

Revisiting the *persuade*-constructions in Korean with empirical evidence*

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Lee, Juwon and Sanghoun Song, 2020. Revisiting the *persuade*-constructions in Korean with empirical evidence. *Linguistics Research* 37(1), 29-70. Using the data-based methods of language research, this article addresses whether the *seltukha*-constructions (*persuade*-constructions) in Korean indeed undergo a control phenomenon as generally assumed and argued in the literature. As is well known, there are two essential properties of controls across languages; (i) the controllee should be co-indexed with another element in the sentence and (ii) the controllee should be silent. Focusing on these two properties, the present study provides multi-pronged data taken from corpus exploration, context-sensitive survey, and language experiment. The empirical investigation casts a doubt on the control analysis of *seltukha*-constructions; in particular, it is borne out that the embedded subject (controllee) of the *seltukha*-constructions can appear explicitly, and the embedded subject – whether it be silent or not – is not necessarily required to be co-indexed with another element in the sentence. These lead us to the conclusion that the *seltukha*-constructions can be accounted for by means of a *pro*-drop rather than a control. One remaining issue in the analysis is such that the *seltukha*-constructions may sound awkward if the two NPs (matrix object and embedded subject) refer to the same individual and they appear simultaneously. To account for the awkwardness, we propose the Anti-redundancy Hypothesis; i.e., two NPs referring to the same entity or having the same form tend not to appear right next to each other. The current experiment further demonstrates that the hypothesis works as a general tendency rather than a stipulation about *seltukha*-constructions. Building upon the empirical data, we propose that the theory of controls in Korean (and hopefully other languages) should be reexamined from the bottom up. (Jeonju University · Korea University)

Keywords control, *persuade*, co-indexation, *pro*-drop, corpus, survey, acceptability judgment

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1. Introduction

The *seltukha*- verb in Korean has been regarded as a counterpart of ‘persuade’ in English since the early days of Korean generative grammar. Hence, it has been commonly assumed that the verb involves an object control just as with its superficial translation. Under the assumption, most previous studies of the control phenomena in Korean syntax has concentrated on the *seltukha*-constructions with the suffix *-tolok* (as a counterpart of ‘to’ in a similar way). However, as far as our present knowledge goes, few previous studies have verified whether the assumption accords closely with the native speakers’ broad intuition as well as language usages in daily speech.

In this respect, this article challenges this long-standing but anecdotal claim in Korean syntax, using the multi-pronged empirical methods of language research. First, the present study empirically addresses whether the verb *seltukha*- is syntactically equivalent to ‘persuade’ in the English object control construction. Second, while most previous studies lay an exclusive focus on two types of constructions in which only one NP appears realized as an object in the embedding clause (i.e., accusative), the present study concerns a variety of the *seltukha*-constructions. Thereby, the present study ultimately aims to provide corroborative evidence for enhancing the further syntactic theories of the control phenomenon in Korean (and hopefully other languages).

In order to reexamine the linguistic behaviors of the *seltukha*-constructions from the bottom in such a thorough way, the present study makes good use of methodological pluralism: a combination of corpus exploration, context-sensitive survey, and acceptability judgment testing. First, the present study explores a POS-tagged corpus in Korean in order to see how the so-called control verbs including *seltukha*- are used in read data. This analysis indicates the basic direction of reexamination in an empirical way. Second, the present study conducts a context-based survey in order to see whether the previous arguments hold water with respect to the distributional property of the *seltukha*-constructions. Third, the present study conducts an acceptability judgment testing on a comprehensive scale with 83 participants in order to account for why the two same NPs tend not to co-occur simultaneously in the *seltukha*-constructions and others. These data analyses demonstrate that there is no a posteriori reason for believing that the *seltukha*-constructions necessarily undergo an object control. In other words, the

assimilation of *seltukha*- in Korean to ‘persuade’ in English is just grounded upon insufficient evidence. Moreover, all the data reveal that the *seltukha*-constructions can be more comprehensively accounted for by means of *pro*-drop.

This article is organized as follows. Section 2 raises the basic data that the current work empirically addresses. Section 3 goes over the previous studies of the *seltukha*-constructions and argues against the claims. Section 4 explores a corpus in order to look at how the so-called object control verbs including *seltukha*- are realized. Section 5 provides a syntactic analysis with an eye toward the distribution of NPs in the *seltukha*-constructions. Section 6 experimentally delves into our working hypothesis to account for why two explicit NPs in the main and the embedded clauses sometimes cause less acceptability, viz. the anti-redundancy hypothesis. Section 7 discusses the implications of the current findings and proposes how the study of object controls in Korean has to be revised. Section 8 concludes this article with some thoughts about the future work.

2. Basic data

Roughly speaking, control refers to a syntactic phenomenon in which the verb in the embedding clause controls the argument(s) in the embedded (and mostly non-finite) clause; i.e., the understood subject of a predicate is identified by some other linguistic element in the context (see e.g., Farkas 1988). The syntactic operation can be essentially defined as presented in (1), and the stereotypical examples are provided in (2).

(1) The Obligatory Control signature

In a control construction [. . . X_i ..._S PRO_i . . .] . . .], where X controls the PRO subject of the clause S:

- a. The controller(s) X must be (a) co-dependent(s) of S.
- b. PRO (or part of it) must be interpreted as a bound variable.

(Landau 2013: 29)

- (2) a. John_i tried/attempted [_____i to leave]. (subject control)

- b. John_i persuaded/forced Mary_j [_____j to leave]. (object control)

As (partially) defined and exemplified in (1-2), the control constructions have the two defining properties irrespective of whether they be subject control or object control. A first property is that the subject of the embedded clauses must be silent, as illustrated in (3).

- (3) a. John tried/attempted [(John/*he/*him) to leave].
 b. John persuaded/forced Mary [(Mary/*she/*her) to leave].

Since no explicit NP can appear in the subject position of the *to*-infinitive clauses in the control constructions, how the referent of the silent subject is identified plays a pivotal role in control theory. A second property is that the silent subject of the *to*-infinitive clauses must be co-indexed with an argument of the matrix clause:

- (4) a. John_i tried/attempted [_____i/*_j/*_k to leave].
 b. John_i persuaded/forced Mary_j [_____i/*_j/*_k to leave].

The silent subject is called *controllee*, and the explicit NP that is necessarily co-indexed with the silent subject is called *controller*. This behavior has also been regarded as one of the essential properties of subject or object control constructions. According to the aforementioned Landau's definition of control, the controller in the matrix clause can be implicit. Adopting this, we assume that whether the matrix controller is silent or overt is not important to identify a control construction. Summarizing, silent embedded controllee and co-indexation are crucial for controls.

At a glance, the *seltukha*-constructions look quite similar to the *persuade*-construction in English. However, the present study substantiates that the *seltukha*-constructions sometimes disobey the two fundamental constraints on control: (i) the two NPs can be overt or null in *seltukha*-constructions, and (ii) the two NPs whether they be overt or null are not necessarily co-indexed with each other in *seltukha*-constructions.

The sentences like the following are the most common instances discussed in

many previous studies, in which the persuadee (Mary) appears in the matrix clause with the accusative case marker and the subject in the embedded clause is unexpressed (i.e., silent). We will not discuss further the *tolok*-clause itself in this article any longer. For more information about the different forms of object controls in Korean, see Gamerschlag 2007; Park 2011; Hoe 2014; and others.¹

- (5) *sensayngnim-kkeyse Mary-lul* [____ *peptay-ey ka-tolok*]
 teacher.Hon-Nom Mary-Acc law_school-to go-Tolok
seltukha-si-ess-ta.²
 persuade-Hon-Pst-Dec
 ‘The teacher persuaded Mary to go to law school.’

The persuadee in (5) is in the accusative form, but note that the persuadee can be in a dative form as shown in (6).

- (6) *sensayngnim-kkeyse Mary-eykey* [____ *peptay-ey ka-tolok*]
 teacher.Hon-Nom Mary-Dat law_school-to go-Tolok
seltukha-si-ess-ta.
 persuade-Hon-Pst-Dec
 ‘The teacher persuaded Mary to go to law school.’

It appears that the two sentences (5) and (6) are not truth-conditionally different from each other. In addition to the two types of *seltukha*-constructions, sentences

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- 1 The *seltukha*-constructions can take different markers such as *-lako*, *kes*, etc. other than *-tolok* in order to realize the embedded clause. The current analysis is exclusively concerned with the *-tolok* marker to narrow down the discussion for two reasons. First, many previous studies have also exclusively addressed *-tolok* as a counterpart of ‘to’ in English (Monahan 2003; Cormack and Smith 2004; Kwon and Polinsky 2006; Choe 2006; Polinsky 2007; Kwon et al. 2010; Park 2012; Lee 2013; and others). Second, the preliminary corpus analysis indicated that the different markers did not yield such a big difference in distribution. Although this article does not directly address the distributional properties of different markers including *-tolok*, *-lako*, and *kes*, they were fully provided in the corpus data (see §4.1, Appendix A) in order for further studies to explore them in detail. Herein, suffice it to say that the *-tolok* marker functions as distributionally a clitic, syntactically a complementizer, and semantically an operator that involves a jussive interpretation.
- 2 The abbreviations used in this paper are: Acc = accusative, Comp = complementizer, Conn = connectives, Dat = dative, Dec = declarative, Gen = genitive, Hon = honorific, Imp = imperative, Nom = nominative, Pass = passive, Plu = plural, Pst = past, Rel = relativizer.

like (7) are also possible; the object position in the main clause is empty and the nominative subject appears in the embedded clause. Note that this sentence also appears to be truth-conditionally equivalent to (5) and (6).³ Monahan (2003) calls this type of *seltukha*-construction a backward control.

- (7) *sensayngnim-kkeyse* ____ [*Mary-ka* *peptay-ey* *ka-tolok*]
 teacher.Hon-Nom Mary-Nom law_school-to go-Tolok
seltukha-si-ess-ta.
 persuade-Hon-Pst-Dec
 ‘The teacher persuaded Mary to go to law school.’

In short, the persuadee of the *seltukha*-constructions can be realized with any of the case markers – accusative, dative, and nominative. This case alternation can be represented as shown in (8); i.e., the persuadee can be combined with all three types of case markers in the linear order of surface form. Because the current study delves into the *seltukha*-constructions with the *-tolok* marker on a comprehensive scale, the three types of constructions will be all dealt with in the data (see §7.3).⁴

- (8) *sensayngnim-kkeyse* *Mary-lul/eykey/ka* *peptay-ey* *ka-tolok*
 teacher.Hon-Nom Mary-Acc/Dat/Nom law_school-to go-Tolok
seltukha-si-ess-ta.
 persuade-Hon-Pst-Dec
 ‘The teacher persuaded Mary to go to law school.’

The examples presented thus far include only one NP either in the main

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- 3 Using different case markers normally makes a difference in truth-condition, because the case markers are often pertinent to thematic roles. Yet, we do not have any specific evidence to say that the three types of sentences convey truth-conditionally different meanings from each other. The further study needs to investigate how the case alternation makes a difference in discourse based on the current empirical data (see §7.3).
- 4 It is striking that the dative alternation exemplified in (5) has been almost ignored with a notable exception of Gamerschlag (2007). Kwon and Polinsky (2006) and Kwon et al. (2010) bypass the dative alternation even though they admit that the controller in the matrix clause can be either the accusative or the dative. The further study has to deeply investigate how the case alternation interacts with the so-called control verbs in Korean, as will be discussed later in §7.3.

clause or in the embedded clause, which is compatible with typical control constructions in other languages including English. However, a fact that the present study takes notice of is that the NP denoting the persuadee linguistically can appear in neither of them, as shown in (9). In other words, the two NPs are both null in this example. It is noteworthy that many previous studies of controls have underestimated the *pro*-drop property in Korean with exceptions of Choe (2006) and Park (2012).

- (9) *sensayngnim-kkeyse* ____ [*____ peptay-ey ka-tolok*]
 teacher.Hon-Nom law_school-to go-Tolok
seltukha-si-ess-ta.
 persuade-Hon-Pst-Dec
 ‘The teacher persuaded someone to go to law school.’

The existence of the instances like (9) may suggest that the existing theories are vulnerable (see more discussions in §5.2). Moreover, we have sentences like (10), where the two NPs appear in surface form simultaneously (see similar examples in Monahan 2003 and Cormack and Smith 2004). In (10) no silent NP appears, and thus the core question of identifying the referent of a null element in control constructions disappears in the sentence. Furthermore, in (10), the object in the main clause and the subject in the embedded clause do not refer to the same individual even if there exists an internal relationship between them (i.e., Mary’s mother can influence Mary’s behaviors).

- (10) *sensayngnim-kkeyse Mary emeni-lul* [*Mary-ka peptay-ey*
 teacher.Hon-Nom Mary mother-Acc Mary-Nom law_school-to
ka-tolok] *seltukha-si-ess-ta.*
 go-Tolok persuade-Hon-Pst-Dec
 ‘The teacher persuaded Mary’s mother that Mary should go to law school.’

As exemplified thus far, the two essential constraints on object control verbs (i.e., silent controllee and co-indexation) can be violated in the *seltukha*-constructions. In other words, a control analysis has much burden to explain the data given above. The main purpose of this paper is to show that all the *seltukha*-constructions above

(and the data to be presented below) can be accounted for by a *pro*-drop analysis of the construction: Korean is a *pro*-drop language and so NPs can be dropped from a *seltukha*-construction when their referents can be inferred from the context. On this analysis, *seltukha*-constructions can be briefly represented like the following:

- (11) NP-Nom (NP-Acc/Dat) [(NP-Nom) ... V-tolok] *seltukha*-

This analysis predicts that the matrix object and the embedded subject can appear simultaneously and refer to the same individual in a *seltukha*-constructions. However, this prediction seems not to be borne out. For example, consider the sentence in (12), in which *Mary-ka* ‘Mary-Nom’ immediately follows *Mary-lul* ‘Mary-Acc.’

- (12) ??*sensayngnim-kkeyse Mary-lul [Mary-ka peptay-ey ka-tolok]*
 teacher.Hon-Nom Mary-Acc Mary-Nom law_school-to go-Tolok
seltukha-si-ess-ta.
 persuade-Hon-Pst-Dec
 ‘The teacher persuaded Mary that she should go to law school.’

Several studies in the early days of Korean generative grammar judged the sentences like (12) to be legitimate (Choi 1988; Kim 1995), which did not support the control analysis of the *seltukha*-constructions. More recently, Gamerschlag (2007) argued against such a claim and said that the judgments of the sentences like (12) would be mixed. However, Gamerschlag’s argument does not have an empirical basis either. It is worthwhile to test whether and how the sentences like (12) sound acceptable to native speakers.

We admit that this sentence may sound a little awkward to native speakers, and yet we argue that the less acceptability of (12) can be accounted for by redundancy rather than the controlling constraint on the persuadee.⁵ The present study proposes the Anti-redundancy Hypothesis as formulated in (13).

5 It also looks like that sentence (12) is less acceptable due to the violation of the Binding Condition C; but we show that Binding Condition C is not enough to account for the *seltukha*-constructions in Korean (see §3 and §5).

- (13) **Anti-redundancy Hypothesis:** two NPs referring to the same entity or having the same form tend not to appear right next to each other, since the iteration sounds redundant.

This hypothesis will be tested in §6 in a fine-grained experimental way. Consequently, the current empirical investigation demonstrates the assimilation between *sektulha-* and ‘persuade’ has been overgeneralized in that the essential constraints on the object control are not straightforwardly applied to *sektulha-*.

3. Literature review

3.1 PRO

Traditionally, PRO is on the subject position of the *to*-infinitive clause as in the following (see Chomsky 1981, 1995):

- (14) John persuaded [Mary_i] [_{TP} PRO_j to leave].

The PRO in (14) is obligatory PRO, which is necessarily co-indexed with a matrix argument. This ensures the obligatory control (OC) interpretation of the *persuade*-construction. However, this PRO analysis seems not to be appropriate for the *seltukha*-constructions. First, the subject of the *tolok*-clause can appear explicitly as shown in (7) and (10) above (see similar examples in Monahan 2003 and Cormack and Smith 2004). This suggests that the gap in the embedded clause of the *seltukha*-constructions is not PRO of any kind. Second, the subject of the *tolok*-clause is basically nominative, not caseless, as shown in (7) and (10). If the caseless null element PRO is really in the subject position of the embedded clause of the *seltukha*-constructions, this does not account for the data like (7) and (10). Finally, the subject of the *tolok*-clause in (10) is not co-indexed with a matrix argument. Taken together, it looks difficult to apply a PRO analysis to the *seltukha*-constructions in Korean.

3.2 Movement

Kwon and Polinsky (2006) and Kwon *et al.* (2010) argue that the two sentences in (15) are not derivationally related, but they are distinct constructions. That is, it is not the case that the scrambling of (15a) results in (15b). They call the former ACC1 and the later ACC2.

- (15) a. *Jane-i Minswu-lul [_____j toangka-tolok]*
 Jane-Nom Minswu-Acc run_away-Tolok
seltukhay-ss-ta. [ACC1]
 persuade-Pst-Dec
 ‘Jane persuaded Minswu to run away.’
- b. *Jane-i [____ toangka-tolok]_j [Minswu-lul _____j]*
 Jane-Nom run_away-Tolok Minswu-Acc
seltukhay-ss-ta. [ACC2]
 persuade-Pst-Dec
 ‘Jane persuaded Minswu to run away.’

Following the movement analysis of English controls (Hornstein 1999, 2003), they argue that in (15a) the subject of the *tolok*-clause moves to the object position in the matrix clause, and the tail of this A-chain is deleted. This produces ACC1, which they assume is an obligatory control. In (15b), the *tolok*-clause moves leftward, and the subject of this clause moves to the right. This makes ACC2, and they assume that this is a non-obligatory control (NOC): the accusative NP can be co-indexed with the null subject of the *tolok*-clause, but this is not necessary.

Before we continue our discussion, the term non-obligatory control (NOC) needs to be more clarified. The very basic concept of control is that the referent of a null element is determined by another element in a structure. That is, a controller controls an implicit controllee. If this dependency between two elements lacks in a structure, then the structure should not be a control. The term, non-obligatory control (NOC), sounds contradictory, and we believe it is simply a misnomer. The term obligatory control (OC) sounds redundant. By

contrast, the term partial control makes sense since at least a controller controls part of a controllee (the referents of the controllee must include the controller). Although we continue using the terms OC and NOC for expository purposes, we interpret what is called NOC as non-control structure and OC as the true control structure.

As a further step, we argue that the movement analysis has some problems. First, they did not say anything about how the case is assigned to the subject of the embedded clause or the object of the matrix clause. The movement analysis should explain how exactly the nominative subject in the embedded clause (see an example in (7)) is switched to the accusative object in the matrix clause as in (15a). If it is assumed that it is not a change of a kind, but a spell-out after the movement, then this process should be described in detail. Moreover, they almost ignored the *seltukha*-constructions with a dative object in the matrix clause (see an example in (6)), which would further complicate the issue of case assignments. Second, if we assume that the matrix object moves to the subject position in the *tolok*-clause and the head of this A-chain is deleted, we would be able to generate the same sentences in (15). Then the question is whether there is any independent evidence for a certain direction of the movement in the constructions. One may argue that since lowering from the matrix clause to the subordinate clause is generally assumed not to occur, the matrix object does not move to the subject position in the *tolok*-clause. But we wonder about whether there is any independent evidence for the general assumption of the movement direction. Third, if the matrix object really comes from the subject of the *tolok*-clause, then we should say that direct objects are licensed in two different ways, the base generation as in *Jane-i Minswu-lul ttayli-ess-ta* 'Jane hit Minswu' and the movement as in (15). A naturally occurring question is why we must use the two different fashions to license the accusative objects in the matrix clause. This may not be a serious problem in the derivational framework; but, if the same thing can be achieved in a uniform way as in the constraint-based frameworks, then the latter seem to be theoretically more desirable. Finally, it is borne out that the matrix object and the embedded subject in (10) above refer to different entities (see the corpus and experimental data in §4 and §6).

3.3 Semantic control

Cormack and Smith (2004) suggest that (obligatory) “semantic control” is involved in the control construction as in (16) (see also Jackendoff and Culicover 2003 for a semantic approach).

- (16) *Jane-i Minswu-lul [pro; tomangka-tolok] seltukhay-ss-ta.*
 Jane-Nom Minswu-Acc run_away-Tolok persuade-Pst-Dec
 ‘Jane persuaded Minswu to run away.’

The null pronominal *pro* can be a bound variable or a referential pronoun; that is, it is not necessarily co-indexed with the matrix object in (16). However, Cormack and Smith (2004: 66) posited the meaning postulate in (17) as an axiom to ensure the co-indexation between them:

(17) Meaning postulate 1:

For all *s*, *x*, *y*, if ‘PERSUADE *s y x*’ holds then *y* is Agent in Event *s* (*s* is the Event argument of PERSUADE, *y* the persuadee, *x* the persuader, where *x* and *y* are individuals).

Due to this meaning postulate, the agent of the embedded position in (16) must be identical to the *persuadee* (*Minswu-lul*) of the matrix clause. A fundamental assumption in Cormack and Smith (2004: 68) is that the lexical meaning of *seltukha-* ‘persuade’ (and Japanese *ssumeru* and *settoku suru*)⁶ is identical to that of the English *persuade*, and so the Meaning Postulate is equally applied to the meanings of the verbs in the languages. However, we argue that the Meaning Postulate does not account for sentences like (10). Cormack and Smith (2004: 68, footnote 23) assume that the sentences such as (10) are possible due to a causative coercion of some kind. However, they do not describe how exactly such a coercion saves the sentences. We believe that the sentences are serious empirical problems to Cormack and Smith (2004). Furthermore, a theory which

6 The verb *seltukha-* is a combination of the Sino-Korean verbal noun *seltuk* ‘persuasion’ and the light verb *ha* ‘do.’ The Japanese verb *settoku suru* basically has the same internal structure.

does not need such coercion would be superior to one that needs it, and we argue below that our non-control analysis of the *seltukha*-constructions can naturally account for data like (10).

In addition, according to Monahan (2003), Cormack and Smith's (2002, 2004) meaning postulate predicts that the following sentence should have the interpretation that is not actually available for the sentence:

- (18) *Minswu-nun [ku yepaywu-ka kica-eykey inthepyupat-tolok]*
Minswu-Top the actress-Nom reporter-to interview.Pass-Tolok
seltukhay-ss-ta.
persuade-Pst-Dec
'#Minswu persuaded the reporter to interview the actress.'

Cormack and Smith (2004: 72) object that the nominative subject, not the dative logical subject, in the embedded clause is an agent, and the sentence has the meaning that Minswu persuaded the actress to get/let herself (be) interviewed by the reporter. Indeed, the subject of a passive can be a kind of agent (e.g., *Jane-i ilpwule saca-eykey meh-hi-ess-ta*. 'Jane was intentionally eaten by the lion.'). However, the reporter in (18) can be an agent in the event of interviewing the actress even though the actress helps or allows the reporter to interview her. In short, Cormack and Smith's (2004) analysis overgenerates an interpretation for (18) that Minswu persuaded the reporter to interview the actress.

3.4 *Pro*

Choe (2006) argues that "Korean does not employ (obligatory) object control, either forward or backward, which may imply that Korean does not employ obligatory PRO at all." She claims, instead, that *pro* is involved in the *seltukha*-constructions like the following (see also Park 2012)

- (19) a. *Yenghuy-nun Chelswu-lul [pro ttena-tolok] seltukhay-ss-ta.*
Yenghuy-Top Chelswu-Acc leave-Tolok persuade-Pst-Dec
'Yenghuy persuaded Chelswu to leave.'

- b. *Yenghuy-nun pro [Chelswu-ka ttena-tolok] seltukhay-ss-ta.*
 Yenghuy-Top Chelswu-Acc leave-Tolok persuade-Pst-Dec
 ‘Yenghuy persuaded Chelswu to leave.’

According to Choe (2006), (19a) is not obligatory control, and (19b) involves pragmatic coreference.

Choe (2006) does not explain the awkwardness of sentences like (12) with the two explicit NPs. If the matrix object or the embedded subject can appear in the *seltukha*-constructions as in (19), then why is it so bad if the two NPs appear simultaneously in the *seltukha*-constructions such as (12)? In addition, Choe (2006) does not discuss the *seltukha*-constructions with no explicit NP like (9). Hence, the various possible interpretations of these *seltukha*-constructions were not discussed in Choe (2006), either. Moreover, she mentioned a *seltukha*-construction with the dative object, but it was not seriously discussed. Finally, the data in Choe (2006) seem to be based on her own intuitions. Although the data collection of this kind may not be a serious problem or it may have its own merits, it seems better to collect data from various sources. In this paper, we propose an account for (12), discuss various forms and meanings of the *seltukha*-constructions, and provide more evidence employing various empirical methods.

4. Corpus analysis

4.1 Annotation

The corpus this study exploits in order to look at the distribution and linguistic behaviors of the so-called object control constructions including *seltukha*- is the Sejong POS-tagged corpus (consisting of approximately 15 million words). The annotation for the current analysis is carried out as follows. First, a programming script was implemented in order to extract the potentially relevant forms from the source data. There are two types of relevant forms; one aims to figure out how the so-called object control verbs take the dependents and the other aims to see which verbs co-occur with the suffix *-tolok* in the data. The

numbers of the extracted instances for each of them are 7,074 and 10,676. These instances were converted into a database format for the next step. Utilizing the database, an online workbench on which the annotators read each tagged instance one by one and judged the linguistic features was implemented. The annotation was crosschecked by three different annotators, and the entire tagging process was repeated twice. This means that each instance was examined six times (three annotators, two iterations).

The annotation process largely examined how the argument(s) of the verbs were realized.⁷ If the persuadee linguistically appeared in the instance, which case marker is attached to the NP was tagged. If an object was realized but it did not refer to the persuadee, the separate tag was attached to the instance. If a complement clause appeared with *-tolok* and other suffixes, the complementizer was stored into the database. Finally, if the control verb formed a relative clause and the relativized head functioned as either the subject or the object in the relative clause, a separate tag was attached in order to exclude the instances in the calculation. The tagged items are all presented in Appendix A.

The extracted and annotated verbs are summarized in Table 1. The original list of verbs was taken from Polinsky (2007), which includes eleven verbs. In addition to them, we added four more synonyms to make a more comprehensive analysis. The *setukha-* verb (boldfaced in Table 1) is ranked eighth and accounts for approximately 5% out of the fifteen items.

Table 1. Object control verbs in Korean

Verb	Freq.	Prop.	Verb	Freq.	Prop.
<i>yokwuha-</i> ‘demand’	2,438	34.46%	<i>pwuchwuki-</i> ‘incite’	303	4.28%
<i>yochengha-</i> ‘request’	690	9.75%	<i>kenuyha-</i> ‘propose’	178	2.52%
<i>pwuthakha-</i> ‘ask’	581	8.21%	<i>myenglyengha-</i> ‘command’	177	2.50%
<i>yutoha-</i> ‘induce’	502	7.10%	<i>kwenyuha-</i> ‘recommend’	168	2.37%
<i>cisiha-</i> ‘order’	485	6.86%	<i>thailu-</i> ‘admonish’	140	1.98%
<i>kangyoha-</i> ‘force’	456	6.45%	<i>kwenkoha-</i> ‘advise’	125	1.77%

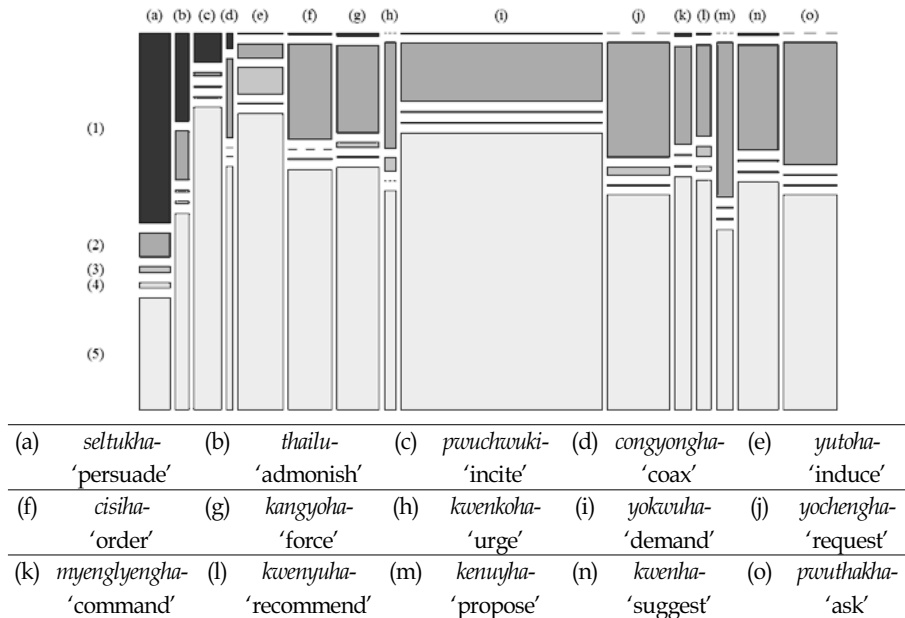
7 When it comes to the suffix *-tolok*, the functional type of *-tolok* was judged: ‘until’, ‘purpose’, ‘resultative’, ‘command (or recommendation)’, a complement of *ha-* or *toy-*, etc. In addition to this, the verb on which the *-tolok* clause was dependent was found and stored into the database. This information was collected in order to measure the association strength between *-tolok* and verbal items using the collocation analysis. Note that the quantitative analysis of the *tolok*-clauses is not dealt with in this article for want of space but fully presented in Appendix A for further analysis.

<i>kwenha-</i>	‘suggest’	429	6.06%	<i>congyongha-</i>	‘coax’	72	1.02%
<i>seltukha-</i>	‘persuade’	330	4.66%				

4.2 Distributional properties of control verbs

The current corpus analysis addresses the distributional properties of the *seltukha*-constructions focusing on the linguistic realization of those who are supposed to act following what the person associated with the matrix subject intends. The NP appears in the embedding or embedded clause with different case markers as enumerated in §2: accusative, dative, and nominative. Because several nominal markers such as the topic marker (*un*) are sometimes substituted for the ordinary case markers in Korean, these supplementary nominal markers are separately counted. Note that the NP that refers to the person to be persuaded or controlled does not necessarily appear in surface form. If the NP is missing as such, the instances are also separately counted.

The frequency table factored by the different verbs and the different case-markings are visualized in the following mosaic plot.



(1)	accusative	(2)	dative	(3)	nominative	(4)	others	(5)	unexpressed
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Figure 1. Realization of the person to be persuaded (or controller / controllee)

The columns from (a) to (o) indicate which verb takes which types of NPs (associated with the persons to be persuaded or controlled). The Y-axis represents the ways of NP realization such as accusative, dative, nominative, others (i.e., supplementary), and null (i.e., unexpressed).

It is necessary to take notice of the ‘unexpressed’ items in the corpus data. The instances in which the *-tolok* marker and the *seltukha*-verb co-occur with each other appear 19 times. Out of them, one instance was realized as a relative clause and therefore discarded in the analysis process. Out of the other 18 instances, the persuadee was either expressed with different case markers (nominative: five times, accusative: four times, dative: three times) or unexpressed (six times, like the example given in (9)). This distribution indicates that the persuadee can be very naturally omitted in the *seltukha*-constructions and therefore the *pro*-drop analysis is not odd at all. One utterance adapted from the corpus data is instantiated in (20), in which the woman to be persuaded is mentioned in the previous utterance (20A) and then dropped in the current utterance (20B).

- (20) A: *ku yeca-eykey etten iyaki-lul ha-l-kka?*
 the woman-Dat what story-Acc do-Fut-Que
 ‘What should I say to her?’
 B: *keki ka-nun kes-ul phokiha-tolok seltukhay-la.*
 there go-Rel thing-Acc give_up-Tolok persuade-Imp
 (lit.) ‘Persuade (her) to give up going there.’

Those who want to advocate the control analysis of the *seltukha*-constructions should take the examples like (20) and others into account.⁸ As far as we know,

⁸ We acknowledge that the example provided in (20) can be analyzed in different ways. The null arguments in the recent syntactic studies are subcategorized into more specific types such as constituent *pro*-drop and discourse *pro*-drop. The former that entails a linguistically expressed antecedent in the context is sometimes called an argument ellipsis or an NP ellipsis (Saito 2007; Takahashi 2008; etc.). In this respect, the null element in (20B) can be regarded as an elided NP (see the discussion in §7.2). Nonetheless, since such a distinction in null arguments is still

the studies that advocates the control analysis do not directly account for how the sentences like (20) can build up on the parse tree.

In addition, this mosaic plot implies that the so-called object control verbs are not homogeneous at least with respect to argument realization. The *seltukha*-verb represented in the first column preferably takes the accusative form when the persuadee linguistically appears as indicated by the darkest portion. In other words, in the most representative argument structure of *seltukha*- the persuadee is realized as an accusative form in the embedding clause. In this respect, the *seltukha*- verb has a different tendency from the other control verbs. The other verbs represented in the columns (e) to (o) take the accusative form very minimally as shown in the upper side (zero or few times). Instead, they normally assign the dative case to the controllee if it appears as indicated by the second top portions. The second column for the verb *thailu*- ‘admonish’ exhibits a similar distribution to *seltukha*-, in which the accusative form accounts for the largest proportion. Recall that *thailu*- is regarded as a synonym of *seltukha*- in Korean dictionaries. The other two verbs in the columns (c) and (d), *pwuchwuki*- ‘incite’ and *congyongha*- ‘coax’, are somewhere between the *seltukha*-type and the others represented in columns (e) to (o) in that the accusative forms are used as frequently as the dative form. One more noticeable point is that the nominative form is not often used across the verbs except (e) *yutoha*- ‘induce’. This additional finding taken from the corpus data will be more discussed later in §7.3.

4.3 A counterexample to control analysis

In addition to making the quantitative analysis presented in the previous subsection, the current corpus investigation serves as a preliminary step for designing the experimental study provided in the following sections (i.e., methodological pluralism, McEnery and Hardie 2011). In particular, the corpus exploration identifies an instance that the previous studies can hardly account

controversial (Duguine 2017), we cannot rely on the analysis in the current work. A further study will be able to provide an ellipsis-based analysis of the sentences like (20) exploring the corpus data (For general discussion about ellipsis, see Park 2018 and others). Recall that all the utterances extracted from the corpus can be seen in Appendix A.

for, which will be further examined in the subsequent language experiment.

In (21) the accusative object (*phyengyang-ul* ‘Pyongyang-Acc’) in the matrix clause and the nominative subject (*pwukhan-i* ‘North Korea-Nom’) in the embedded clause appear at the same time. On the one hand, if the two NPs (underlined) are evaluated as referring to different entities as shown in the forms, then the co-indexation constraint on object controls is violated. This means that (21) indicates that not all the *seltukha*-constructions necessarily obey the constraints presented in (1a); i.e., the controller X must be a co-dependent of S (Landau 2013: 79). On the other hand, they can metonymically refer to the same entity (probably the political leader in North Korea), and we prefer this interpretation within the given context. Even in this analysis, (21) would serve as a crucial counterexample against the control analysis of the *seltukha*-constructions. Note that the sentence in (21) is similar to that in (12) in that the two NPs referring to the same entity appear simultaneously, although (21) sounds more natural than (12). This suggests that the two explicit NPs are both licensed in the *seltukha*-constructions, but something hinders the two NPs from appearing sequentially like (12).⁹

- (21) [*pwukhan-i* *hayksachaltan-uy* *ipkwuk-ul* *heyongha-tolok*]
 North Korea-Nom nuclear_inspector-Gen entrance-Acc allow-Tolok
 kwanlyen kwukka-tul-i *phyengyang-ul* *seltukhay-ya* *han-ta*.
 allied country-Plu-Nom Pyongyang-Acc persuade-Conn must-Dec
 (lit.) ‘The allied countries must persuade North Korea Pyongyang to allow
 the entrance of the nuclear inspectors.’

Our interim hypothesis is as follows. The sentence (12) sounds less acceptable because the two NPs referring to the same entity in the same form appear right next to each other. By contrast, the *tolok*-clause in (21) is fronted (not *in-situ*), which makes the two NPs apart from each other enough. Accordingly, we test

⁹ Recall that syntactic well-formedness is a sufficient condition for acceptability (Song and Oh 2017b; and many others). If an expression violates a syntactic rule, the expression necessarily sounds unacceptable, but not vice versa. It is a fact that the sentence (12) sounds less acceptable, but the reason may be extra-syntactic. In other words, (12) and (21) both meet the syntactic requirement, but the former may not sound good enough for the other reason(s).

this hypothesis in §6.

If one adheres to the control analysis of the *seltukha*-constructions in Korean, it is indeed required to account for how the instances excerpted from the read data like (21) can be successfully derived within the control theory. One potential explanation of (21) would be positing two (or more) different argument structures of *seltukha*- in Korean; one with the control constraint and the other without it. The present study does not postulate this, and the alternative will be refuted in §7.2 in detail.

5. Co-indexation

As discussed earlier, the previous analyses of control constructions are not enough to account for the syntactic and semantic properties of the *seltukha*-constructions. In this section, we further argue that there is no strong evidence for us to believe the *seltukha*- verb necessarily involves an object control. The distributional analysis provided in this section is empirically bolstered by a pen-and-paper survey. The survey was conducted with the experiment discussed in the next section; i.e., each participant in the experiment was additionally solicited to answer the survey right after completing the lab-based experiment. The survey form is given in Appendix B.

5.1 One explicit NP

The default reading of the sentence in (22), is that the teacher persuaded Mary to go to law school (see Monahan 2003 for backward control analysis of sentences like (22)).

- (22) *sensayngnim-un* ____ [*Mary-ka* *peptay-ey* *ka-tolok*]
 teacher.Hon-Top Mary-Nom law_school-to go-Tolok
 seltukha-si-ess-ta.
 persuade-Hon-Pst-Dec
 ‘The teacher persuaded Mary to go to law school.’

However, if a certain context is given as in (23), it is possible for the silent matrix object not to be co-indexed with the subject of the *tolok*-clause.

- (23) [Context: The teacher talked to Mary's mother about Mary's career.]
Mary emeni-nun Mary-ka uytay-ey ka-ki-lul
 Mary mother-Top Mary-Nom medical_school-to go-Nom-Acc
palay-ss-ciman, sensayngnim-un ____ [*Mary-ka peptay-ey*
 want-Pst-but teacher.Hon-Top Mary-Nom law_school-to
ka-tolok] *seltukha-si-ess-ta.*
 go-Tolok persuade-Hon-Pst-Dec
 (lit.) 'Mary's mother wanted Mary to go to medical school, but the teacher persuaded Mary's mother Mary to go to law school'

Generally speaking, a person can influence herself rather than other people. This seems to be the reason why the default reading of the sentence in (22) is the co-indexation reading. But it is not that the control reading is necessary for (22); when a persuadee can be inferred from a context and the implicit persuadee has an authority or something to influence the explicit subject of the *tolok*-clause as in (23), then the co-indexation reading is not required. This is an unexpected fact if *seltukha*- 'persuade' is a control verb.

Similarly, the default reading of the sentence in (24) is that the teacher persuaded Mary's mother to go to law school.

- (24) *sensayngnim-un Mary emeni-lul* [____ *peptay-ey ka-tolok*]
 teacher.Hon-Top Mary mother-Acc law_school-to go-Tolok
seltukha-si-ess-ta.
 persuade-Hon-Pst-Dec
 'The teacher persuaded Mary's mother to go to law school.'

However, if an appropriate context is given as in the following, the silent subject of the *tolok*-clause is not necessarily co-indexed with the matrix object:

- (25) A: *way Mary-ka peptay-ey ka-n ke-ya?*
 why Mary-Nom law_school-to go-Rel thing-Que

‘Why did Mary go to law school?’

- B: *Mary emeni-nun Mary-ka uytay-ey ka-ki-lul*
 Mary mother-Top Mary-Nom medical_school-to go-Nom-Acc
wenhay-ss-ciman, sensayngnim-i Mary emeni-lul
 want-Pst-but teacher.Hon-Nom Mary mother-Acc
 [____ *peptay-ey ka-tolok*] *seltukhay-ss-ketun.*
 law_school-to go-Tolok persuade-Pst-Dec
 (lit.) ‘Mary’s mother wanted Mary to go to medical school, but the
 teacher persuaded Mary’s mother Mary to go to law school.’

The sentences and their interpretations in this subsection suggest that co-indexation between the matrix object and the embedded subject is not a requirement in the *seltukha*-constructions. This supports the claim that the verb *seltukha*- ‘persuade’ is not a control verb in Korean and either of the two NPs can be dropped since Korean is a *pro*-drop language.

5.2 No explicit NP

Both the matrix object and the embedded subject can be silent at the same time, as already shown in (9) above. A similar sentence is given in (26) with some context. At the post-experiment survey, 72.29% of the participants said yes to the question whether the sentence uttered by Jinhi in (26) is natural in the context.

- (26) Minse: *sensayngnim-i Yenghuy emeni-lul manna-se*
 teacher.Hon-Nom Yenghuy mother-Acc meet-and
Yenghuy-ka peptay-ey ka-yahan-ta-ko iyakihay-ss-tay.
 Yenghuy-Nom law_school-to go-should-Dec-Comp talk-Pst-Dec
 ‘The teacher told Yenghuy’s mother that Yenghuy should go to law
 school.’
- Jinhi: *kulenikka sensayngnim-i* ____ [____ *peptay-ey ka-tolok*]
 you_mean teacher.Hon-Nom law_school-to go-Tolok

seltukhay-ss-ta-num ke-ya?
 persuade-Pst-Dec-Rel thing-Dec
 (lit.) ‘You mean that the teacher persuaded to go to law school?’
 Minse: *ung kulayse Yenghuy-ka peptay-ey ka-n ke-lay.*
 yes so Yenghuy-Nom law_school-to go-Ren thing-Dec.
 ‘Yes, that’s why Yenghuy went to law school.’

The default reading of the sentence itself uttered by Jinhi in (26) is the co-indexation reading (i.e., the teacher persuaded someone to go to law school), but the identities of the two silent NPs can be determined by the utterance context. In (26), the persuadee is Yenghuy’s mother and who actually went to law school is Yenghuy. Under the assumption that *seltukha-* ‘persuade’ is a control verb, it would be very difficult to account for the syntax and semantics of the sentence: the simultaneous appearance of the two null NPs and no co-indexation between them. However, the same data can be accounted for without difficulty by a *pro*-drop analysis of the verb; the two NPs are omitted and their identities can be inferred from the utterance context.

5.3 Two explicit NPs

As discussed in §2.1, one of the fundamental properties of control verbs is that the controllee should be silent. If *seltukha-* is really a control verb like *persuade*, it should never allow the two explicit NPs (the matrix object and the embedded subject) to appear simultaneously in the *seltukha*-constructions. This prediction seems to be borne out in (12), repeated in (27).

(27) ??*sensayngnim-kkeyse Mary-lul [Mary-ka peptay-ey ka-tolok]*
 teacher.Hon-Nom Mary-Acc Mary-Nom law_school-to go-Tolok
seltukha-si-ess-ta.
 persuade-Hon-Pst-Dec
 ‘The teacher persuaded Mary that she should go to law school.’

The oddness of the sentence can be accounted for if *seltukha-* is a control verb like *persuade* and so either of the two NPs should be silent.

Alternatively, however, we can also say that the sentence in (27) is not acceptable because the referential subject *Mary-ka* in the *tolok*-clause violates the Condition C. If the subject in the embedded clause is a pronoun as in (28), the sentence seems to be a little bit more acceptable (see similar data in Cormack and Smith 2010: 70 and Hoe 2014: 4, (6))

- (28) ?*sensayngnim-i Yenghuy-lul [kunye-ka tayhak-ey ka-tolok]*
 teacher.Hon-Nom Yenghuy-Acc she-Nom university go-Acc
seltukhay-ss-ta. (18.07%)
 persuade-Pst-Dec
 (lit.) ‘The teacher persuaded Yenghuy she to go to university.’

If the Condition C (or more broadly, constraints of binding theory) is really responsible for the awkwardness of the sentence in (27), then the sentence in (28) should be clearly acceptable. In short, (28) can be a problem for both the binding analysis and the control analysis of (27). But it still sounds rather awkward though it is better than (27).¹⁰ Notably, if an anaphor appears as the subject of the embedded clause as in (29), the sentence further improves (not significantly though).

- (29) ?*sensayngnim-i Yenghuy-lul [kunye casinj-i tayhak-ey ka-tolok]*
 teacher.Hon-Nom Yenghuy-Acc she self-Nom university go-Acc
seltukhay-ss-ta. (28.05%)
 persuade-Pst-Dec
 (lit.) ‘The teacher persuaded Yenghuy herself to go to university.’

10 A reviewer suggested that it would be interesting to examine *seltukha*-constructions with two pronouns like the following:

- (i) ?*sensayngnim-i ku-lul [ku-ka tayhak-ey ka-tolok] seltukha-si-ess-ta.*
 teacher.Hon-Nom he-Acc he-Nom university-to go-Tolok persuade-Hon-Pst-Dec
 (lit.) ‘The teacher persuaded him he to go to university.’

The sentence in (i) sounds a bit more awkward than the corresponding *seltukha*-constructions with only one pronoun (which functions as either the matrix object or the embedded subject). This can support the Anti-redundancy Hypothesis although more empirical research about such sentences is required to verify the judgments.

Since Korean allows a long-distance binding of anaphor, the sentence in (29) does not violate a condition of binding theory for Korean. But (29) can be another problem for the control analysis of *seltukha*- ‘persuade’ since the two explicit NPs appear at the same time in the sentence.

Furthermore, the two explicit NPs referring to different individuals can appear simultaneously in a sentence, as discussed with (10). Almost half the participants (48.19%) of the survey responded that the following conversation is natural:

- (30) Minsu: *sensyngnim-i mwukwu-lul [mwu-ka tayhak-ey ka-tolok]*
teacher.Hon-Nom who-Acc who-Nom university-to go-Tolok
seltukhayss-tako?
persuade-Dec
(lit.) ‘Who did the teacher persuade whom to go to university?’
- Jinhi: *sensyngnim-i Yenghuy emeni-lul [Yenghuy-ka tayhak-ey*
teacher.Hon-Nom Yenghuy mother-Acc Yenghuy-Nom go-Tolok
ka-tolok] seltukhayss-tako.
university-Tolok persuade-Dec
(lit.) ‘The teacher persuaded Yenghuy’s mother Yenghuy to go to university.’

This suggests that at least for some speakers *seltukha*- ‘persuade’ may not be a control verb; it would be a transitive verb which takes an object and a clause as its complements.

The non-control analysis of *seltukha*- ‘persuade’ is further supported by another kind of data like the following. Note first that no silent element appears in the sentences, which is a challenge to a control analysis of *seltukha*- ‘persuade’:

- (31) a. *Chelswuj-ka sacangnim-ul [casinj-i ku il-ul math-tolok]*
Chelswu-Nom CEO.Hon-Acc self-Nom the task-Acc undertake-Tolok
seltukhay-ss-ta.
persuade-Pst-Dec
(lit.) ‘Chelswu persuaded the CEO self to undertake the task.’
(self = Chelswu, 83.34%)

- b. *Chelswu*_j-*ka* *sacangnim*-*eykey* [*casin*_j-*i* *ku* *il-ul* *math-tolok*]
 Chelswu-Nom CEO.Hon-Dat self-Nom the task-Acc undertake-Tolok
seltukhay-ss-ta.
 persuade-Pst-Dec
 (lit.) 'Chelswu persuaded the CEO self to undertake the task.'
 (self = Chelswu, 98.78%)

The sentences in (31) are similar to the sentence (29), but in (31) the anaphor *casin* 'self' is only used as the embedded subject. Since basically *casin* 'self' can be co-indexed with a subject or object (e.g., *Bill-i Minci-lul/eykey casin-i ttokttokha-ta-ko seynoyhay-ss-ta* (lit.) 'Bill_i brainwashed Minci_j into thinking that self_{ij} is smart.'), it is predicted that the embedded subject *casin-i* 'self-Nom' in (31) can be co-indexed with the matrix subject. Indeed, 83.34% and 98.78% of the post-experiment survey participants accept the co-indexation interpretations. The anaphor *casin* 'self' in (31) can also be co-indexed with the matrix object (42.17% for (31a) and 32.93% for (31b)). This difference of acceptability seems to be due to the fact that the anaphor *casin* 'self' tends not to be used to refer to a person who is socially higher than the speaker. In (31) *sacangnim* 'CEO.Hon' with the honorific morpheme indicates that the speaker is socially below the CEO. Another anaphor *ponin* 'self' appears to have no such social implication. If *ponin* 'self' replaces *casin* 'self' in (31) and it is co-indexed with the matrix object, the sentences seem to improve. When *casin* 'self' in (31) is intended to refer to an individual in the utterance context, the sentences are judged to be unacceptable for most people: only 9.64% and 8.54% of the participants accept (31a) and (31b), respectively, with this interpretation. These results are not surprising since *casin* 'self' is an anaphor in Korean and it should find its antecedent in structures including the anaphor. In sum, the anaphor *casin* 'self' in the embedded clause can be co-indexed with the subject or the object in the matrix clause, and this could be a critical hole in the control analysis of *seltukha-* 'persuade.'

Admitting that not all speakers fully accept the expressions provided above (14.46% acceptance rate of (31a) and 76.83% acceptance rate of (31b)), we point out that many native speakers anyway can bind the reflexive form in the embedded clause to even the subject in the embedding clause (83.34% with (31a) and 98.78% with (31b)).¹¹ This is another piece of evidence for the claim that

seltukha- ‘persuade’ in Korean may not be a control verb. If so, the naturally arising question is then why the sentences from (27) to (30) sound odd (or natural) to different degrees. In the following section we argue with experimental results that the two explicit NPs tend not to occur simultaneously in the *seltukha*-constructions to avoid a redundancy.

6. Experimental analysis

6.1 The hypothesis

As defined before in §2, we formulate a hypothesis that two NPs referring to the same entity (or having the same form) avoid co-occurring immediately. This hypothesis can account for the different degrees of the awkwardness of the sentences from (27) to (30). In (27) the matrix object and the embedded subject refer to the same individual. In addition, they have almost the same forms, *Mary-lul* and *Mary-ka*, and appear right next to each other. These make the sentence sound very redundant. However, in (28) even though the two NPs refer to the same entity and appear right next to each other, they have different forms, a referential NP (*Mary-lul*) and a pronominal NP (*kunye-ka*). This reduces the redundancy involved in (28), and so the sentence (28) sounds less awkward than (27). In (29) *casin* ‘self’ adds an emphasis to the subject of the *tolok*-clause, which further reduces the redundancy. In (30), the two NPs have the different forms and refer to different individuals even though they appear right next to each other. No redundancy is involved in (30).

In addition to these sentences with the two explicit NPs, the Anti-redundancy Hypothesis can account for the *seltukha*-constructions having only one explicit NP or no explicit NP discussed in §5.1 and §5.2, respectively; they are all acceptable since they do not have two explicit NPs, and thus no redundancy arises. In short, the distributions of the two NPs in the *seltukha*-constructions can be accounted for by the Anti-redundancy Hypothesis.

11 The distinction between accusatives and datives is also revealed with this example. This implies that the two types of the *seltukha*-construction are not on a par with each other although they may share the same truth-condition.

In the subsections that follow, we present some empirical data from experiments in favor of the hypothesis.

6.2 Experimental design

The experimental task used for the current analysis is the five-point Likert scale task ('1': the least acceptable, '5': the most acceptable). The toolkit used for the current lab-based experiment is OpenSesame (Mathôt et al. 2012). This toolkit enables all the stimulus items to be presented to each participant in a fully random order, and the responses were separately stored into a log file. The raw responses from 1 to 5 were Z-transformed per participant in order to alleviate the point bias. The grand mean of the z-scores were drawn for each condition.

The test items the current experiment concerns include 53 sentences in total. Amongst them, 45 sentences consist of nine conditions and five pairwise sentences for each condition. The nine conditions can be divided into four subgroups with two factors following the interim findings obtained from the corpus analysis (i.e., methodological pluralism, McEnery and Hardie 2011). The test items are all given in Appendix C-1.

The first factor largely comes from the instance provided in (18); if the *-tolok* clause is fronted, the two NPs that refer to the same entity can appear at the same time (TYPE in the following figures). The first subgroup includes two types with redundancy, in which the persuadee is realized as either the accusative form or the dative form and the embedded subject consecutively appears. The second subgroup is a variation of the second, in which two adverbs are inserted between the object in the embedding clause and the subject in the embedded clause. The last subgroup is also a variation of the second, in which the embedded clause (i.e., *tolok*-clause) is left-dislocated. In addition to these, eight sentences were included in order to test the Anti-redundancy hypothesis in a thorough way. Six of them include two sequential NPs referring to either the same entity or different entities. The last two sentences are the variation of the third subgroup, in which the adverbial expression appears after all the two NPs.

The second factor is which case is assigned to the NPs, and the other factor pertains to the variation in sentential forms (CASE in the following figures). The

subgroup includes the three types of default *seltukha*-constructions, in which the persuadee is realized as nominative, accusative, and dative forms. Recall that the *seltukha*- verb exhibits a different pattern in distribution from the other so-called object control verbs with respect to the distinction between accusative and dative. Note that this section does not largely address the second factor in order to focus on the Anti-redundancy Hypothesis, but the entire statistical analyses are presented in Appendix C-3.

In addition to the 53 test items, 100 filler items and 50 control items consisting of good and bad sentences (half and half for each) were added into the stimulus items. The acceptability judgments of these items were made in a previous experiment carried out on a large scale (Song and Oh 2017a). Each participant was supposed to respond to six pretest items before the 203 main items, and it took approximately fifteen minutes for each participant to respond to the 209 items in total.

For the current experiment, 83 participants were recruited at a university located in Seoul. The average age of the participants is 22.62, of which the standard deviation is 4.04. Out of the participants who major in various studies, 16.9% have taken one or more linguistics-related courses before. The ratio of male to female is 30.26%. Note that some participants refused to describe such a personal information. The data log files of two out of the 83 participants were discarded because of a technical issue. Out of the 81 participants, one was detected as a slacker in that more than 20% of his or her responses to the control items was incorrect. The data points provided by the slacker participant were all eliminated from the data table. The data table created thus far is readily available in Appendix C-2.

The inferential analysis employed for the current work is the linear mixed effect model. The model was created using R (R Core Team 2019) and the ‘lme4’ library (Douglas et al. 2015), replicating the source scripts provided in Winter (2013) and Shin (2019). The significance was determined following Gelman and Hill (2006); i.e., if the absolute *t*-value of a fixed factor is more than 2, the effect is significant at $\alpha < .05$. All the mixed effect model-based statistical analyses in this section are included in Appendix C-3 in detail (with several sub-steps in statistics such as testing the linearity, homogeneity, normality, and multicollinearity of residuals, see Winter 2013 and Shin 2019).

6.3 Anti-redundancy

Assuming that the shorter the distance between the two NPs is the more redundant the sentence is, the Anti-redundancy Hypothesis predicts that if the distance between the two NPs significantly increases, then the *seltukha*-constructions should be acceptable. This is verified with an experimental result. When the *tolok*-clause is left-dislocated in the *seltukha*-constructions as exemplified in (32), such sentences are significantly better than the *seltukha*-constructions like (27) without the dislocation.

- (32) [Minci-ka *hakkyo-ey* *ka-tolok*] *emenim-kkeyse* Minci-lul
 Minci-Nom school-to go-Tolok mother.Hon-Nom Minci-Acc
seltukha-si-ess-ta.
 persuade-Hon-Pst-Dec
 (lit.) ‘The mother persuaded Minci Minci to go to school.’

The general improvement of the acceptability is shown in Figure 2 with the result of the mixed effect model (see Appendix C-3 for the details). The factor TYPE (i.e., whether the *tolok*-clause is *in-situ* or dislocated) causes a very significant effect on the acceptability as indicated by the *t*-value (16.856). As is well-expected, the dislocation of the *tolok*-clause to the front of the sentence with an accusative object significantly improves the acceptability (Figure 3). This experimental result matches well with the instance excerpted from the corpus data, as provided in (21). If the *tolok*-clause is fronted, the two NPs referring to the same entity can appear at the same time in the embedding and embedded clause. If the corpus data and the experiment result converge with each other, the findings should be taken into deep consideration.

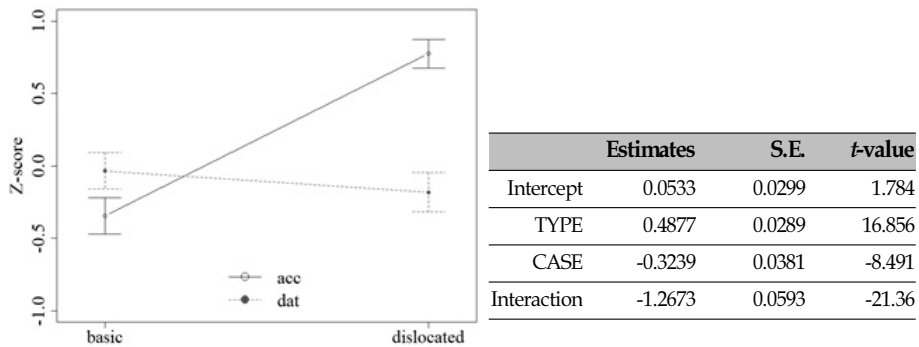


Figure 2. Two NPs with/without dislocation

However, if the matrix object is marked with the dative case, the dislocation does not affect the acceptability (as shown by the *t*-values of CASE and Interaction). This suggests that the dative object is different from the accusative object though they are positioned in the main clause (see §7.3).¹²

The *seltukha*-constructions with only one explicit NP are significantly better than the *seltukha*-constructions like (27) with the two explicit NPs referring to the same entity and having almost the same form. This pattern is shown in Figure 3, for which the factor TYPE also causes a very significant effect on the acceptability judgments as indicated by the *t*-value (22.809).

12 We assume that the dative object is an adjunct, but the accusative object is a complement of the verb, and this makes the difference. A typical test to distinguish complements from adjuncts is the *do-so* test.

- (i) *ku-ka Minci-eykey/-lul [hakkyo-ey nao-tolok] seltukhay-ss-ko, sensayngnim-to*
 he-Nom Minci-Dat/-Acc school-to come-Tolok persuade-Pst-and teacher-also
Minci-eykey/-lul kulay-ss-ta.*
 Minci-Dat/-Acc do_so-Pst-Dec
 (int.) 'He persuaded Minci to come to school, and so did the teacher.'

As shown in (i), the accusative NP cannot appear in the second clause, but the dative NP can. This indicates that the dative NP is more like an adjunct rather than a complement. Then we can say that in *seltukha*-construction with the dislocation the verb combines with the dative object (adjunct) first rather than the *tolok*-clause (complement) and this combination goes against the general tendency that a head combines with a complement first rather than an adjunct.

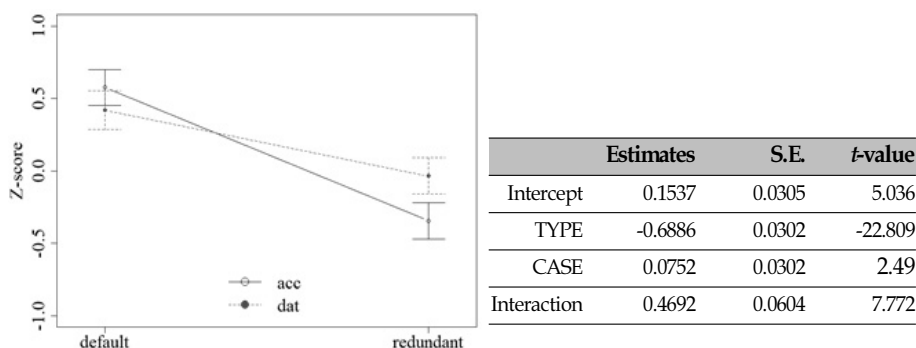


Figure 3. One explicit NP vs. Two explicit NPs

Nonetheless, it is noticeable that the tendency to avoid redundancy is also found in sentences headed by other verbs. We examined the three verbs, *mit-* ‘believe’, *soki-* ‘deceive’ and *malha-* ‘say.’ The three verbs in (33) have different properties: *mit-* ‘believe’ needs a clause complement, but *soki-* ‘deceive’ and *malha-* ‘say’ require the two complements, one of which is a case-marked NP. The difference between *soki-* ‘conceive’ and *malha-* ‘say’ is that the object of the former must be accusative, but that of the latter must be dative. Note that the three verbs commonly take a complement clause even though the syntactic structures are not the same.

- (33) a. *sacangnim-kkeyse* [Minswu-ka Yenghuy-lul/*?Minswu-lul
 president.Hon-Nom Minswu-Nom Yenghuy-Acc/Minswu-Acc
cohaha-n-ta-ko] *mitu-si-ess-ta.*
 like-Pres-Dec-Comp believe-Hon-Pst-Dec
 ‘The president believed that Minswu likes Yenghuy/*Minswu.’
- b. *sensayngnim-kkeyse* *Yunho-lul* [Mary-ka/??Yunho-ka *sihem-ey*
 teacher.Hon-Nom Yunho-Acc Mary-Nom/Yunho-Nom exam-to
hapkyekhay-ss-ta-ko] *soki-si-ess-ta.*
 pass-Pst-Dec-Comp conceive-Hon-Pst-Dec
 ‘The teacher conceived Yunho into believing that Mary/Yunho passed the exam.’
- c. *halapenim-kkeyse* *Chelswu-eykey* [Junho-ka/*?Chelswu-ka
 grandfather.Hon-Nom Chelswu-to Junho-Nom/Chelswu-Nom

Cwungkwiuke-lul cal ha-n-ta-ko] malha-si-ess-ta.
 Chinese-Acc well do-Pres-Dec-Comp say-Hon-Pst-Dec
 ‘The grandfather told Chelswu that Junho/Chelswu speaks Chinese well.’

In (33), when the two underlined NPs refer to the same individual in each sentence, the sentence sounds bad. But if they refer to different individuals, then the sentence sounds better. This general pattern is represented in Figure 4 with the results of the Paired T-test.

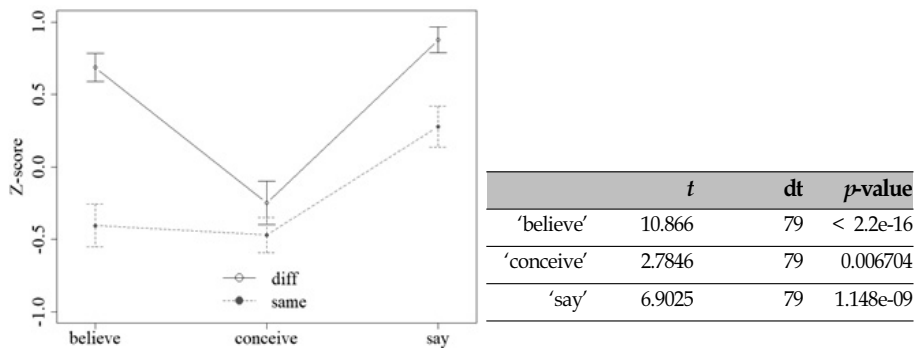


Figure 4. Anti-redundancy with other verbs

The chart and the *p*-values in the table indicate that the redundant NPs in the embedding and embedded clauses have an adverse effect on acceptability judgments irrespective of the verbal types.

Although the acceptability differences vary among the three verbs probably because the three verbs have different properties, what they have in common is the tendency to avoid the redundancy. This shows that the Anti-redundancy Hypothesis is not just limited to the *seltukha*-constructions, but it would be a general principle constraining occurrence of NPs of various verbs in Korean. In short, the tendency to avoid the redundancy in the *seltukha*-constructions is not a stipulation, but a result of a general principle.

Under the assumption that the linear distance between the two NPs matters for redundancy, a problem for the Anti-redundancy Hypothesis is that when two adverbs are placed in between the matrix object and the embedded subject as in

(34), which thus increases the distance between them, such sentences are slightly worse than those without the adverbs ($|t| \approx 3.096$) and the interaction with case alternation may not exist ($|t| \approx 0.664$).

- (34) *halapenim-kkeyse Minci-lul/-eykey maywu coyonghi*
 grandfather.Hon-Nom Minci-Acc/-Dat very quietly
 [Minci-ka hakkyo-ey tuleka-tolok] seltukha-si-ess-ta.
 Minci-Nom school-to enter-Tolok] persuade-Hon-Pst-Dec
 (lit.) ‘Grandfather persuaded Minci Minci to enter the school very quietly.’

We assume that the sentences like (34) are less acceptable since the adverbs creates a garden path effect (or ambiguity); the adverbs can modify the predicate of the embedded clause or the predicate of the main clause. This is supported by the fact that if the adverbs are placed in between the *tolok*-clause and the verb as in (35), which does not create a garden path (or ambiguity), then such sentences are better than those like (34).

- (35) *emenim-kkeyse Unhuy-lul/-eykey [Unhuy-ka hakkyo-ey tolao-tolok*
 mother.Hon-Nom Unhuy-Acc/-Dat Unhuy-Nom school-to return-Tolok
maywu chapwunhi seltukha-si-ess-ta.
 very calmly persuade-Hon-Pst-Dec
 (lit.) ‘The mother very calmly persuaded Unhuy Unhuy to return to school.’

Although a further study is required to examine the exact relation between the adverb modification and redundancy, we assume for now that the redundancy increases as the two NPs with the same form or meaning appear right next to each other.

7. Discussion

7.1 Summary

As confirmed by the experimental results and the instances excerpted from

while the sentence (36) is somehow possible since Korean is a *pro*-drop language. That is, (36) can be derived from (5) or (6) by omitting *Mary-lul/eykey*. However, this approach has a problem; the control analysis of *seltukha*- ‘persuade’ cannot account for other sentences like (10), (21) or (31) with the two explicit NPs.

Then, one may also argue that *seltukha*- ‘persuade’ in sentences like (5), (6) or (36) is a control verb, but *seltukha*- ‘persuade’ in (10), (21) or (31) is not a control verb; i.e., *seltukha*- ‘persuade’ may have multiple subcategorizations. Similarly, we can find that a verb (e.g., *run* as in *She ran* vs. *run* as in *She ran a marathon*) can have multiple subcategorizations, and *seltukha*- ‘persuade’ may be such a case.¹³ However, this approach has some other problems. First, we need independent evidence for such multiple subcategorizations of *seltukha*- ‘persuade.’ Second, it may result in a proliferation of lexical items in the lexicon. By contrast, the *pro*-drop analysis can account for the same phenomena without such proliferation. Third, if *seltukha*- ‘persuade’ in (10) is not a control verb and thus the matrix object and the embedded subject are not necessarily co-indexed with each other, why do we need the control version of *seltukha*- ‘persuade’ only for sentences like (36)? That is, we may say that *seltukha*- ‘persuade’ is not a control verb, but the context ensures the co-indexation reading in (36). Moreover, in fact, co-indexation seems not necessary (but preferred though) in sentences like (5), (6) or (36). Fourth, if *seltukha*- ‘persuade’ in (10) is not a control verb and requires the matrix object and the embedded subject not to be co-indexed with each other (non-co-indexation) since we have a control version of *seltukha*- ‘persuade,’ then why should it require the non-co-indexation? Is there any other verb that requires such non-co-indexation?

To sum up, unless some independent evidence for the alternative hypotheses is found, the presented data seem to serve as a serious challenge to a control analysis of *seltukha*- ‘persuade’ and it seems reasonable to maintain the *pro*-drop analysis of *seltukha*-constructions.

13 In fact, ‘persuade’ in English also has a different subcategorization frame (e.g., *It will be difficult to persuade them that there’s no other choice*). In other words, there are two types of forms such as ‘persuade someone that *S*’ and ‘persuade someone to *VP*’. In contrast, we are addressing a single form in Korean such as ‘... -tolok *seltukha*-’, which ideally involves a single subcategorization frame (cf. Occam’s Razor).

7.3 Related work

As reviewed earlier, the case alternation of the NPs associated with the persuadee in the *seltukha*-constructions has been understudied thus far. However, the difference the case alternation makes in frequency and acceptability is revealed in the annotated corpus data as well as in the experimental results. Figure 1 (based on the corpus data) demonstrates that the *seltukha*-types of verbs tend to take the dative form less frequently than the other so-called object control verbs. Figure 2 (based on the experimental result) indicates that the use of accusatives yields different patterns in acceptability from the use of datives. On the other hand, the nominative case does not appear so often in the corpus data irrespective of different types of the object control verbs (as presented in Figure 1), but it is further borne out that the case does not yield unacceptability (as shown in Figure 5 below). Since they are commonly disclosed in both the corpus analysis and the experimental analysis, the further studies have to research into the underlying reason based on the empirical data the current work provides. In order for the further studies to advance the theory of controls on a more solid empirical foundation, the secondary finding obtained from the corpus and experimental data is additionally provided in this subsection. That is, the *seltukha*-constructions with the accusative NP appear in the corpus most frequently (acc > dat > nom), but the *seltukha*-constructions with the nominative NP are most acceptable to the participants of the experiment (nom > acc > dat).

If the NP marked with the nominative case is the default form as assumed in Kwon and Polinsky 2006, we expect that its frequency is higher than those of the other case-marked NPs. As shown in Figure 1, however, the frequency of the *seltukha*-constructions with the nominative subject is significantly lower than those of *seltukha*-construction with the accusative or dative object. If so, the acceptability of the nominative NP would be also quite low. To verify this prediction, we looked at the acceptability judgments of the three types of constructions as represented in Figure 5.

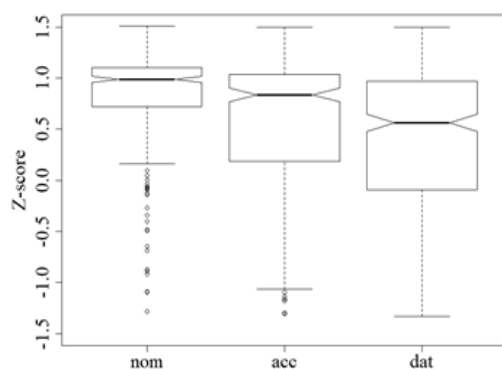


Figure 5. Nom vs. Acc vs. Dat

As is unexpectedly represented in the first box, the acceptability of the *seltukha*-constructions with the nominative subject is good enough (even better than the constructions with the other cases). This mismatch between frequency and acceptability seems to go against the tendency that the more frequently used an expression is, the more acceptable it is. However, if we assume that there is an entailment relation between the frequency and acceptability, we may account for the “mismatch.” Assuming that if an expression is frequently used, then it is highly acceptable, the *seltukha*-constructions with the nominative subject is an expression which is not frequently used, but highly acceptable. Similarly, the cleft constructions appear less frequently in real conversations or texts, and yet they are fairly acceptable so they can be used as a way of the constituency test (Kim 2012). In the recent studies, Divjak (2017) addresses the relationship between frequency and acceptability of linguistic expressions; i.e., it is true that the frequently occurring expressions are necessarily acceptable, but the less frequently occurring expressions are not necessarily less acceptable. That is, the nominative case in the *seltukha*-constructions appears less frequently but does not cause unacceptability.

In Figure 5, it is also notable that the *seltukha*-constructions with the dative case sound less acceptable than those with the other cases. This pertains to the corpus-based findings represented in Figure 1. There are inherently two different groups in the so-called object control verbs in Korean with respect to argument realization. While the *seltukha*-type verbs normally assign the accusative case to

the persuadee, the other object control verbs such as *myenglyengha-* ‘command’ ordinarily constitute a ditransitive construction in which the accusative form denotes the content and the dative form denotes the person to be controlled. In other words, the subcategorization frames of the so-called object control verbs in Korean may not be homogeneous.

As far as we go over, no previous studies have addressed how the *seltukha*-constructions differ in case alternation with respect to frequency and acceptability. The possibility of case alternation (accusatives, datives, and nominatives) and the interaction with different types of so-called control verbs should be reexamined in further studies.

8. Conclusion

There have been many endeavors to apply the generative grammar largely built within the English data to various linguistic structures in Korean for the last few decades. However, we are aware that not all the endeavors necessarily provide a satisfactory explanation. One of the cases would be the *seltukha*-constructions the present study has dwelled on thus far. A few studies have partially challenged the control analysis of the constructions, but the current work has its own significance in that we created and analyzed the empirical data and then distributed them to the public domain.

If the matrix object or the embedded subject is omitted and a context forces the missing NP to be interpreted as being co-indexed with an explicit argument in the sentence, this would give rise to the impression that the *seltukha*-construction is a typical control construction. Nonetheless, a deeper analysis (based on corpus, experiment and survey) tells us that there are a few critical counterexamples to the claim that the constructions involve a syntactic control. First, the matrix object and the embedded subject can appear simultaneously especially when they refer to different entities. Even when the two explicit NPs refer to the same entity, the *seltukha*-constructions are acceptable if the *tolok*-clause is dislocated to the front of the sentence. Second, the co-indexation interpretation is not required for the *seltukha*-constructions no matter whether there is a null NP in the sentences. However, certain

seltukha-constructions with the two NPs referring to the same entity and having almost the same form sound rather awkward. To account for this, the Anti-redundancy Hypothesis was proposed; such NPs tend not to appear simultaneously in a sentence to prevent redundancy.

Lastly, we should say that we do not argue that Korean does not have a control construction at all. Rather, we argue that what has been considered as a seemingly control construction (the *seltukha*-constructions) in Korean may not involve a syntactic control. We believe that the *pro*-drop analysis of the *seltukha*-constructions can be applied to many other constructions with *tolok*-clause and the other so-called control verbs in Korean. A verification of this awaits further research.

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Appendixes

All appendix files are readily downloadable from the following.
<http://bit.ly/2DmWVUR>

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