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Information Structure and Voice Mismatch in VP Ellipsis*

Hae-Kyung Wee (Dankook University)

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Hae-Kyung Wee
Professor, Dept. of British and American Humanities,
Dankook University
152 Jukjeon-ro, Suji-gu, Yongin-si, Gyeonggi-do, Korea
Tel: 031) 8005-2114
Email: hkwee@dankook.ac.kr

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ABSTRACT

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This study explores Korean and English voice mismatch effect in Verb Phrase Ellipsis (VPE) and analyzes them based on Kertz's (2013) information structural (IS) account. Kertz's account for varying judgements on acceptability of voice mismatched VPE in English is that a voice mismatched VPE is judged unacceptable when the subject, the default topic, of the VPE clause is not in a well-formed *contrastive topic* (CT) relation with that of the antecedent clause. We test the validity of Kertz's CT-based IS account for Korean mismatched VPE and additionally investigate whether another informational category, *contrastive focus* (CF) plays a role for voice mismatch effect in Korean. We found that (i) the judgement difference between the acceptability of ill-formed CT-relations and that of non-CT relations is relatively small in Korean, compared to English cases; (ii) even non-CT relation cases are not judged perfectly grammatical, which suggests that mismatch cases yield a certain degree of grammatical degradation regardless of the status of the information structure; (iv) nonetheless, in general, Kertz's CT-based IS account is also valid for Korean voice-mismatched VPE; and (iv) finally, what affects the acceptability of the voice mismatched VPE the most in Korean is non-parallelism between the *topic-comment* structures resulting from an ill-formed CT relation, but not any other IS non-parallelism such as a non-parallel *contrastive focus* relation.

KEYWORDS

voice mismatch, VP ellipsis, information structure, contrastive topic, contrastive focus, topic, focus, parallelism

1. Introduction

This study is about voice mismatch effect in VP ellipsis in English and Korean. First, consider an English example of VPE in (1).

(1) The driver reported the incident, and the pedestrian did too. [report the incident] (Kertz 2013: 390)

One of the most commonly asked questions about ellipsis is the relationship between the elided meaning and its licensing antecedent. In (1), the elided part of the second clause is interpreted to be identical to the content of the VP of the antecedent clause, provided in the square bracket. The general opinion regarding this issue is that there is some identity relationship between the antecedent and the elided content. The precise nature of this identity is controversial, however. There are mainly two opposing views. One is a syntactic view and the other is semantic. Syntactic analyses view that the recovery of the elided VP meaning depends on availability of an identical syntactic VP to serve as an antecedent in the discourse (Hankamer 1979, Merchant 2013, Sag 1976, among others). Semantic analyses, on the other hand, view that VP ellipsis can be interpreted by reference to a suitable semantic antecedent (Hardt 1993, 1999, Kehler 2000, Merchant 2001, among others). The problem is either of these approaches cannot completely answer the question of why sometimes the antecedent and ellipsis site must match in syntactic structure as illustrated by the unacceptability of (2), while at other times they allow a mismatch as exemplified in (3).

(2) #The incident was reported by the driver, and the pedestrian did too. [report the incident]
(3) The incident was reported by the driver, although he didn't really need to. [report the incident]

The varying judgements of acceptability for voice mismatch constructions are a challenging issue for both approaches. The acceptability of the mismatch in (3) is problematic for a pure syntactic approach, since a structurally identical antecedent is not obviously available. The non-acceptability of the mismatch in (2) is problematic for semantic identity approach, on the other hand, since a semantic antecedent is available given that the active and passive have the same semantic contents and thus should satisfy the semantic identity condition. There is a third possibility, which is a hybrid approach consisting of syntactic and semantic analyses. The discourse-based approach proposed by Kehler (2000) is an instance of it. This analysis proposes that, in certain cases, only a semantic identity is required, while, in other cases, both semantic and syntactic identities are so. The discourse relationship between the antecedent and the elided material is what determines which type of identity is required. Kertz's (2008, 2013) information structural account, which is based on the notion of contrastive topic (CT), is another type of discourse-oriented approach.

In this study, for analyzing voice mismatch effect, I focus on the discourse-oriented analyses, especially information structural (IS) approach proposed by Kertz (2013), which relies on the informational category of *contrastive topic* (CT). First, I review her IS analysis for English VP ellipsis, and then attempt to apply this IS analysis to Korean VPE counterparts and additionally investigate a potential role of another informational category, *contrastive focus*, for the same phenomenon. This study finds that i) Kertz's IS account is generally valid in Korean, too, (ii) the difference of the acceptability between the matched and the mismatched cases is not as solid as in the English cases, (iii) *contrastive topic* is the genuine factor that can distinguish the good and bad mismatches, but *contrastive focus* does not seem to play a significant role in the Korean VPE data. These findings confirm that interaction of syntax and discourse factors such as information structure, on the one hand, and the division of labor

between them, on the other, is necessary, as Kim and Runner (2018) claimed.

This paper is structured as follows: In section 2, the discourse-oriented analysis of Kehler (2000) and the IS-based analysis of Kertz (2008, 2013) are reviewed. Section 3 shows that there are two possible information structures of VPE constructions depending on the QUD (question under discussion) structure that they presuppose. In section 4, proper data of Korean passive constructions are established as the target of exploration for the current issue, and additional informational category, *contrastive focus* (CF), is explored if it also has some relation with the IS analysis of voice mismatch effect in Korean. It is shown that CF does not play a significant role for accounting for voice mismatch effect in Korean and probably in English, eventually supporting Kertz's (2013) *topic-comment parallelism* for analysis of voice mismatched VPE.

2. Discourse-oriented Analyses

2.1 Discourse-coherence Analysis (Kehler 2000)

A notable discourse-oriented approach to voice mismatch effect in VPE is Kehler (2000). Kehler relies on the notion of discourse-coherence and suggests a means for constraining overgeneration of the semantic approach. He claims that bad mismatches arise in discourse segments linked to their antecedents via *resemblance* relations whereas good mismatches arise in segments involving other types of relation such as *cause-effect* relations. This generalization is claimed to hold for the contrasting pair in (2) and (3). The coherence relations in (2) is *resemblance*, instantiating a bad mismatch, whereas (3) instantiates an unexpected *cause-effect* relation, which allows a mismatch. There are several problems in this approach, however.

First, as Kehler (2002) himself and Kertz (2013) noted, there exists no definitive diagnostics for determining coherence relations such as the resemblance relation and the cause-effect relation that he employed for the explanation. The second problem is an empirical one. Frazier and Clifton (2006) tested the predictions of the coherence account in a series of off-line experiments. They showed that no evidence was found to demonstrate that the mismatch effect is relevant with the notion of coherence, contra to Kehler. For instance, Frazier and Clifton observe that both (4) and (5) are commonly degraded even though they use different discourse coherence relations.

(4) # The problem was looked into by Kim even though Lee did.
(5) #The problem was looked into by Kim just like Lee did. (Frazier and Clifton 2006: 323, 8)

They suggest that *just like* signals a parallel relation and *even though* a cause-effect relation. Hence, this could count as a counterexample to the discourse-oriented analysis that Kehler suggests.

2.2 Information-structural Analysis (Kertz 2008, 2013)

Kertz (2008) offers an alternative discourse-based analysis that does not rely on the notion of coherence unlike Kehler. She argues that the contrast between (2) and (3) is not due to coherence relations, but due to the distribution of focus in the target clause. For an analysis of the information structure of the VPEs as in (1) and (2), Kertz adopts Hendrik's (2004) *contrastive topic* (CT) analysis originally provided for gapping constructions and claims that CT ellipses as in (1-2) raise mismatch effect while other discourse relations as in (3) do not.

Kertz (2013), by adopting Hendriks' (2004) characterization of CT constructions as *parallel coherence*, provides an analysis of why CT ellipses show the mismatch effect. In specific, she provides a clause-level constraint on CT, enforcing *topic-comment* parallelism, while assuming that the two conjuncts involving CT constructions as in (1) supply partial answers to a common question, namely "*Who reported the incident*?", as illustrated in (1').

(1') Who reported the incident?

[The driver]$_{T}$ reported the incident. [The pedestrian]$_{CT}$ did, too.

Traditional canonical cases of CT are known to involve dual-focus structures, as in (6) (cf. Büring 2003, Kadmon 2001, Roberts 1996, *inter alia*).

(6) Bill kissed Sue, and [Larry]$_{TF}$ kissed [Nina]$_{F}$.

Focus can overlap with the topic or comment portion of the utterance. When focus marks the topic part of an utterance, it functions as a contrastive topic. Kertz refers to it as a topic focus (marked as TF in (6)) following Büring (2003), and when focus marks some part in the comment part, it is referred to as a focus (F). The question is how to determine which focus is a topic and which focus a nontopic focus.

There are a number of ways to determine the topic part and the focus part available in the field. Bolinger (1961) notes the distinction of two different types of pitch accents, which mark each of the focal categories. The (contrastive) topic, *Larry* in (6), is associated with the pitch accent that Bolinger calls 'B-accent' and the focus in the comment part is associate with what he calls 'A-accent'.[1] Reinhart's (1982) *as for* test is a common way that can explicitly indicate the sentence topic. The focus on the subject NP is a topic focus in (7), given that the subject 'pie' but not the object 'pasta' can be marked by as for.

(7) Peter ate pasta, and as for Pia/#pasta, Pia ate pasta too. / Pia did too.

Dual-focus contrastive topic structures with a topic focus (TF) on 'Pia' can be realized as in (8)-(10), for instance.

(8) Peter ate pasta, and [Pia]$_{TF}$ ate [muesli]$_{F}$.
(9) Peter ate pasta, and [Pia]$_{TF}$ ate pasta, too.
(10) Peter ate pasta, and [Pia]$_{TF}$ did, too.

Among these, (9-10) are the cases of our interest here, where the additive particle too, instead of the secondary contrast, *too* is licensed.[2] Roberts (1996) and Büring (2003) provide a way to determine the category of CT distinguishably from that of *focus* by considering the type of the discourse question or what Roberts call *question under discussion* (QUD) as illustrated in (1"a). The CT constructions, as in (1"d, e) function to answer the sub-

[1] From the discourse-semantic perspective, Jackendoff (1972) describes their difference as that the topic focus is 'fixed first' in the discourse as an independent variable and the comment focus is a 'dependent' variable on the topic focus.

[2] Krifka(1999) views that a CT is identified as a partial answer to a common discourse question and the additive particle *too* is licensed by a CT.

questions, as in (1”b, c). This is the type of discourse structure that Kertz (2013) relies on for her IS analysis of VPE.

(1”) a. Who reported the incident? (QUD)

b. Did the driver report the incident? c. Did the pedestrian report the incident?

d. [The driver]$_{T}$ reported the incident. e. [The pedestrian]$_{CT}$ did, too.

All these ways of defining the informational category, *contrastive topic*, suggest that the subjects of the two clauses in (1) form contrastive topics and stand in contrastive relation to each other.[3]

As a step for accounting for the greatest penalty given to the mismatched cases in (2), Kertz defines CT relation, as in (11), based on the felicity condition in (12), which is provided by Rooth (1992). This definition states that a discourse segment B is in CT relation to the preceding segment A when B contains a topic focus and the proposition B is a member of the focus semantic value of the antecedent A.[4]

(11) **CT relation**: A discourse segment B forms a CT relation with a preceding segment A if B contains a topic focus and is felicitously contrasted with A. (Kertz 2013)

(12) **Felicitous contrast**: A proposition B is felicitously contrasted with a preceding proposition A if the ordinary semantic value of A falls within the focus semantic value of B (Rooth 1992).

The CT-relations in (9-10) are felicitous, since the *focus semantic value* of the second segment has the proposition of the first segment as a member, as shown in (13).

(13) ⟦[PIA]F ate pasta⟧ ^{F} = {pia ate pasta, peter ate pasta,…}

These conditions cannot account for the unacceptability of (2), however. The bad mismatch in (2) also satisfies the conditions provided in (12) when the subject *pedestrian* has focus. Its *focus semantic value* should be the set of the proposition as in (14)

(14) {the pedestrian reported the accident, the driver reported the accident, the witness reported the accident, …}

Assuming that the propositional content of a passive sentence is the same as that of the active counterpart, the underlined proposition for the antecedent, *the driver reported the accident*, can be considered as a member of the focus semantic value of the second clause, satisfying the felicitous condition of CT relation provided in (11-12). This thus cannot predict the bad mismatch in (2). So, Kertz provides a constraint on CT relations in (15) in order to explain the unacceptability of (2).

[3] A traditional common idea regarding identification of topic is that the subject usually serves as the (sentence) topic by default. A non-subject sometimes can function as the topic. In (7), for instance, the subject NP *Pia* is the *topic* and in (8) the object NP *muesli* is the *topic.*

[4] She assumes that *discourse segments* encode a topic/comment partition, but *propositions* do not. Thus, the definition is supposed to apply to *discourse segments* (construed here as a clause or a sentence), not *propositions*.

(15) Constraint on CT relations:
A *CT relation* is well formed if members of the *topic set* are *sentence level topics*.[5]

Kertz was not clear about what she means by *topic set* and the *sentence level topic*.[6] She simply adopts a traditional idea that the subject is a default topic and then assumes the function of passivization as altering the information-structure *via* argument alternation, yielding the following two effects.

(16) Two effects of Passivization:

(i) **Topicalization of the patient**: promoting a *logical object (patient/theme)* to a more prominent position, *i.e.,* the subject, as a form of *topicalization*.
(ii) **Non-topicalization of the agent**: demoting the *logical subject (agent)* to a low-prominence oblique position or omitting it entirely, marking the demoted agent as *nontopical*.

The matched ellipsis in (1) is well-formed given that the subject is the topic of each sentence and thereby observing constraint (15). In contrast, in (2), the argument structure mismatch resulting from passivization leads to a violation because the default sentence level topics, the subjects of the two clauses, do not form the legitimate topic set, which must be {the driver, the pedestrian}, and thus the CT in (2) violates constraint (15). The CT relation between the two clauses does not form a parallel *topic-comment structure* due to the argument alternation *via* passivisation. *The driver* is the sentence topic of the first clause in (1) forming the topic set with *the pedestrian*, but not in (2).

(1) [The driver]$_{\text{Top}}$ reported the incident, and [the pedestrian]$_{\text{TF}}$ did too.
(2) #[The incident]$_{\text{Top}}$ was reported by the driver, and [the pedestrian]$_{\text{TF}}$ did too.

In (2), the subject *the pedestrian* functions as a topic focus in the second clause, which cannot belong to the same topic set with the subject *the incident* of the first clause violating constraint (15). Examples in (17-18) are also instances of degradation caused by a mismatched CT relation under this analysis.

(17) #The cause of the accident was investigated by the police because [the insurance company]$_{\text{TF}}$ did.
(Frazier and Clifton 2006: 339, 9)
(18) #The student was praised by the old schoolmaster, and [the advisor]$_{\text{TF}}$ did, too.
(Arregui et al. 2006: 241, 17)

Sentence (19) is saved, by contrast, since the focused constituent is an auxiliary verb, which is not the sentence

[5] As one reviewer pointed out, given that Kertz does not explicitly confine this constraint to VPE cases, the following non-elided version of (2) violates constraint (15).
(i) The incident was reported by the driver and the pedestrian reported the incident, too.
But this sentence is syntactically perfect, and thus is not a kind of data of our concern here. The main question of this study is how to explain the phenomenon that a voice mismatched VPE, which is a grammatically wrong sentence, sometimes can be accepted. So, sentence (i) does not have to obey this constraint.

[6] In Büring's (2003) model, the *topic set* is a set of possible answers to a *super question* in a hierarchically structured discourse. That super question, which dominates the sub-question presupposed by the nontopic focus in the discourse stack, is presupposed by the *topic focus*.

topic, and thus the two clauses are not in CT relation, not violating any condition in (11-12) and (15).

(19) The incident was reported by the driver, although he didn't really [need]$_F$ to.

Considering the data discussed so far, one can see that all the cases that are judged to be unaffected by the constraint (15) are those that have focus on the auxiliary or the polarity, instead of the subject as in (19) and (20-21):

(20) This problem was to have been looked into, but obviously nobody [did]$_F$. (Kehler 2000: 548, 22)
(21) This information could have been released by Gorbachev, but he chose [not]$_F$ to. (Hardt 1993: 37, 131)

The common degradation of the examples in (4) and (5), repeated here in (22) and (23), which cannot be accounted for by Kehler (2000), can be also explained by Kertz's analysis.

(22) #The problem was looked into by Kim even though [Lee]$_F$ did.
(23) #The problem was looked into by Kim just like [Lee]$_F$ did.

The target subjects were focused, evoking a contrast with the oblique argument in the antecedent clause (*Lee* contrasts with *Kim*), violating constraint (15). Kertz's proposal thereby predicts reduced acceptability in both cases.

Based on the above discussion, Kertz's IS account on varying acceptability of voice-mismatched VPE can be recapitulated as follows:

(24) Acceptability of voice-mismatched VPE
  (i) VPE has either subject-focus or *auxiliary*-focus.
  (ii) When the target clause has the subject-focus with a voice mismatch, it becomes unacceptable due to constraint (15).
  (iii) When the target clause has the *auxiliary*-focus, it is saved even with a voice mismatch, unaffected by constraint (15).[7]

So far, we have seen that the information structural (IS) approach of Kertz (2013) can account for English data. In section 4, I would like to test the validity of this account by attempting to analyze VPE counterparts in Korean. There remains some issue regarding the QUD to be clarified before discussing Korean data, however, which I would like to address in Section 3.

3. QUD of VPE

The type of QUD structure in (1') that Kertz (2013) assumes requires more consideration with respect to determining the information categories, *topic* and *focus*. Consider the QUD of (7), which was discussed by a

[7] All the instances of this *aux*-focus case have commonality in that the referent of the subject of the VPE is the same as that of the *by*-phrase of the antecedent, which is a natural consequence of the fact that the new information indicated by the focus of this VPE is the auxiliary and the deaccented subject is the given information in the antecedent.

number of authors including Bolinger (1961), Roberts (1996), Kadmon (2001), and Büring 2003, among others.

(7) I know what Peter ate, but what about Pia? What did Pia eat?
[Pia]$_{TF}$ ate [muesli]$_{F}$.

The QUD structure of (7) should be as in (7').

(7') (a) Who ate what?

What did Peter eat? What did Pia eat?

(b) [Peter]$_{TF}$ ate [pasta]$_{F}$ (c) [Pia]$_{TF}$ ate [muesli]$_{F}$

In this QUD structure, the sentence level topics of the answers in (7b, c) are obviously *Peter* and *Pia*. The topical status of these subjects here is due to that there are separate focuses, *muesli* and *pasta*, which *Pia* and *Peter ate*, respectively, that is, the subject in each sentence is the sentence topic about which the rest of the sentence provides the comment. Thus, each of the sentences given as a partial answer to the big question forms the standard *topic-comment (or topic-focus)* structure.

Now compare this structure with the QUD in (1"), repeated in (25), obtained based on the information structure that Kertz suggests for example (1).

(25) Who reported the incident? (QUD)

Did the driver report the incident? Did the pedestrian report the incident?

[The driver]$_{T}$ reported the incident. [The pedestrian]$_{CT}$ did, too.

In this case, if the subjects are to be regarded as the sentence topics, the focus should be considered as the verum focus, or the polarity focus, for each of the topics, that is, as for *the driver*, the answer is *yes*, and as for *the pedestrian*, the answer is *yes*, too.[8] The super question in this case should be considered as a multiple question like "Who did report the incident and who didn't?". With this interpretation, the information structures of these clauses constitute the standard topic-comment structures.

Note, however, that this is not the only possible QUD for this question-answer structure. There is another possible QUD as follows.

(26) (a) Who reported the incident?
(b) [The driver]$_{F}$ reported the incident
(c) [The pedestrian]$_{F}$ did, too.

The subjects serve as the topic focus in (1'), but they also can serve as the single nontopic focus, but not as a

[8] What Höhle (1992) refers to as *verum focus* is called *polarity focus* by Gussenhoven (1984).

topic, which provides the identity of the single *wh*-phrase, as represented in (26). Assuming this type of information structure for the given sentences, the following answers should presuppose essentially the same type of QUD, that is, a single *wh*-question with its exhaustive answer, to describe the situation where those people who reported the incident were the driver and the pedestrian.

(27) (a) A: Who reported the incident?
(b) B: The driver and the pedestrian.
(c) B: [The driver]$_F$ did and [the pedestrian]$_F$ did, too.
(d) B: [The driver]$_F$ reported the incident and [the pedestrian]$_F$ reported the incident.

(27b) is a fragment answer to question (27a), (27c) illustrates coordinated two parallel VPEs, and (27d) an enumeration of the two full clauses with the focus on the subjects and deaccentuation of the rest. With this type of information structure*, the driver* and *the pedestrian* should be most plausibly pronounced with Bolinger's A-accent, which is known to be associated with the nontopic focus, instead of the B-accent, which is generally employed for contrastive topic or topic focus. In this type of QUD structure, the super question is not a multiple *wh*-question with more than one piece of missing information as in (25), but a single *wh*-question with just one piece of missing information, which should be identified by the focused answer, generally associated with an A-accent.[9] Given this possibility, the original sentence discussed in (1) can be also interpreted to have this type of information structure, as in (28).

(28) [The driver]$_F$ reported the incident and [the pedestrian]$_F$ did, too.

The information structure of each clause in (25) consists of the topical subject and the verum focus realized on the auxiliary, *did*, whereas that of (28) consists of the single nontopic focus on the subject and the deaccented auxiliary *did*. The noticeable difference between the informational statuses of the auxiliary *did* of the two cases is that, in (25) it is the new information or the main focus, representing the verum focus, i.e., the positive polar answer about the topic subject *the pedestrian*, whereas in (28) it is old information inherited from the assumed super question and the VP of the antecedent sentence. The former case presupposes an inquiry of whether each of the involved people did or did not report the accident, whereas the latter case an inquiry of seeking for the exhaustive list of those who reported the accident. Accordingly, adverb *too* should also be interpreted differently for each case: For the former case, it should be associated with the auxiliary *did* and for the latter, with the subject, considering that *too* is a so-called focus-sensitive operator, which is interpreted in association with the main focus manifested with the prominent pitch accent.

Now the question is how Kertz's proposal predicts the acceptability of the second type of information structure, (28). If her analysis is applicable only for the CT parallel structure as in (25), the same string of words with a different information structure, as in (28), would not be judged unacceptable unlike (2), given that constraint (15) only concerns CT or topic focus but not nontopic focus. Under (25), the information structure of sentence (2) would be like (2'), while under (26) it would be like (2")

[9] A B-accent for contrastive topic is also possible depending on the intention of the speaker, but this issue will not be explored in this study.

(2') The incident was reported by the driver, and [the pedestrian] $_{CT}$ [did]$_{F}$, too.
(2") The incident was reported by the driver, and [the pedestrian]$_{F}$ did, too.

To actually test this intuition for English is very hard, given that English marks topic-comment structure mostly by prosody only. Korean, by contrast, having a morphological topic marker, (n)un, is advantageous in testing the effects of different information structures. In the next section, we will explore Korean VPE data both with the CT parallel structure as in (2') and with the contrastive focus (CF) parallel structure as in (2"), presupposing the QUD structures in (25) and (26), respectively.

4. Elliptical VP Anaphora in Korean

For Korean VPE, there are two problems that should be dealt with first. The first problem is that it is not very easy to form a syntactic passive sentence in Korean, especially with an inanimate or nonhuman subject. The second problem is the question of whether or not Korean indeed has VP ellipsis. Let us start with the second problem.

4.1 Does VPE Exist in Korean?

Korean does not seem to have VPE constructions in the same fashion as English does. Whether or not Korean has VPE constructions and what they look like if it does are controversial issues. Some authors such as Kim&Kim (2020) claim that (29a) exhibits an instance of verb stranded VPE. Park (1997), on the other hand, argues that the missing element here is just a null argument anaphor or a pro. Park (1997) instead claims that (29b) is an instance of VPE in Korean.[10]

(29) a. John-i kong-ul chassko, Bill-to _____ chassta.
NOM ball ACC kicked and also kicked
"John kicked the ball and Bill did, too.'

b. ?John-i kong-ul chassko, Bill-to _____ hayssta.
NOM ball ACC kicked and also did
"John kicked the ball and Bill did, too.'

As for the elided VP form in (29a), it does not seem to be practically proper for our purposes here. Consider the passive forms with and without ellipsis as in the following:

(30) ?kong-i John-ey-uyhay cha-i-ess-ko, Bill-to kong-ul cha-ss-ta.
ball NOM by John was kicked and Bill ADDITIVE ball ACC kicked
'The ball was kicked and Bill also kicked the ball, too.'
(31) ?kong-i John-ey-uyhay cha-i-ess-ko, Bill-to ____ cha-ss-ta.
ball NOM by John was kicked and Bill ADDITIVE kicked

[10] Park now supports the *pro* analysis for (34b), according to Kim and Kim (2020).

(32) #kong-i John-ey-uyhay cha-i-ess-ko, Bill-to ____ hay-ss-ta.
ball NOM by John was kicked and Bill ADDITIVE did

Note that the passive construction even without any ellipsis as in (30) does not sound perfectly good, because the passive of the first clause sounds awkward, probably because a non-animate subject tends to be avoided in traditional Korean grammar. The second clause of (31), with ellipsis, does not seem to be more degraded than (30), so the missing argument does not affect the acceptability, given that the original verb *chata* 'to kick' retains its original content including active voice information. If we would have to regard the VP with a missing object as in (31) as an instance of VPE, the question of voice mismatch effect would not even arise in Korean, since apparently the verb is not replaced with any pro-form or anaphoric element as an auxiliary verb does in English. Hence, I would not take this type of VP as VP ellipsis at least for our current purpose, that is, to investigate a potential voice mismatch effect occurring in Korean VPE.

A further problem is that for this type of passive constructions, which consists of a verb stem combined with a passive suffix, *-i, -hi, -li,* or *-ki*, verb *hayssta* 'did' in the second clause does not sound acceptable as a pro-form. This verb phrase sounds awkward to me even without voice mismatch as in (29b) as well as with it as in (32). So, this type of passive constructions are not proper data for the current purpose.

Considering these problems, we need a different type of passive constructions.

4.2 Passive Construction in Korean

Korean has a special kind of passive verbs, consisting of Verbal Noun (VN) and a passive Light Verb (pLV) as illustrated in (33), which are called "passive Light Verb Constructions (PLVC)" by Chae (2003):

(33) Korean Light Verb Constructions (PLVC)

cungmyeng 'proof':	cungmyeng-hata/ cungmyeng -toyta	"prove/ be proved"
poko 'report':	poko-hata/ poko-toyta	"report/ be reported"
chotay 'invitation':	chotay-hata/ chotay-toyta/-patta	"invite/ be invited"
hyeppak 'threat':	hyeppak -hata/hyeppak-tanghata	"threaten/ be threatened"

These passive verbs are formed by substituting the light verb *-ha* 'to do' with a passive light verb*, -toy, -pat,* or *-tangha,* 'to be/get done', as in (33). These verbs are under controversy as to whether they are genuine passives or separate lexical items. Some authors (Yeon 2011) claim that they should not be considered as passive forms, while others (Sohn 1994: 304-6) argue to the contrary. I will simply follow Chae (2003) and Yeon (2011) and assume that the passive light verb construction is a passivized counterpart to the active form, VN+*hata*, considering that this study is not about the nature of passive construction per se in Korean. The purpose of this study is to explore the issue of whether the information structure analysis of Kertz is valid for Korean voice mismatch examples.

In formal register, especially when used with Chinese loan verbs as in (33), an inanimate subject with passive voice is more acceptable than the pure Korean verbs as in (29b) and (30), which is another reason that I consider this type of passive construction, i.e., passive Light verb construction, as the proper data here. Another practical advantage of employing these verbs for our analysis is that the light verb *hata* has a function similar to the auxiliary of English VPE, serving as a pro-form or an elided form of the antecedent VP.

Considering the aforementioned reasons summarized in (34), I would simply assume, without a rigorous syntactic investigation, that the verb *hata* phrase for Chinese loan verbs here functions as VP ellipsis:

(34) (i) The lexical content of the verb as well as the patient/theme argument of verb *hata* can be apparently missing, just like English VPE.
(ii) Verb *hata* phrase functions as an anaphoric replacement for the corresponding antecedent verb, just like English VPE.
(iii) The syntactic passive constructions which are formed by suffixes and a verb with pure Korean origin as in (29b) is hardly replaceable by any anaphorical verbal element including light verb *hata*.

4.3 Information Structure of Korean VPE

Now let us go back to the issue of the ambiguous information structure of the VPE discussed in section 3. Consider the Korean counterpart in (35) to the mismatched English VPE in (2).

(35) # i saken-i phihayca-ey uyhay poko-toy- essko, kahayca-to hayssta.
this case NOM victim by report PASS past CONJ offender ADDITIVE did
"This incident was reported by the victim, and the offender did, too."

This sentence can be interpreted in two possible ways with respect to the information structure, just like the English counterparts, as represented by the QUD structures in (25) and (26). Assuming the information structure like (25), the subject should be CT and the nontopic focus should fall on the VP *hata*, providing the verum focus, i.e., positive polarity. Assuming the information structure of (26), by contrast, the VP *hata* should be realized as deaccented given information and the nontopic focus falls on the subject, *kahayca* 'offender'.

Kertz's constraint in (15) is only applied to the first case, where the two clauses are supposed to stand in CT relation. The second case, in which the subjects do not constitute the topic set but serve as the nontopic focus, is not relevant to Kertz' CT-constraint. The information structural interpretation of the second case then is predicted to be acceptable, not violating constraint (15). To test this exact sentence is also very hard for Korean, since this Korean sentence has the same problem as English. The information-structural difference of the two cases can only be indicated by prosody in Korean, too, since the subject of the second clause should be marked by additive particle -to. So, the topic-hood of the subject cannot be morphologically marked by the topic marker -*nun*. When the -*to*-marked subject functions as a CT, it would be pronounced as a rising intonation (presumably, L*+H) and the high pitch accent on the light verb *haystta* 'did', and when it functions as a non-topic focus, it would be pronounced with the high pitch followed by low tone (presumably, H*+L) and deaccentuation of the light verb. Thus, Korean cannot take advantage of the morphological topic marker for this particular sentence. Considering the difficulty of testing the prosody of written data, I would like to use a slightly modified sentence that can ensure the second type of information structure as in (36).

(36) ecey-nun i saken-i phihayca-ey uyhay poko-toy-ess-ko, onul-un kahayca-ka hay-ss-ta.
yesterday CT this incident NOM victim by report PASS past CONJ today CT offender NOM did
"Yesterday, this accident was reported by the defendant, and today, the offender did"

In (36), the sentence level topics should be indicated by the *nun*-marked temporal adverbs, *ece-nun* 'as for yesterday' and *onul-un* 'as for today', and the subject should be considered as the nontopic focus providing the comment on the sentence level topic, as illustrated by the following QUD structure.

(37) Who reported the incident when?

[Yesterday]$_{TF}$ the incident was reported by the victim [Today]$_{TF}$ [the offender]$_{F}$ did

This case should not violate constraint (15) because the sentence topic of the target clause is not the subject but the adverb *onul-un* 'today', which legitimately stands in the contrastive relation with the adverb *ece-nun* 'yesterday' in the antecedent clause. Note, however, that the subject is supposed to be in contrastive relation with the agent of the antecedent clause, not as (contrastive) topics (CT), but as contrastive focus (CF). But nontopic CF *the offender* does not form a plausible alternative set with the subject *the incident*, which results in non-parallel information structure. If any kind of information structural parallelism can be the factor to affect the mismatch effect here, a voice-mismatched sentence like (36) should also be judged unacceptable like the original sentence with CT in (2). If *topic-comment* parallelism is the genuine factor, in contrast, this sentence would not be judged as bad as (2) or its Korean counterpart, given that (15) only mentions topic but not nontopic focus. *Yesterday* and *today* are in the topic set, not violating any of the conditions provided by Kertz, as illustrated by the English version in (38).

(38) [Yesterday]$_{T}$, the incident was reported by the driver, and [today]$_{TF}$ the pedestrian did.

The subject, *the pedestrian*, is not the topic that can be realized with a B-accent but the main focus that is generally associated with an A-accent in English. To test this prediction in English is worthwhile, but instead, in this study, I would like to explore Korean data to test whether this prediction is born out, in the next section.

4.4 Observations of Korean VPE

Consider the following voice mismatched sentences in Korean. Sentences (39a) and (39b) are instances that do not involve any contrastive relation between the two composing clauses, which thus are expected to be acceptable, not applied by the CT constraint in (15).

(39) Non-CT relation

(In a trial court)

a. i mwuncey-ka phihayca-ey uyhay ceyki-toy-ess-ta. an-hay-to kwaynchanh-ass-ess-nuntey
this issue NOM victim by was raised NEG do fine PAST although
"This issue was raised by the victim, although he did not need to."

b. kkok hal philyo-ka eps-ess-nunteyto, i mwuncey-ka phihayca-ey uy-hay ceyki-toy-ess-ta
Necessarily to do need-NOM did not exist although, this issue NOM victim by was raised
"Although he did not need to, this issue was raised by the victim."

The sentences in (40a-b), in contrast, are predicted to be bad, violating constraint (15), since the subjects *i mwuncey* '*this issue'* and *kahayca 'the offender'*, which are the default topics, obviously cannot constitute the topic set.

(40) CT-violation relation

(In a trial court)
(a) # i mwuncey-ka phihayca-ey uyhay ceyki-toy-ess-ko, kahayca-to hayss-ta.
this issue NOM victim by was raised and offender ADDITIVE did
"This issue was raised by the victim and the offender did, too."

(b) # i mwuncey -ka Lee kyoswu-ey uyhay yenkwu-toy-ess-ko, Kim kyoswu-to hays-ta.
This problem NOM Prof. Lee by was investigated CONJ. Prof. Kim ADDITIVE did
"This problem was investigated by Prof. Lee, and Prof. Kim did, too."

The following cases are the important data that can test whether *topic-comment* structure parallelism, in particular, plays the significant role for determining the acceptability of the voice mismatched VPE or any kind of IS parallelism does so.

(41) Legitimate CT with non-parallel CF

(In a trial court)
(a) ecey-nun i mwuncey-ka phihayca-ey uyhay ceyki-toy-ess-ko, onul-un kahayca-ka hayss-ta
yesterday CT this issue NOM victim by was raised and today-CT offender NOM did
"Today, this issue was raised by the victim and today the offender did."

(b) caknyen-ey-nun i mwuncey-ka Lee kyoswu-ey uyhay yenkwu-toy-ess-ko, olhay-nun kim kyoswu-ka
last year CT this problem-NOM Prof. Lee by was investigated and this year-CT Prof. Kim NOM
hays-ta
did
"In the last year, this problem was investigated by Prof. Lee, and in this year, Prof. Kim did."

In (41a-b), the topic of each sentence is not the agent of the event but the temporal or locative adverbials, which are distinctly indicated by topic marker *-nun*. Regarding these sentences, I personally judge them to be more acceptable than those in (40a-b), which violate constraint (15). To confirm my judgments, I referred to some Korean native informants. It turned out that my informants, ten native Korean undergraduate students, have the similar intuition to mine, judging (41a-b) relatively more acceptable than (40a-b). Requested to determine their acceptability judgement from 1 for 'completely unacceptable' to 5 for 'perfectly acceptable', the following average scores were obtained from the informants' answers to the questionnaire:

Table 1. Judgement Score

Informational types of a mismatch	Average Score
Non-CT (39a-b)	3.5
Violated CT (40a-b)	2
Legitimate CT with Non-parallel CF (41a-b)	3.33

The average score for non-contrastive cases in (39a-b) is 3.5. The CT-violating cases in (40a-b) averaged 2. Finally, the CF sentences in (41a-c) are scored 3.33 on average, similar to the non-CT cases in (39a-b), but better than the violated CT cases in (40a-b). This judgement results show that the informants rated the CT-violating cases in (40a-b) lower than both the non-contrastive cases in (39a-b) and the CF-violating cases in (41a-c). This leads to the conclusion that the real factor for predicting the varying acceptability of voice mismatched VPE constructions in Korean is parallelism of *topic-comment* structure indeed but not any other kind of IS parallelism.

4.5 Findings

The above observations lead to the following findings.

First, the CT-based IS account seems to be valid to a certain degree for Korean, too. The IS analysis predicts that mismatched non-CT relations, that is, *aux*-focus cases, as in (39a-b), are judged more acceptable than mismatched CT-relational clauses, i.e., subject-focus, which violates the constraint for CT-relations, as in (40a-b). And this prediction turns out to be true.

Second, however, the difference of the acceptability between the violated CT-relations (the average score 2) and non-CT relations (the average score 3.5) as shown in Table 1 is relatively small. So, it seems that the violated CT-relations in Korean as in (40a-b) are not judged as bad as English cases in (2). I would like to suggest a possible explanation for this as follows: The difference of the linear order between Korean and English seems to affect the acceptability. That is, in Korean passive constructions, the agent is not demoted to the end of the clause but occurs relatively earlier than that of English. Although the agent loses its topical status by losing its subjecthood, it is still located before the verb, which might provide an impression that the general topic-comment structure still seems to be kept due to the linear order, that is, the topic occurs in the beginning and the comment in the end. In Korean, the position of the agent phrase in the passive sentence parallels with that of the active VPE clause. The agent phrase in a passive clause thereby still may be regarded as the topic to a certain degree and accordingly the information structure of the clause might still be perceived as forming the topic-comment structure, yielding parallelism between the information structure of the antecedent and the target clause, consisting of the agent and the predicate.

This parallelism between the topic-comment structures of the two clauses might serve as the cue that can redeem this CT-relations from the worst penalty, although they do not match in voicing. This parallelism seems to help *the victim* in (40a) forms a topic set with *the offender* in the topic-comment structures, and thus not completely violating Kertz's constraint (15). The voice mismatching due to the morphology of the verbs might be disregarded somehow owing to the seeming parallelism between the two clauses at hand, which is not the case in the English counterpart where the agent is located in the end.

Third, even the non-CT relation cases as in (39a-b) do not seem to be judged perfectly grammatical, as shown by the average score 3.5, which suggests a certain degree of degradation due to the mismatch. This suggests that mismatched VPE in Korean is less acceptable than the matched counterpart even when it is not in the CT-relation with the antecedent, which may suggest that syntactic non-identity has some effect in all cases regardless of the CT-relation status. In this sense, the observed facts obtained from Korean VPE data can confirm the claim of Kim&Runner (2018), who suggest the necessity of the division of labor of syntax and discourse factors such as information structure. Kim&Runner (2018) propose that a syntactic constraint licenses VPE, but those sentences violating this constraint can nevertheless be interpreted. The variability in acceptability is accounted for by other discoursal factors that affect sentential and discoursal well-formedness, such as information structural constraints as proposed by Kertz 2013 or sensitivity to Question Under Discussion structure (Kehler 2015).

Finally, what affects the acceptability of the voice mismatched VPE the most is non-parallel *topic-comment* structure due to an illegitimate CT relation, but not any other non-parallel information structure such as an illegitimate contrastive focus (CF) relation. This suggests that an information structural level incorporating topic-comment structure, distinct from the syntactic or the semantic level, is playing a significant role for interpretation of a sentence, which cannot be completely accounted for based on either a syntactic or a semantic consideration only.

5. Conclusion

In this study, we found that information structure plays a significant role for accounting for varying acceptability judgements of syntactically ungrammatical sentences. In particular, *non-parallel topic-comment* structure is the fatal flaw that renders voice-mismatched VPE strongly unacceptable. In contrast, as far as *topic-comment parallelism* between the antecedent clause and the VPE clause are retained, the ungrammaticality due to voice-mismatched VPE might be saved to some extent. Accordingly, this study suggests that *topic-comment* structure, among various informational structures, has some especially significant role for coherent flow of discourse. To confirm this point more solidly, it might be necessary to explore whether this conclusion can be valid for English by investigating whether an English sentence like (38) is also judged better than sentence (2).[11] Additionally, a more rigorous experimental study may be in need, which can yield more statistically significant findings that can support the results of the present study.

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[11] One reviewer commented that a native English speaker informed that sentence (38) is judged better than the original sentence in (2). I would leave a more rigorous attempt to confirm this intuition for future research.

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Examples in: English
Applicable Languages: English
Applicable Level: Tertiary

