/
?yeyppu-/ kil-/ ccalp-/ yalh-/ tukkep-key
beautiful-/ long-/ short-/ thin-/ thick-Key
twutulki-ess-ta.
hammer-Pst-Dec
(lit.) 'Hank hammered the metal flat / beautiful / long / short / thin / thick.'

In (22) when the resultative predicate is, e.g., *napcakha-key* 'flat-Key', the sentence is called weak resultative since hammering the metal is closely related to the flatness of the metal. When the resultative predicate is, e.g., *yeyppu-key* 'beautiful-Key', the sentence is referred to as strong resultative because hammering the metal is not closely related to the beauty of the mental.

[2] An anonymous reviewer pointed out that it is generally assumed that an adverb is not a complement of a verb. However, it is well-known that some adverbs are actually a complement of a verb: e.g., *cal* 'well' is required as the complement of the verb *cinay-* 'live' in Korean and consider the following English sentences, *He is staying *(in a hotel)* and *He loves living *(in a city)*. I believe that the previous "popular" assumption itself does not really constitute a counter-argument to the view that Adj-*key* is a kind of adverbial complement, for which I explicitly provided several pieces of evidence in this paper.

6 Eventive resultative constructions

I show here that the so-called eventive resultatives (see Son, 2008) with V(erb)-*key* are parallel to the stative resultatives with Adj-*key* with respect to the three grammatical properties.

6.1 Adverb

First, V-*key* can be coordinated with manner adverb as in (23).

(23) *ku-ka Jane-ul* [*nemeci-key kuliko*
he-Nom Jane-Acc fall-Key and
ppalli] *mil-ess-ta.*
quickly push-Pst-Dec
'He quickly pushed Jane so that she fell.'

Second, when a degree adverb modifies V-*key*, the adverb cannot appear after it:

(24) a. *ku-ka Jane-ul* [*acwu nemeci-key*]
he-Nom Jane-Acc very fall-Key
mil-ess-ta.
push-Pst-Dec
'He pushed Jane so that she completely fell.'
b. **ku-ka Jane-ul* [*nemeci-key acwu*]
he-Nom Jane-Acc fall-Key very
mil-ess-ta.
push-Pst-Dec
(int.) 'He pushed Jane so that she completely fell.'

Third, the topic marker or delimiters can be attached to V-*key*, as in the following example:

(25) *ku-ka Jane-ul nemeci-key(-nun/-man)*
he-Nom Jane-Acc fall-Key(-Top/-only)
mil-ess-ta.
push-Pst-Dec
'He pushed Jane so that she fell.'

These three properties suggest that the V-*key* also belong to adverb in terms of morpho-syntax just like the Adj-*key*.

6.2 *Pro*-dropped clause

The nominative predication subject of V-*key* can explicitly occur in eventive resultative constructions as follows:

(26) a. *Jane-i nemeci-key ku-ka*
Jane-Acc fall-Key he-Nom
himkkes Jane-ul mil-ess-ta.
forcefully Jane-Acc push-Pst-Dec
'He forcefully pushed Jane so that Jane fell.'
b. *ku-ka Jane-i nemeci-key*
he-Nom Jane-Nom fall-Key
mil-ess-ta.
push-Pst-Dec
'He pushed Jane so that Jane fell.'

The honorification marker *si* can be attached to the V-*key* in (27).

(27) *kunye-ka apeci-lul ilese-si-key*
she-Nom father-Key stand.up-Hon-key
tangki-ess-ta.
pull-Pst-Dec
'She pulled his father so that he stood up.'

These grammatical features indicate that the V-*key* heads the result clause of an eventive resultative construction.

6.3 Complement

In (28a) the V-*key* must not appear with *kulay-ss-ta* 'do.so-Pst-Dec' and in (28b) the two resultative predicates cannot occur around the verb at the same time.

(28) a. *ku-ka Jane-ul ilese-key*
he-Nom Jane-Acc stand.up-Key
tangki-ess-ta. kuliko Sophia-to
pull-Pst-Dec and Sophia-also
(**ilese-key*) *kulay-ss-ta.*
stand.up-Key do.so-Pst-Dec
'He pulled Jane so that Jane stood up. And Sophia did so, too.'
b. **ku-ka Jane-ul ilese-key*
he-Nom Jane-Acc stand.up-Key
tangki-ess-ta talli-key.
pull-Pst-Dec run-Key
(int.) 'He pulled Jane so that Jane stood up and ran.'

If one of the two V-*key* expressions is removed from (28b), the sentence becomes grammatical. In short, the resultative predicates (Adj-*key* and V-*key*) can be analyzed as the head of an adverbial complement clause.

7 An HPSG Formalization

I believe the adverbial complement clause analysis can be expressed in various frameworks. In this paper, HPSG is employed for generation of the Korean resultative constructions.

7.1 Main verb

The verbal lexeme *chilha-2* 'paint' in (29) (which will be used in a resultative construction) can be licensed from the normal transitive verb, *chilha-1* 'paint', by a lexical rule through which a result clause whose FORM value is *key* is added to the ARG(UMENT)-ST(RUCTURE) list of *chilha-1* 'paint' (cf. Lee, 2012).

(29) *chilha-2* 'paint':

$$\begin{bmatrix} \text{PHON} < \textit{chilha}- > \\ \text{ARG-ST} < \text{NP}[\textit{nom}]_i, \begin{bmatrix} \text{FORM } \textit{key} \\ \text{SUBJ} \langle\ \rangle \\ \text{INDEX } s4 \\ \text{RELS} < \begin{bmatrix} \textit{cause_result_rel} \\ \text{SIT } s4 \\ \text{ARG1 } s3 \\ \text{ARG2 } s2 \end{bmatrix}, \ldots > \end{bmatrix}, \text{NP}[\textit{acc}]_j > \\ \text{SEM} \begin{bmatrix} \text{INDEX } s4 \\ \text{RELS} < \begin{bmatrix} \textit{paint_rel} \\ \text{SIT } s3 \\ \text{ARG1 } i \\ \text{ARG2 } j \end{bmatrix} > \end{bmatrix} \end{bmatrix}$$

In (29) the INDEX value (*s4*) of the verb is identified with the INDEX value (*s4*) of the result clause, which guarantees that the INDEX value (*s4*) of the resultative predicate (the head of the result clause) is passed up to the VP of a resultative sentence. Also, the SIT(UATION) value (*s3*) of [*paint_rel*] is identical to the ARG1 value (*s3*) of [*cause_result_rel*]. This means that [*paint_rel*] corresponds to the causing subevent of a causation denoted by [*cause_result_rel*]. I assume that the semantics ([*paint_rel*]) of *chilha-2* 'paint' is the same as that of *chilha-1* 'paint', since a resultative meaning obtains basically due to the addition of a resultative clause.

7.2 Resultative predicate lexical rule

The resultative predicate, Adj-*key*, can be systematically licensed from an adjective lexeme by the lexical rule proposed in (30) below (cf. Lee, 2012; 2014). Since the Adj-*key* (e.g., *ppalkah-key* 'red-Key') is an adverb, it has a verbal expression as its MOD value; this constraint can be inherited from the type, *adv*(*erb*). In addition, the verbal

expression requires an X-*key* expression (result clause) as a complement; this will prevent the Adj-*key* expression from modifying verbs like *chilha-ta-1* 'paint'. The Adj-*key* optionally selects a nominative subject (tagged 2). In semantics, the meaning (tagged 3) of the adjective lexeme becomes the result state in the meaning of the Adj-*key*. Since a transitive verb sentence becomes a resultative construction due to the addition of an Adj-*key* expression, the cause-result meaning (i.e., [*cause_result_rel*]) of the resultative sentence is posited to be in the semantics of the Adj-*key*. Following the causation event structure (e.g., Dowty, 1979), [*become_rel*] is also added to the REL(ATION)S list of the Adj-*key*. I assume, however, that [*cause_result_rel*] is different from CAUSE of a causation event structure: CAUSE represents a direct causation, but [*cause_result_rel*] does not necessarily do so (see the basic semantics of clausal resultatives in Wechsler and Noh, 2001: 402-403).

7.3 Generation of VP

The result clause in (31) below is licensed by the general rule, *hd-subj-ph* (see the grammar rule in Sag *et al*., 2003; Kim, 2004). The result clause has no value for the SUBJ list, which guarantees that the main verb of a resultative construction combines with the result clause. Note that in (29), *chilha-2* 'paint' requires an expression whose FORM value is *key* and whose SUBJ list is empty. When the SUBJ list of the resultative predicate is empty, it forms a *pro*-dropped clause and this clause can also combine with the main verb of a resultative construction.

In (32) below the verb combines with the result clause via *hd-comp-ph* (see the Head-Complement Rule in Sag *et al*., 2003; Kim, 2004). However, the MOD value of the resultative predicate is passed up to the result clause as in (31) due to the Valence Principle (Sag *et al*., 2003: 146) and so the result clause can combine with the verb via *hd-mod-ph* (see the Head-Modifier Rule in Sag *et al*., 2003; Kim, 2004). Then it is possible to overgenerate sentences like (33).

(33) **ku-ka* [*ppalkah-key* [[*mwun-i*
he-Nom red-Key door-Nom
ppalkah-key] *chilhay-ss-ta*]].
red-Key paint-Pst-Dec
(int.) 'He painted the door red.'

In (33) the COMPS value (a result clause) of the verb is passed up to *hd-mod-ph* of the verb and the result clause, and then it combines with another result clause (which in this case is a *pro*-dropped clause) via *hd-comp-ph*. While there seem to be different ways to solve this problem (e.g., positing *hd-comp-mod-ph* using multiple inheritance), I assume here that *hd-mod-ph* is reformulated so as to block the application of *hd-mod-ph* to the combination of the verb and the result clause in (33). It can be formally stated in *hd-mod-ph* using a kind of subtraction operation that a modifier only modifies an expression whose COMPS list does not include an element which modifies that expression. This subtraction operation should be a little different from the one defined in Sag *et al*. (2003: 431); the subtraction here is defined even if an element to be subtracted from a list is not included in the list (like set complementation).

If the VP in (32) combines with other required expressions (e.g., the matrix subject) at the higher level of the syntactic structure, a grammatical resultative sentence can be licensed. Intransitive resultatives like (1b) and eventive resultatives can be generated in much the same way.

8 Conclusion

I have argued that in Korean resultative constructions, (i) X-*key* is a resultative adverb, (ii) X-*key* forms a fully saturated clause, and (iii) the result clause is a complement of the main verb. This adverbial complement clause analysis of the resultatives may be applied to a range of other constructions with Adj-*key* or V-*key* expression (e.g., unaccusative resultative constructions and causative constructions). The resultative predicate in Korean can be X-*tolok* and this seems to have almost the same properties as X-*key*, examination of which is left to future research. In addition, this analysis would provide a basis for a cross-linguistic study of resultative constructions in, for example, Korean, Japanese, and English.

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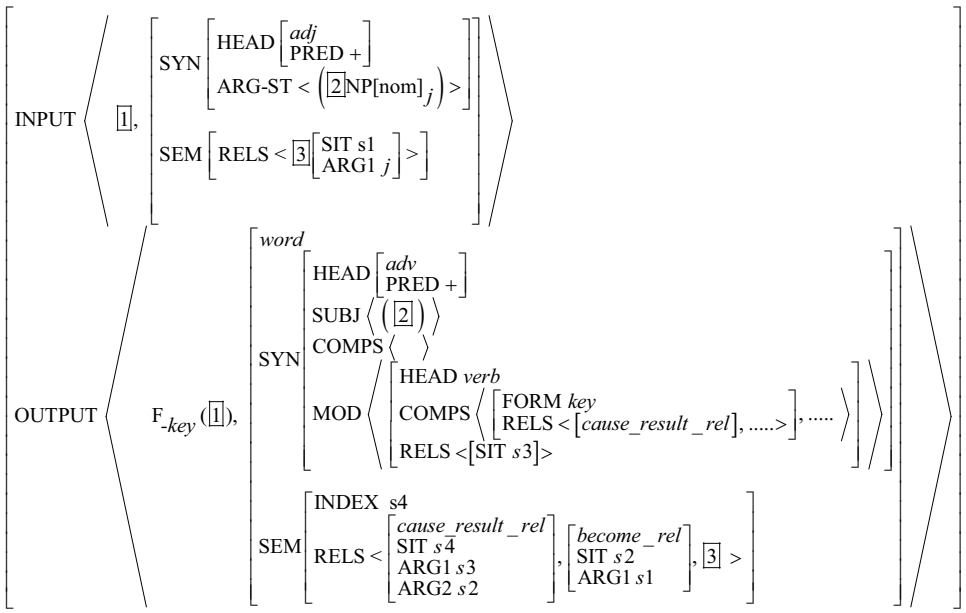
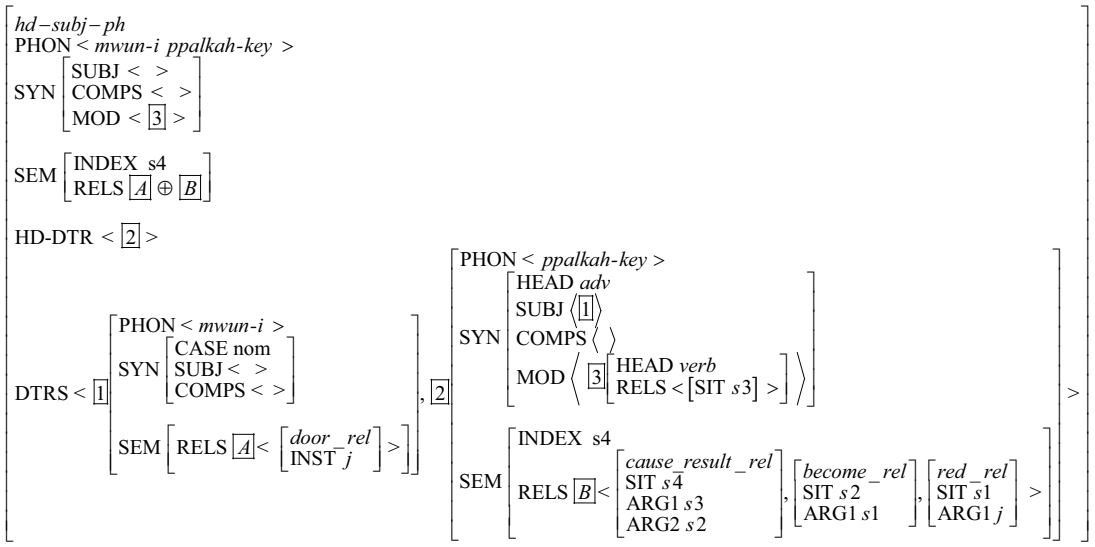
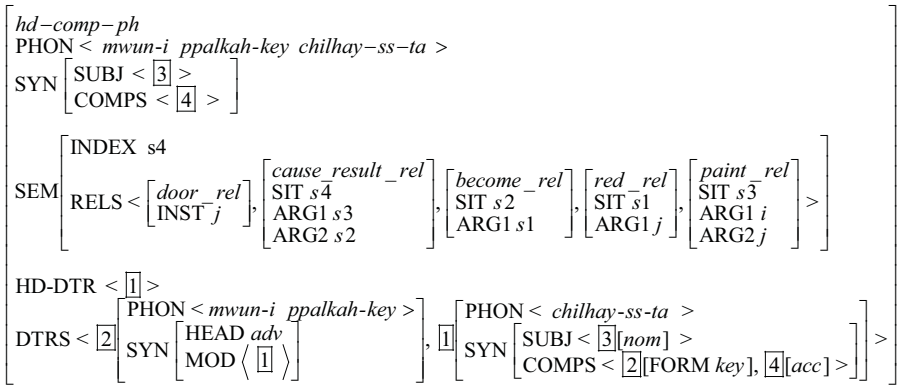
(30) Resultative predicate lexical rule:



(31) Generation of a result clause, *mwun-i ppalkah-key* 'door-Nom red-Key':



(32) Generation of a VP, *mwun-i ppalkah-key chilhay-ss-ta* 'door-Nom red-Key painted':



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