

# Causatives and Inchoatives in Korean: A Unified Account

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## 1 Introduction

Affixes of the world’s languages can specify various types of meanings. Properties such as number (e.g., plurality) and gender in the nominal domain, and tense, causation, aspect, etc. in the verbal domain are familiar types of semantic contributions made by affixes. However, affixes may also contribute more abstract types of meaning such as referent-dependent markedness, i.e., the notion that the referent has deviated from its canonical properties. This observation has enabled work such as Grimm (2012) to capture potentially puzzling affixation systems in the nominal domain, in which a single affix in a given language (Dagaare) is used to signal both singular and plural meanings depending on the noun stem it combines with.

While such markedness based morphological phenomena have been documented and formally captured in the nominal domain, an analogous type of observation is lacking for affixes in the verbal domain. This paper argues that affixes that signal referent-dependent markedness exist in the verbal domain as well, and provides a case study of a language, Korean, that seems to have such a verbal affix. The paper shows that the Korean suffix *-i* sometimes signals causativization of the verb, but other times signal inchoativization of the verb, depending on whether the event associated with the verb stem canoni-

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cally denotes spontaneously occurring vs. externally caused events (McKoon and Macfarland 2000; Levin and Rappaport Hovav 1995; Rappaport Hovav and Levin 2012; cf. Haspelmath 1993, Piñón 2001a, Piñón 2001b). It then provides two possible analyses of the semantics of the *-i* affix. The first analysis closely resembles the analysis posited by Grimm (2012) for the number marking affix in Dagaare, and has at its core a set complementation operation (*C*) relativized to the domain of the base. The second one makes more use of pragmatic reasoning to derive the resulting causative and inchoative meanings. The two analyses will be shown to systematically unify the seemingly disparate morphologically marked vs. unmarked causativization and morphologically marked vs. unmarked inchoativization data patterns observed in Korean, which have so far only been analyzed separately or in partial pairings (Kim 2009a,b; cf. Park 1986).

## 2 The Korean Causative Alternation

The causative alternation denotes a phenomenon whereby the same verb stem (with potentially different affixes) alternates between an  $NP_1 V_{trans} NP_2$  construction and an  $NP_2 V_{intrans}$  construction. In these constructions, the nominal arguments have causative semantic relations with the verb and with each other: In the former construction,  $NP_1$  denotes the causer and  $NP_2$  denotes the entity that undergoes a change of state due to the causer. In the latter construction,  $NP_2$  again denotes the entity that undergoes the change of state specified by the verb, but the causer is not explicitly mentioned. An example of the causative alternation in English is the alternation between the sentence *John broke the glass.* and the sentence *The glass broke.* While such causative alternations in English are instances of labile alternation, whereby the same verb form is used without any affixation marking in both constructions that form a pair (e.g., the examples above), the causative alternation in many other languages such as Greek, Japanese, etc. involves affixation of some kind on at least one variant.

Korean is another such language. Although previous work (e.g. Kim 2009a, Alexiadou et al. 2006) has claimed that there are only three kinds of affixational patterns for the causative alternation in Korean, there are actually four kinds which can be grouped into two pairs that are mirror images of each other.

From now on, following the existing conventions in work such as Haspelmath (1993), this paper will refer to the transitive sentence of the causative alternation pair as ‘causative’ and the intransitive one of the pair as ‘inchoative’.

In Korean, there are some verbs whose causative versions are not marked morphologically, whereas their inchoative counterparts are marked with the

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morpheme *-i*. There are also other verbs whose inchoative versions are not marked morphologically, whereas their causative counterparts are marked with the morpheme *-i*. We will now call each of these cases 0-causative, *i*-inchoative, 0-inchoative, and *i*-causative, respectively. While the existence of 0-causative has occasionally been observed, as well as the existence of two distinct types of inchoatives (morphologically marked vs. unmarked ones; Kim 2009b), the existence of the matching *i*-causative has so far escaped attention in previous work. However, the *i*-causative actually occurs robustly, and completes the full set of Korean causative alternation data in a symmetric fashion. The examples in (1) and (2) demonstrate each of the four different cases involved in the causative alternation in Korean. The morpheme *-i* has a number of allomorphs *-hi*, *-li*, *-gi*, *-u*, *-gu* and *-chu*, which appear in different phonological environments. In both (1) and (2), the allomorph *-li* has been used for the verbs *yeol-* (‘open’) and *eol-* (‘freeze’), respectively.

As shown in (1), in Korean, verbs such as *yeol-* ‘open’ show the 0-causative and *i*-inchoative pattern. When the verb appears with two arguments (the causer *Alice*, and the theme *door*), no suffix is attached to the verb stem, and the verb appears as a bare stem with only tense and complementizer markings. On the other hand, when it appears with only one argument (the theme *door*; no causer can be seen) the inchoative suffix *-i* is attached to the verb stem to denote the inchoative form of the verb. In sum, for these kinds of verbs, it seems as if the inchoative form is more marked (at least in terms of morphology) than the causative form.

- (1) 0-causative, *i*-inchoative
- a. Alice-ga moon-ul yeol-eoss-da.  
Alice-NOM door-ACC open-PAST-DEC.  
Alice opened the door.
  - b. moon-i yeol-***li***-eoss-da.  
door-NOM open-INCHO-PAST-DEC.  
The door opened.
- (2) 0-inchoative, *i*-causative
- a. hosu-ga eol-eoss-da.  
lake-NOM freeze-PAST-DEC.  
The lake froze.
  - b. Alice-ga mul-ul eol-***li***-eoss-da.  
Alice-NOM water-ACC freeze-CAUS-PAST-DEC.  
Alice froze the (glass of) water.

In contrast, as shown in (2), verbs such as *eol-* ‘freeze’ show the 0-inchoative and *i*-causative pattern, which looks like a mirror image of the

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verbs in (1). When it appears with a single argument (*lake*), no suffix is attached to the verb stem, and this time, it is the intransitive version of the verb that appears as a bare stem. On the other hand, when the verb appears with two arguments (the agent causer *Alice* and the patient *ice*), the causative suffix *-i* is attached to the verb stem to denote the causative form of the verb. To recapitulate, for these kinds of verbs, it seems as if the causative form is more marked (again in terms of morphology) than the inchoative form. This state of affairs creates a striking contrast with the pattern shown in (1), whose base-derived morphological relationship goes in the opposite direction. It is also worth noting that the 0-inchoatives are always paired with *i*-causatives, and *i*-inchoatives are always paired with 0-causatives, when associated with a particular verb stem.

### 3 Previous Approaches

Previous works on the Korean causative alternation, based on the general framework developed in Alexiadou and Anagnostopoulou (2004) and Alexiadou et al. (2006), have provided much insight into its syntax (Kim 1998, 2009a,b). However, they also leave open a few questions, especially relating to its semantics. Given the space constraint, we simply mention a few limitations that emerge.

First, these approaches focus on the two types of inchoatives, but do not say much about the two types of matching causatives. Second, they do not capture the close semantic connections between morphologically marked vs. unmarked causative and inchoative pairs. Finally, they do not provide an explanation as to what semantic properties of the verb contribute to it having morphologically marked (*-i*) causative constructions and unmarked inchoative constructions vs. having morphologically unmarked causative constructions and marked inchoative constructions.

#### 3.1 Emerging Observations

To address these issues, let us examine more closely which type of verb stems in Korean combine with 0-causatives and *i*-inchoatives, and which combine with 0-inchoatives and *i*-causatives. As a starting point, the list of verbs investigated by Haspelmath (1993) and McKoon and Macfarland (2000) can be of use.

Based on a study of the morphological instantiation of the causative alternation in a variety of languages, Haspelmath (1993) claims that the basic vs. derived relationship of a word’s morphology often reflects the basic vs. derived relationship of the semantic conceptualization of the words. More specifically, the verbs denoting events that have clear external causers are more likely to have (morphologically) unmarked causatives and marked inchoatives, whereas the verbs denoting events that do not have clear external

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causers are more likely to have (morphologically) marked causatives and unmarked inchoatives. While Haspelmath (1993) doesn't make it clear whether *identical* morphological marking can be used for marked inchoatives and marked causatives in a given language (we have seen that this is the case for Korean), it does show certain global, crosslinguistic tendencies in which verbs glossed as 'freeze' are generally found with morphologically marked causative forms and unmarked inchoative forms, whereas verbs glossed as 'break' are found with morphologically unmarked causatives and marked inchoatives.

Relatedly, based on a corpus study of verbs that are found in English causative alternations, McKoon and Macfarland (2000) argue that internally-caused change of state verbs (e.g., *bloom*) vs. externally-caused change of state verbs (e.g., *explode*) in English show systematically different behavior, in particular with respect to the selectional restrictions they impose on their subject.

Let us see how the Korean equivalent of these verbs fare with respect to the causative/inchoative alternation. A condensed list of Korean verbs that correspond to Haspelmath (1993) and McKoon and Macfarland (2000)'s verbs has been provided in the Appendix, along with their alternation patterns. The emerging patterns suggest that the choice between 0-causative and *i*-inchoative vs. *i*-causative and 0-inchoative, is not random in Korean. It seems to have a deep connection with the lexical properties of the verb, namely, the type of event it denotes. It also seems to mirror the cross-linguistic affixation pattern in a meaningful way.

First, all internally-caused change of state verbs in Korean (top of the list) seem to be associated with *i*-causatives and 0-inchoatives. Second, most externally-caused change of state verbs in Korean (bottom of the list) that are canonically associated with animate causers seem to be associated with 0-causatives and *i*-inchoatives. Finally, the boundary between the two types of affixation patterns seems to more or less align with the crosslinguistic affixation pattern noted in Haspelmath (1993), although Korean is stricter in attributing unmarked causatives compared to the average crosslinguistic pattern.

This suggests that in line with Haspelmath (1993), Korean also associates marked causative morphology and unmarked inchoative morphology with verbs that canonically denote internally-caused or spontaneously occurring events, whereas it associates unmarked causative morphology and marked inchoative morphology with verbs that canonically denote externally-caused or goal-driven events. What is additionally interesting about Korean is that the marked causative morphology and the marked inchoative morphology manifest as the *same* form, *-i*.

Given the systematic patterns of *-i* affixation as well as the close rela-

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tionship between the *i*-causative and 0-inchoative (in a parallel fashion, the *i*-inchoative and 0-causative) delineated above, is it possible to provide a unified semantics for the affix *-i*? If the affix directly denotes either causative or inchoative meaning, then two separate affixes would be necessary, namely, the *i*-causative affix and the *i*-inchoative affix, that happen to share the same form as well as the same range of allomorphs for some inexplicable reason. However, if we were to associate a fundamentally different type of meaning with the affix *-i*, then a unified semantics would be within reach. More specifically, suppose that the affix *-i* consistently indicates that the event denoted by the verb stem has deviated from its canonical properties. Such an analysis would explain why *-i* gives rise to causative meanings when combined with verb stems that canonically denote uncaused, spontaneously occurring events, and why *-i* gives rise to inchoative (i.e., anticausative) meanings when combined with verb stems that canonically denote externally caused events.

The hypothesized semantics for the affix *-i* is reminiscent of a semantic analysis that hinges on referent-dependent markedness in the nominal domain. We therefore scrutinize a study that adopts such a markedness-based analysis, in order to examine how a semantic analysis that has successfully accounted for certain puzzling phenomena in the nominal domain can be productively extended to explain the Korean causative/inchoative affixation phenomena in the verbal domain.

#### 4 Markedness Morphology in the Nominal Domain

We show that the Korean causative/inchoative affixation pattern has many parallels with a number marking affixation pattern in Dagaare. Grimm (2012) shows that the Dagaare number marking affix, *-ri*, can signal both singular and plural meanings, depending on the type of noun it combines with. When it combines with what is considered an ‘individuated’ noun (roughly, one with referents that can be easily counted and distinguished from each other) such as ‘child’, it yields a plural meaning (i.e., children), but when it combines with what is considered a ‘non-individuated’ and ‘inherently plural’ noun such as ‘seed’, it yields a singular meaning (i.e., a single seed).

To capture these patterns, Grimm (2012) argues as follows: inherent singularity and inherent plurality are available as lexical information; the number affix *-ri* consistently marks the reversal of this inherent property associated with the referent that the noun stem denotes. Since ‘child’ is inherently singular and ‘seed’ inherently plural, the *-ri* morpheme comes to signal opposite types of meanings, plurality vs. singularity, when combined with respective noun stems.

Grimm (2012) formalizes this generalization as follows. The base or root of the noun denotes the entire space generated by the atoms and their sums

(atoms  $\cup$  sums); consequently, the base is compatible with both singular and plural individuals. *-ri* is then modeled as the operation of set complementation (*C*), relativized to the domain of the base (Grimm (2012): 95). As mentioned earlier, the degree of individuation determines whether a noun is considered lexically singular or plural.

The idea that an affix may indicate the reversal of the canonical property (which crucially differs from stem to stem along a certain dimension) seems to directly connect the behavior of Dagaare number affix with that of Korean causativization/inchoativization affix. The relevant dimension that determines the referent-dependent canonical property is number in the case of Dagaare, whereas it is causation (or non causation) in the case of Korean. Other than that, the basic mechanism of the two affixes, one nominal and the other verbal, seems remarkably similar.

### 5 Korean Causatives/Inchoatives: A First Pass

If we can determine the appropriate type of domain of the base for verb stems, as well as lay out the exact type of canonical properties that has been lexically specified for different types of verb stems, then the Korean affix *-i* can also be analyzed as involving set complementation operation (*C*) relativized to the domain of base. This is because as in the case of the Dagaare number affix *-ri*, the Korean causative/inchoative affix *i-* also seems to have the main function of reversing the lexically specified canonical property of the verb stem it combines with. As mentioned earlier, in the case of Korean *-i*, the relevant canonical property relates to the type of event that the verb stem denotes, particularly as to whether they have clear external causers or not.

Considering that the relevant canonical property is event-based, let us assume that the relevant domain of base to which the set complementation operation applies is the set of all events, i.e., the set of all possible caused (with external causer) and spontaneous (no discernable external causer) events that the vP as a whole can denote. Let us also assume, analogous to the case of Dagaare, that inherent causedness vs. spontaneity is lexically specified for different types of verb stems; stems like ‘freeze’ would inherently denote spontaneous events, whereas stems like ‘open’ would inherently denote caused events. The lexically specified properties of different verb stems would not only impose selectional restrictions on the object argument (what types of things can undergo freezing, and what types of things can be opened?), but certain properties like inherent causedness vs. spontaneity would also percolate up to the whole vP.

Building on these assumptions, the domain of the base associated with the vP ‘freeze lake’ would denote the set of both externally caused and spontaneously occurring lake-freezing events. In the absence of any additional affix,

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the vP ‘freeze lake’ itself would denote the set of all spontaneously occurring lake-freezing events, as the stem ‘freeze’ is inherently marked with reference to spontaneously occurring events. In contrast, the vP ‘open door’ without any additional affix would denote the set of all externally caused door-opening events, as the stem ‘open’ is inherently marked with reference to externally caused events. Again, the associated domain of base would denote the set of both externally caused and spontaneously occurring door-opening events.

The affix *-i* can then be straightforwardly analyzed as effecting the set complementation operation (*C*), as summarized in (3).

- (3)  $[-i] \langle \llbracket_{vP} X \rrbracket \rangle = \llbracket_{vP} X \rrbracket^C = B - \llbracket_{vP} X \rrbracket$  where X denotes a set of canonical events associated with the vP and B is the domain of all possible events associated with the vP.

We assume that the affix *-i* occupies the Voice head. When it combines with the vP ‘freeze lake’, the set complementation operation yields the set of all externally caused lake-freezing events (the set of all semantically marked lake-freezing events), i.e., it ends up having a causative meaning. In contrast, when it combines with the vP ‘open door’, the same set complementation operation yields the set of all spontaneously occurring door opening events (the set of all semantically marked door-opening events), i.e., it ends up having an inchoative meaning. Detailed derivations that demonstrate this are given in Table 1; *v* is a variable over events.

Verb stem canonically denotes spontaneously occurring events	Verb stem canonically denotes events with external causers
<i>0-inchoative</i> (bare stem)	<i>0-causative</i> (bare stem)
$\llbracket_{vP} \text{ freeze lake} \rrbracket$ := $\lambda v(\text{FREEZE-LAKE}(v)$ – $\text{CAUSE-FREEZE-LAKE}(v))$	$\llbracket_{vP} \text{ open door} \rrbracket$ := $\lambda v(\text{CAUSE-OPEN-DOOR}(v))$
<i>i-causative</i>	<i>i-inchoative</i>
$\llbracket_{vP} \text{ freeze lake} \rrbracket + li$ = $(\llbracket_{vP} \text{ freeze lake} \rrbracket)^C$ = $[\lambda v(\text{FREEZE-LAKE}(v)$ – $\text{CAUSE-FREEZE-LAKE}(v))]^C$ = $[\lambda v(\text{CAUSE-FREEZE-LAKE}(v))$ → $\text{CAUS}(\text{freeze lake})$	$\llbracket_{vP} \text{ open door} \rrbracket + li$ = $(\llbracket_{vP} \text{ open door} \rrbracket)^C$ = $[\lambda v(\text{CAUSE-OPEN-DOOR}(v))]^C$ = $[\lambda v(\text{OPEN-DOOR}(v)$ – $\text{CAUSE-OPEN-DOOR}(v))]$ → $\text{INCHO}(\text{open door})$

TABLE 1: Analysis of the Korean suffix *-i*



This analysis has several advantages. First, it provides a unified semantics for the morpheme *-i*: the morpheme contributes a set complementation operation relativized to the domain of events denoted by the verb base. This is ideal as both *i*-inchoatives and *i*-causatives utilize the same form and same range of allomorphs, as well as being associated with systematically connected meanings. Existing approaches that provide distinct semantics to the putative homonym *-i*, namely, inchoativization and causativization, would not be able to explain this systematic connection.

Second, the analysis explains why *i*-causatives are always paired with 0-inchoatives and why 0-causatives are always paired with *i*-inchoatives. Existing approaches that provide separate structures and semantics for *i*-inchoatives and 0-inchoatives for instance, are not able to explain the close connection between the pairs of marked vs. unmarked causatives and inchoatives.

Finally, it captures the parallel syntactic behaviors of 0- and *i*-causatives (likewise, 0 and *i*-inchoatives): for instance, both types of causatives allow true (agentive) instrument PPs, whereas both types of inchoatives disallow them (cf. Kim 2009b). This is predicted, as both types of causatives end up signaling externally caused events and inchoatives, spontaneous ones.

At the same time, the analysis also has some problems as well. In particular, as I now discuss, it is not clear how the relevant domain of the base comes to be generated compositionally, given that verb stems are argued to denote solely the canonical events. We crucially need the domain of base (the set of all possible vP events) against which the core set complementation operation takes place, but it is not directly provided by the verb stem. Grimm (2012)’s analysis in the nominal domain avoids this problem because any set of atoms can automatically derive a set of atoms and their sums. The situation is not the same in the verbal domain: a given set of canonical events cannot by itself generate a larger set of both canonical and non-canonical events, i.e., the domain of base. The presence of this base thus has to be stipulated separately, which is a bit ad hoc. To address this problem as well as a few other potential issues, the subsequent section presents an alternative analysis that maintains the main intuitions in the current analysis, while also achieving more flexibility.

## 6 The Analysis of Korean Causatives/Inchoatives

Instead of positing that verb stems without affixes denote sets of canonical events, let us instead assume that they denote sets of all possible events of the relevant type (i.e., events specified by the root). We may then posit that the *-i* morpheme functions as a kind of subsective modifier of events, and picks out just the non-canonical events, as summarized in (4). In terms of semantics

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then, 0-causatives and 0-inchoatives would refer to sets of all possible events, whereas *i*-causatives and *i*-inchoatives would refer to just the sets of non-canonical events. With respect to the operation of (4), whether an event is considered as ‘non-canonical’ or ‘marked’ would depend solely on what is construed to be the typical causal configuration for the events denoted by the verb stem. For verbs that call for *i*-causatives, the non-canonical events would be caused events, and for verbs that call for *i*-inchoatives, the non-canonical events would be spontaneously occurring ones.<sup>1</sup>

- (4)  $\llbracket -i \rrbracket(X) = Y$  where  $Y \subseteq X$  and  $Y$  denotes a set of events that are marked/non-canonical with respect to causation-related properties associated with  $X$ .

If 0-causatives and 0-inchoatives do not distinguish between spontaneous and caused events (and denote sets of all possible events of the relevant type), how do they obtain the causative or inchoative meaning, respectively? These meanings are predicted to arise from pragmatic enrichment (Cleo Condoravdi and Chris Potts, p.c.). The absence of the *-i* morpheme in the case of 0-causatives leads to the inference that the verb has been used to denote all events *minus* the events that would have been denoted via the *i*-inchoative, and thus ends up picking out just the canonical, caused events. In a parallel fashion, the absence of the *-i* morpheme in the case of 0-inchoative leads to the inference that the verb has been used to denote all events *minus* the events that would have been denoted via the *i*-causative, and thus ends up picking out just the canonical, spontaneously occurring events.

Such a line of analysis maintains all of the advantages of the analysis in sec. 5: it again succeeds in providing a unified analysis of the *-i* morpheme, and captures why *i*-causatives naturally pair with 0-inchoatives, and 0-causatives with *i*-inchoatives. However, the parallel syntactic behaviors of the two causatives and two inchoatives are a bit unexpected under the current analysis: *i*-causatives and *i*-inchoatives pick out more restricted sets of events than 0-causatives and 0-inchoatives; we might thus expect the first two to be subject to additional syntactic constraints, which doesn’t actually seem to be the case. However, closer examination of a wider range of syntactic constructions might end up revealing subtle differences between *i*-causatives and 0-causatives, and between *i*-inchoatives and 0-inchoatives.<sup>2</sup> This would provide further evidence in favor of the current analysis over the one outlined in sec. 5.

<sup>1</sup> I thank Cleo Condoravdi and Chris Potts for pointing me towards this line of analysis.

<sup>2</sup> An interesting place to examine this based on prior studies, would be the distribution of non-agentive instrument phrases (Kim 2009b).

## 7 Conclusion

The analyses of Korean causatives/inchoatives presented in this paper rely on the idea that certain affixes prescribe meanings that relate to stem-dependent canonical properties. It claims that the seemingly disparate Korean causativization affix *-i* and inchoativization affix *-i* can be given a unified analysis if we posit that *-i* signals referent-dependent markedness. The resulting analysis highlights the parallel mechanisms that seem to exist both in the nominal and the verbal domain, in which the affixes target referent-dependent markedness with respect to boundedness on the one hand, and telicity on the other.

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## 8 Appendix

2 provides Korean counterparts of the verbs examined in Haspelmath (1993) and McKoon and Macfarland (2000), along with their causative/inchoative affixation patterns. Crosslinguistic patterns noted in Haspelmath 1993 have also been provided in the last column to enable comparison; ‘causative’ means that the causative form is morphologically marked, and ‘inchoative’ means that the inchoative form is morphologically marked.

verb list	Korean causative	Korean inchoative	Korean pattern	typologically marked
boil	kkul-i-da	kkul-da	i-causative	causative
freeze	eol-li-da	eol-da	i-causative	causative
dry	mal-li-da	maru-da	i-causative	causative
wake up	kkae-u-da	kkae-da	i-causative	causative
sink	garaan-hi-da	garaan-da	i-causative	causative
learn/teach	baeu-da	garuchi-da	suppletive	causative
melt	nok-i-da	nok-da	i-causative	causative
stop	mumchu-da	mumchu-da	labile	causative
turn	dol-li-da	dol-da	i-causative	inchoative
dissolve	nok-i-da	nok-da	i-causative	inchoative
burn	tae-u-da	ta-da	i-causative	inchoative
finish	ggutna-i-da	ggutna-da	i-causative	inchoative
begin	sijak-doe-da	sijak-ha-da	equipollent	inchoative
roll	gul-li-da	guru-da	i-causative	inchoative
improve	naa-ji-da	naa-ji-ge-hada	i-inchoative	inchoative
rock	hundul-da	hundul-li-da	i-inchoative	inchoative
connect	it-da	io-ji-da	i-inchoative	inchoative
change	bakku-da	bakku-i-da	i-inchoative	inchoative
gather	mo-eu-da	mo-i-da	i-inchoative	inchoative
open	yeol-da	yeol-li-da	i-inchoative	inchoative
break	ggae-da	ggae-ji-da	i-inchoative	inchoative
close	dad-da	dad-hi-da	i-inchoative	inchoative
split	jjogae-da	jjogae-ji-da	i-inchoative	inchoative

TABLE 2: List of Haspelmath (1993)’s verbs and the Korean pattern