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Part I

Oral Syntax

1

Theory and Acquisition of Experientials¹

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1 Introduction

In this paper, we offer a cross-linguistic survey of experiential constructions, trying to sketch the implications for linguistic theory and language acquisition. The paper has three broad aims. First, to document (albeit somewhat incompletely) the linguistic variation in experiential constructions. We will see that languages employ constructions that cut across language families. Second, we will focus on the semantic uniformity underlying the different experiential strategies. Analytically, we will propose that languages instantiate an experiential operator, EXP. We will also motivate an experiential projection by articulating a learnability problem in first language acquisition. Finally, we will also discuss implications for how experiential constructions can serve as a unique target property to test second language hypotheses.

¹This paper is a part of a larger ongoing project, *Events and Kinds: Theory and Acquisition*. The current research is supported by Research Strategy Funds (University of Sheffield) and University of York Priming Funds (URP50109408).

2 Experience: just a mental state or part of grammar?

As human beings, we express our experiences and share them with other people. An experience in itself can be individuated; does “having an experience” constitute a separate entity that is expressed through specific grammatical devices? Consider example (1):

- (1) a. John has patted skunks.
b. John patted skunks.

(1a) is not referring to an episodic event. If you are referring to an event in the past, a simple past tense would be used, as in (1b). (1a), rather than expressing a specific event, expresses a state that John is currently in, such that he has had the experience of patting a skunk. The fact that the experience is relevant to the subject’s present situation is encoded in the idea that having had the relevant experience is a state of its own. This mental state is like other mental states such as sensation (*pain, hunger*) and perception (*see the color red*) (Perry 2001). English experiential sentences such as (1a) follow a formula as shown in (2a), using a present perfect form to express experience, which yields an interpretation as in (2b).

- (2) a. X has Y-en F
b. There is a state S which consists of ‘Y-ing F’ and an individual X and X is in that state.

A question that arises from (2) is, then, how the interpretation in (2b) is encoded in (2a) and how it is realized in the syntax of (1a). Our cross-linguistic survey shows that there are three main types of expressions for experientials. We start with the English experiential constructions in the perfect and then show how other languages employ different constructions to convey experiential meanings.

3 English experientials and perfect

One of the best-known works concerning perfect constructions is Comrie’s (1976) seminal work on the typology of the perfect. The use of the perfect in English can be shown as four types as in (3).

- (3) Types of Perfect
a. Perfect of result
b. Perfect of persistent situation
c. Perfect of recent past
d. **Experiential perfect**

What is of interest to us is the fourth use, the experiential perfect. The use of experiential perfect in English is one of the best-known constructions that express the putative notion of experience. The use of the experiential perfect is also suggested to “assert that the subject has a certain experience” (Iatridou et al. 2001: 191). Grønn and von Stechow (2020) also suggest that “the ‘experiential’ reading in Comrie (1976) is a label which suggests that the instantiations of the past events in question are relevant for the subject’s experience at the reference time” (p. 3).

4 Beyond the Perfect

However, our typological survey shows that experiential constructions are not an artifact of the perfect, nor are they necessarily associated with the use of aspect alone. Cross-linguistically, we find three different types of constructions. The first type is characterized by the use of different aspectual forms: the perfect, as we saw in English, or Italian, the imperfective, as in Slavic languages and by a dedicated experiential aspectual marker, as in Chinese. The second type is characterized by the use of serial verb constructions in languages such as those in the Papuan and Austronesian families. The third is characterized by the use of complex DPs in existential constructions in languages such as Japanese, Korean and Udmurt. We will now look at each type in more detail.

4.1 Aspect

As we showed, in Comrie’s work (1976), the use of the perfect aspect is best known in English, Greek and other Indo-European languages, but it is also found in languages that are not typologically related, such as Kharia (South Munda, Austro-Asiatic), Toqabaqita (Austronesian) and Sidaama (Cushitic):

- (4) Am=bar “Rock deb=si=bar?
 2=2HON “Rock ascend=PERF=2HON
 ‘Have you ever climbed “Rock Garden?’
 (Kharia, Peterson 2011: 250)

- (5) Qo lae-toqo-na qerofunale qi nogo?2
 2SG.NFUT go-test-3OBJ airplane LOC earlier
 ‘Have you ever gone on the airplane before?’
 (Toqabaqita, Lichtenberk 2008: 711)

The second type of aspectual marking for experiential constructions can be found in languages such as Russian (6), which uses the imperfective aspect to express experience:

- (6) Ja (nikogda) ne vid-el-a mor'z-ej.
 I.NOM never NEG see.IMF-PST-FEM.SG seal-ACC/GEN.PL
 'I have never seen seals.'

It is important to note that with the imperfective in (6), the object DP gets a "kind" reading, where *mor'z-ej* ('seals') does not refer to any particular entity. This is unlike its counterpart containing the perfective aspect, where the DP refers to some particular instance of the seal kind – a token reading. The use of the imperfective aspect for experientials can also be found outside the Slavic language family. For example, Kham, a Sino-Tibetan language, distinguishes between perfective and imperfective aspects. Similarly to Russian, Kham uses the imperfective aspect, as below:

- (7) Ma-ba-e.
 NEG-go-IMF.3SG
 'He has not gone/He never went.'

Therefore, one might hypothesize that it is the general property of the imperfective aspect that is used in the experiential construction. However, this is not the case as there are languages that make a distinction between the perfective and imperfective aspects, but they choose to use the perfective aspect in this function. We illustrate this type of system using an example coming from Lak (a Nakh-Dagestanian language) as in (8):¹

- (8) Na ta'c'aw q:a-biwk'-s:a-ra Wladivostok-ra-j
 1SG never NEG-<III.SG>be.PRF-ASRT-1/2SG Vladivostok-OS-LOC
 'I have never been to Vladivostok.'

Even though the imperfective aspect is an unmarked form, Lak resorts to the perfective aspect in the experiential context, where Russian would use the imperfect aspect (cf. (6)). The brief comparison between Lak and Russian shows that the choice of aspectual marking, whether imperfective or perfective, is language specific and depends on the semantic characteristic of a particular aspectual system. There seems to be no default option.

There are also languages that have a dedicated perfect marker for experientials. The best-known representative of this language type is Mandarin Chinese. Mandarin has a limited set of aspectual markings, one of which is *-guo*. *Guo* is used to mark experiential readings, as in (9):

¹ N. Radkevich, fieldnotes.

- (9) Wo jian-guo bai hu
 I see-EXP.PRF white tiger
 'I have seen white tigers.'

Interestingly, the only interpretation available for 'white tiger' in (9) is again a kind and not a token reading. The experiential aspectual marker is also found in other Sinitic languages. Chappell (2001) also notes that experiential aspect marking is not an areal feature of Sinitic languages since it is also attested in other types of language, such as Thai and Indonesian.

There are other types of language cross-linguistically that do not have a tense and aspect marking system. Therefore, they cannot employ any of the three types of strategy of aspectual marking for experientials we have seen so far. There are two alternative strategies use instead to express experientials that are found in our cross-linguistic survey: serial verbs and complex DPs in existential constructions. We will look next at languages that employ serial verb constructions.

4.2 Serial verbs

This option involves using verbs of perception like 'to know' and 'to see' in which their lexical meaning is bleached. And these verbs take some kind of a non-finite complement. Serial verb constructions can be found in languages with no tense/aspect marking, such as Dom (Papuan) and Madurese (Austronesian). Consider the example from Dom below:

- (10) en buai ne kan-n-o
 you betelenut eat.INF SEE-2SG-PQM
 'Have you ever chewed betelenut?'

(Tida 2006: 179)

The verb *kan* 'to see' is used to express one's experience of doing something described by the verb *ne* ('eat') in the infinitival clause.

4.3 Complex DPs in existentials

There is a third group of languages that resort to a very different type of strategy, namely, a construction involving a copula (or an auxiliary) taking a nominalized clause (complex DP), which in turn has the same structure as the existential construction. Interestingly, some of the languages falling in this group have relatively well-developed tense/aspect marking, such as Korean and Japanese. Korean and Japanese belong to the Altaic language family with a tense/aspect marking system, though they lack a clear distinction between tense and aspect, as well as a perfect vs. imperfect distinction. What is important for the purpose of our study is that Korean and Japanese use existential constructions to express experience. Therefore, in existential

constructions, Korean (11) and Japanese (12) use an adnominal clause just like a DP that takes a case marking and that is embedded in an existential construction.

(11) Korean

Na-nun [payk holangi-lul po-n] cek-i eps-ta
 I-TOP white tiger-ACC see-NMZ experience-NOM not.EXIST-DE
 (lit.) ‘There doesn’t exist an experience of me seeing white tiger.’

(12) Japanese

Taro-wa [appurikotto-wo tabe-ta] koto-ga aru
 Taro-TOP apricot-ACC eat-PAST thing-NOM exists
 (lit.) ‘There exists a fact that Taro ate apricots.’

Interestingly, a similar pattern is found in Udmurt, a Finno-Ugric language spoken in Russia. Unlike Korean, Udmurt has a more developed TAM system (Serebrennikov 1960; Winkler 2001), yet it also uses the same existential strategy for experientials. The parallel between the two constructions (experiential perfect and existential) is not surprising since both have to do with “existence/possession of something,” which can be just an entity expressed by a DP or an experience of doing something realized as a nominalized clause.

Bringing together the observations so far based on the cross-linguistic survey, there are three general patterns of expressing the experiential perfect meaning:

- (13) a. aspectual marking (perfect; imperfective; experiential)
- b. serial verb construction
- c. complex DP with existential construction

The survey shows that there is no consistent correlation between experiential strategy and language family, nor is there one with whether a language has a TAM marking system. Experiential expressions are not limited to a verbal domain but they can be expressed in a nominal domain, using existing (existential) constructions, as in Korean and Japanese.

5 Semantic uniformity: kind reading of experientials

Despite the morphosyntactic variation in experiential constructions, there is semantic uniformity. Experiential semantics seems inextricably linked with kind denotation of the grammatical objects involved in the experiential construction. Consider Grillo and Moulton’s (2016, 2018) observation that complements of verbs in the experiential perfect context in Italian only allow

a kind reading, unlike what happens in the simple past. For instance, consider an experiential sentence in Italian below:

- (14) Gianni ha visto la foca.
 Gianni has see.EP the seal
 a. ‘Gianni has seen seals (= Gianni has experienced seeing seals).’
 b. ‘Gianni has seen the seal.’

The object DP *la foca* in (14) is ambiguous between the token (14b) and kind reading (14a). Under the token interpretation, the DP *la foca* ‘the seal’ refers to some particular representative (= token) of a seal family. Under the kind interpretation, on the other hand, this DP does not refer to any particular representation of this kind of animal but rather to the *kind* itself. Interestingly, if we repeat the same sentence in the simple past, this ambiguity is not observed, yielding only the token interpretation, shown below:

- (15) Gianni vide la foca
 Gianni see. SP the seal
 ‘Gianni saw the seal.’

The same ambiguity we saw in (14) can be found in other constructions with other verbal complements, such as pseudo-relatives when used in the context of the perfect (Grillo and Moulton 2018, 2019), as in (16):

- (16) Gianni ha visto [_{PR} Maria che balla al parco]
 Gianni has seen [_{PR} Maria that dances at.the park]
 ‘Gianni has seen Maria dancing in the park.’

The pseudo-relative clause in (16) can refer to an experience of a type of situation, i.e., ‘seeing Maria dancing’ which might have happened once or more times. The second available interpretation is that of an episode (single event) that arises in the perfect of the recent past. Crucially, the ambiguity is absent in the past simple where only the episodic interpretation of the pseudo-relative clause is available, in parallel with the contrast between (14) and (15).

Grillo and Moulton (2018, 2019) also observe that Korean and Japanese employ similar constructions for experientials that embed a head internal relative clause (HIRC), as in an example from Korean (17):

- (17) na_i-nun [PRO_i [Mary-ka chwum chwu-nun] kes-ul po-n]
 I-TOP Mary-NOM dance dance-ADN_{pres} NMZ-ACC see-ADN_{past}
 cek-i iss-ta
 experience-NOM exist-DEC
 (Lit.) ‘To me, the experience of having seen Mary dancing exists’
 (‘I have seen Mary dancing’). (Grillo and Moulton 2019, ex. 76)

(17) is a complex existential structure, which embeds an adnominal clause, headed by an experience noun *cek* (‘experience’). This clause also embeds a HIRC, headed by *kes*. The literal meaning of the sentence is ‘to me, the experience of having seen Mary dancing exists’.

Grillo and Moulton (2018, 2019) further demonstrate that, like Italian, Korean and Japanese HIRCs in experientials allow a kind reading, and the use of referential DPs is ruled out, whose contrast is illustrated in (18) and (19) below:

- (18) Na-nun [Mary-ka sathang-ul/kolay-lul mek-nun]
 I-TOP Mary-NOM candy-ACC/whale-ACC eat-ADN_{PRES}
 kes-ul po-ass-ta.
 NMZ-ACC see-PAST-DEC
 ‘I saw Mary eating (the) candies/the whale.’
 (Grillo and Moulton 2019, ex. 79a)

What we see in (18) is a standard HIRC, not an experiential sentence; only an episodic interpretation is allowed. In contrast, in an experiential sentence embedding a HIRC in (19) below, a kind reading becomes possible:

- (19) na_i-nun [PRO_i Mary-ka sathang-ul/kolay-lul mek-nun]
 I-TOP PRO Mary-NOM candy-ACC/whale-ACC eat-ADN_{PRES}
 kes-ul po-n] cek-i iss-ta.
 NMZ-ACC see-ADN/PAST experience-NOM exist-DEC
 (Lit.) ‘To me, the experience of having seen Mary eating candies/the
 whale exists.’ (Grillo and Moulton 2019, ex. 79b)

What becomes more interesting is that when the object DP is made strongly referential, as in (20), the standard HIRC is fine (20a), but the same environment with an experiential becomes infelicitous (20b):

- (20) a. na-nun Mary-ka [nay-ka thakca-wi-ey twu-n] sathang twu
 I-TOP Mary-NOM I-NOM table-on-LOC put-ADN/PAST candy two
 kay-lul mek-nun] kes-ul po-ass-ta.
 CL-ACC eat-ADN/PRES NMZ-ACC see-PAST-DEC
 ‘I saw Mary eating two candies that I had put on the table.’

- b. ??na_i-nun PRO_i Mary-ka [nay-ka thakca-wi-ey twu-n]
 I-TOP PRO Mary-NOM I-NOM table-on-LOC put-ADN/PAST
 sathang twu kay-lul mek-nun] kes-ul po-n]
 candy two CL-ACC eat-ADN/PRES NMZ-ACC see-ADN/
 cek-i iss-ta.
 PAST experience-NOM exist-DEC
 (Lit.) ‘To me, the experience of having seen Mary eating two
 candies I had put on the table exists.’
 (Grillo and Moulton (2019) ex. 80a and 80b)

(20a) is a standard HIRC and it is felicitous with a referential DP object ‘two candies I put on the table’. In contrast, in a similar sentence, but with an added experiential clause in (20b), the same DP becomes infelicitous. This leads to the conclusion that the experiential construction such as (19) and (20b) is only compatible with a kind-denoting DP object.

The same contrast is also available in simple experiential existentials (without embedded HIRCs), as shown below:

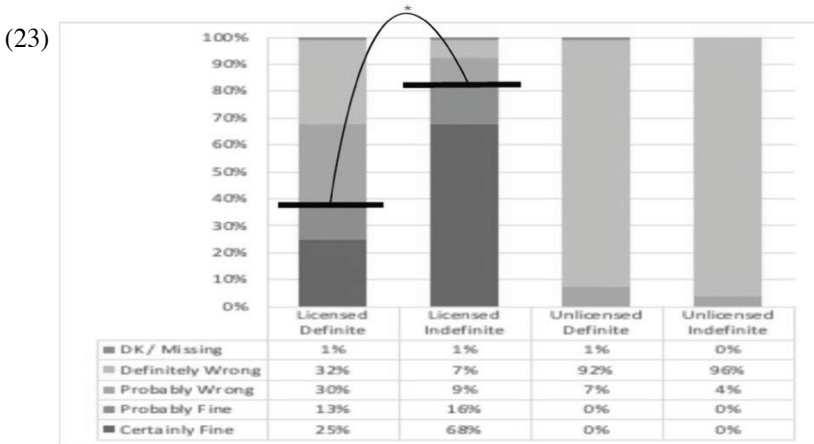
- (21) a. Eynghuy-nun [salkwu-lul meke po-n]
 Eynghuy-TOP apricot-ACC eat see-ADN/PAST
 cek-i iss-ta
 experience-NOM exist-DEC
 ‘To Yeounghi, the experience of having eaten an apricot exists’
 b. ??Yeounghi-nun [ku salkwu-tul-lul meke po-n]
 Yeounghi-TOP the apricot-PL-ACC eat see-ADN/PAST
 cek-i issta
 experience-NOM exist-DEC
 ‘To Yeounghi, the experience of having eaten the apricots exists’

With the bare singular DP *salkwu* (‘apricot’), (21a) is fine and receives a kind reading. However, in (21b) the object DP is specific and referential (accompanied by a demonstrative and plural) *ku salkwu-tul* (‘the two apples’), and the sentence becomes infelicitous. Interestingly, this kind of contrast is not limited to Italian and Korean, but it can also be observed in experiential perfect sentences in English:

- (22) a. John has never built computers.
 b. ??John has never built the computers.

English experientials only allow indefinite object DP (computers) in (22a), where a kind reading is possible. In contrast, the same sentence resists definite object DPs (the computers) in (22b), where the sentence becomes infelicitous.

Savisit (2020) tests this contrast in an acceptability judgment task with native speakers of English, whose result is shown in (23). What interests us here is the comparison between the first two bars that report the acceptance rates between definite and indefinite DPs in experiential constructions such as (22b) vs. (22a). The acceptance rates (putting together the responses of “probably fine” and “certainly fine”) for definite DPs is 38%, compared to 84% for indefinite DPs – a significant, though not categorical, difference.



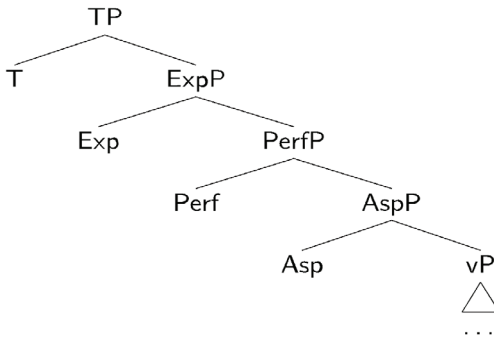
6 Analysis: an experiential operator

Against the background of significant morphosyntactic variation and equally significant semantic uniformity, there appears to be no default typological option taken by experientials across different languages. We propose to capture the patterns observed by postulating a syntactic operator that is universally available on the clausal spine. Before showing such an implementation, consider some further strong motivation coming from a learnability problem in L1 acquisition.

Assume that children come to acquire their first language (L1)-specific experiential constructions motivated by the positive evidence available in the input. However, it is less clear how they eventually come to converge on the uniform semantics, and the relevant syntactic restrictions, in the absence of negative evidence. For instance, the learnability problem in question is how they come to know the illegitimate use of definite object NPs we saw in (22) when the use of definite object DPs would be unavailable in the input. In other words, when language speakers are not likely to come across examples like (22b), how would speakers come to know not to use them? This learnability problem arises for speakers of widely different languages, and

motivates an analysis in terms of an experiential operator EXP as a part of Universal Grammar. As a first approximation, we propose (24):

(24)



The projection we propose for experientials is the Experiential projection (ExpP), which is located between TP and PerfP. The syntactic core that ties the cross-linguistic experiential constructions is the head of this projection, EXP. Given that the EXP head is contributing to the experiential semantics, it is reasonable to suggest that this head will be distinct from other heads that are responsible for the perfect interpretation in those languages that do use the perfect at least as one way of expressing the experiential.

6.1 EXP: parameterization and semantics

The proposal in (24) provides the required structural space for the morphosyntactic exponents of that operator. As the typological survey shows, however, languages are parameterized in various ways. First, EXP can be covert or overt. Covert EXP is found in languages which use their regular aspectual tools (the perfect, e.g., English, Italian, etc.), or the imperfective (e.g., Russian). Languages that have overt EXP vary in terms of how it is spelled-out. EXP is realized as a dedicated experiential perfect marker and its final spell-out position varies cross-linguistically (e.g., Mandarin and Udighe, etc.). Or, EXP is realized lexically as the main verb in the serial verb construction (e.g. Madurese). Or, EXP is realized as the copula in an existential construction which takes a complex DP as complement (e.g. Korean, Japanese and Udmurt, etc.)

The overarching semantic generalization is that EXP is responsible for turning its complement, which is of type $\langle s,t \rangle$ – a proposition instantiating an object-level event (a token event) e_t , into the corresponding proposition that instantiates a kind-level event e_k . The core function of EXP is to derive a kind interpretation in experientials. Tense applies subsequently in the standard way and provides existential quantification (Kratzer 1996). This accounts for certain semantic properties found in the experiential construction (Grillo and Moulton 2016). The event in the experiential

construction can only get a kind, non-unique interpretation. Object DPs in these constructions can only have a kind interpretation. The approach outlined here allows us further to understand the use of existential constructions for the experiential, like in Japanese and Korean, in parallel with the semantics of existential sentences involving kinds, as in Chierchia (1998).

In a manner analogous to the above, the EXP operator may apply to different types of constituents depending on what constituents instantiate experientials in each language.

7 Implications for second language acquisition

The experientials sketched so far offer a unique testing ground for second language acquisition in terms of testing L1 transfer and access to Universal Grammar.

Firstly, based on the cross-linguistic survey described above, experientials would serve as an ideal linguistic property for testing the effects of L1 transfer. Possible pairs of language groups in such an investigation would be to compare L1 Japanese/Korean learners of L2 English with L1 Chinese learners of L2 English. These two kinds of L1 groups differ quite radically in their experiential constructions. Korean and Japanese use complex DPs in existential constructions, while Chinese uses much simpler sentence structures with the experiential perfect marker, *guo*. The Full transfer/Full access L2 model (Schwartz and Sprouse 1996) assumes that L2 learners initially start with the full linguistic representation of their L1 grammar and that L2 acquisition then proceeds by restructuring the initial L1 representation for L2, motivated by the L2 input. Assuming this model, since Chinese and Korean/Japanese use radically different experiential constructions, the comparison of these groups will allow us to track the effects of L1 transfer. The prediction would be that the Chinese L1 group will acquire English experientials much easier than the Japanese/Korean L1 group. This is because restructuring by the Japanese/Korean groups would be a more complex process than it would be for the Chinese groups.

Concerning access to Universal Grammar, once the learner's restructuring for L2 is complete, there is still a remaining learnability question on the subtle semantic restrictions on definite DPs that arise from the strict kind reading of experientials. English experiential constructions are radically different from Korean and Japanese: while the former is instantiated in the VP domain, the latter is in the DP domain (via complex DPs). Suppose that Korean- and Japanese-speaking learners manage to complete restructuring, noting the structural differences from the L2 input. Here, we can apply the same learnability problem we raised for L1 acquisition above. When learners use English experiential constructions successfully, would

their knowledge of experientials manifest the kind-only interpretation, allowed by indefinite DPs, as in the contrast we saw in (22)? If it does, it must come from the knowledge that the English experiential construction instantiates the universal feature of EXP as a part of Universal Grammar. This is because their knowledge of this semantic restriction cannot come from the L2 input (just like the lack of negative evidence in L1 acquisition we saw above), nor can it come from the L1, as the feature is instantiated in completely different experiential constructions.

Lastly, the consideration of the coverage of experientials in classroom instruction can offer stronger evidence to this hypothesis. In the English language classroom, the experiential meaning is covered as part of instruction on the use of present perfect in English. However, the instruction does not extend to the restrictions on what object DPs are compatible with them. Testing L2 learners' knowledge on minimal pairs such as (22) would elucidate further if their L2 knowledge goes beyond the given instruction. If Korean- and Japanese-speaking learners show the knowledge to discern the readings between the use of definite vs. indefinite DPs in experientials, this knowledge must come from the association of the English present perfect with EXP, beyond the coverage in the classroom instruction, offering evidence of knowledge with access to Universal Grammar.

8 Conclusion

We have presented here preliminary results of a cross-linguistic investigation of the experiential construction and highlighted the different ways that languages converge on the same semantic representation. We further considered associated learnability problems for L1 acquisition and proposed that the key to understanding the commonalities while accounting for the differences in the construction lies in the existence of an Exp head along the clausal spine. Much of the detail of the syntax and semantics of Exp still needs to be worked out. We have also drawn attention to the possibilities arising from further study of experiential constructions in terms of testing hypotheses concerning access to Universal Grammar in second language acquisition.

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Semantic Interpretation of Japanese Verbal Compounds Revisited*

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1 Introduction

It is well known that not only can Japanese verbal compounds (hereafter VCs) in the form of [Noun+Verb in infinitive form (*ren'yoo*)] represent various meanings, which range from concrete entities to actions, events, states, and properties, but also their syntactic category varies from that of plain noun to verbal noun (i.e. nouns that can function as verbs combined with a light verb *suru*) to predicate nominal. The category types these compounds function under are shown in (1) and (2):

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(1) Plain nominal

Type A Event (actions, happenings) e.g. *kitune-gari* (fox-hunt) ‘fox-hunting’, *gake-kuzure* (cliff-collapse) ‘landslide’

Type B Entity (concrete objects) e.g. *hana-uri* (flower-sell) ‘flower seller’, *tume-kiri* (nail-cut) ‘nail clipper’, *kuzu-ire* (trash-put.in) ‘trash can’, *tamago-yaki* (egg-fry) ‘Japanese omelet’

(2) Type C Predicate nominal

(i) Action (verbal nouns) e.g. *mizu-arai* (water-wash) ‘wash with water’, *hitori-aruki* (one.person-walk) ‘walk by oneself’

(ii) Change of state (verbal nouns) e.g. *huna-yoi* (ship-get.sick) ‘get seasick’, *hi-yake* (sun-burn) ‘get sunburned’

(iii) State/ property (predicate nominal) e.g. *kuro-koge* (black-burn) ‘burned black’, *daigaku-de* (college-go.out) ‘college-graduate’, *sake-nomi* (sake-drink) ‘heavy drinker’

Since they show different syntactic and semantic characteristics, how they should be classified and what the differences can be ascribed to needs to be clarified. One common way of classifying compounds in the generative approach to morphology is to divide them into **root compounds** and **synthetic compounds**. Synthetic compounds are usually defined as compounds in which the head is derived from a verb, and the non-head is interpreted as its argument (Lieber 2010). Thus, in many cases, VCs are treated in the same manner as synthetic compounds. It is widely acknowledged that the internal relations of VCs are restricted by the following conditions, while such internal relations are considered to be quite free in root compounds (see Roeper and Siegel 1978; Lieber 1983; Selkirk 1982; Kageyama 1982):

- (3) a. The first constituent (N) is interpreted as the internal argument of the head if it has one.
- b. Otherwise, it is interpreted as a semantic argument (or an adjunct) if the head lacks an obligatory internal argument.
- c. All internal arguments of the head must be satisfied within a VC.

Based on the assumption that such constraints hold true for synthetic compounds, the most productive type of VCs in Japanese, which represent natural phenomena and actions (Type A), have been identified as synthetic compounds in the previous literature. As shown in (4), the argument relations available inside Japanese VCs of this type are restricted by the conditions in

- (3). (see Kageyama 1985).
- (4) a. Object + VT: *tora-gari* ‘tiger-hunting’
 b. Complement + VI: *ie-de* ‘running away from home’
 c. Subject + unaccusative VI: *zi-suberi* ‘landslide’
 d. *Subject + VT: **titi-sodate* ‘father-raising’
 e. *Subject + unergative VI: **kodomo-asobi* ‘child’s playing’
 f. Adjunct + unergative VI: *haya-aruki* ‘fast walking’

On the other hand, it seems that previous works have not made clear judgments about whether the VCs that denote concrete objects (Type B) and those that can function as predicates (Type C) are synthetic compounds. The main purpose of this paper is to investigate whether all types of Japanese VCs are synthetic compounds. On the other hand, some previous works have noted that Type C VCs are not compatible with condition (3), but it remains unclear whether the VCs that do not conform to condition (3) cannot be considered synthetic. Thus, we should clarify the extent to which condition (3) can constrain the formation of synthetic compounds in Japanese. Regarding the semantic interpretation of the VCs, previous works have suggested different mechanisms for each type. Therefore, the third question we must investigate is whether condition (3), which is generally considered to determine the interpretation of VCs, can function as a general condition based on which all of the types of VCs can be given appropriate interpretations.

Based on the classification of the VCs in previous works shown in (1) and (2), I will re-examine the constraints on the compound formation as well as the mechanisms of interpretation of each type, and I will propose that, with a slight modification, condition (3) can be applied to the other types of VCs in addition to Type A. I will also show that condition (3) (or its revised version) is not the only condition that can explain possible combinations of N and V in the VC.

This paper is organized into five sections. Regarding Type A, the previous works attested that constraint (3) holds true, and the interpretation can be derived in a straightforward manner from the argument structure of the base verb, so we will not discuss it further. I will begin in Section 2 with Type B, considering whether a constraint such as (3) is applicable. In Section 3, I will turn to the VCs that can be used as verbal nouns (Type C (i) and (ii)) and re-examine the analysis in terms of the Lexical Conceptual Structure (LCS) as proposed by Sugioka (2001). In Section 4, I will look at Type C (iii) VCs that denote property. I will argue that they are also constrained by the argument structure of the base verb, although there remain some difficulties that cannot be tackled in terms of previous approaches. Section 5 concludes the paper.

2 VCs that denote concrete objects (Type B)

In this section, I will clarify that Type B VCs that denote entities can be considered synthetic. As to the internal relations, most of them satisfy the internal argument within a compound, which conforms to (3a), as shown in (5).

- (5) a. Obj + VT
hana o uru → *hana-uri* / *tume o kiru* → *tume-kiri*
 flower ACC sell flower-sell / nail ACC cut nail-cut
 (Agent) (Instrument)
- b. Subj + unaccusative VI
mizu ga tamaru → *mizu-tamari*
 water NOM gather water-gather 'puddle' (Place)

However, some examples that denote places seem to violate (3c). In (6a), the base verb *ire(ru)* 'put', which takes two internal arguments (Theme and Locative), is compounded with the Theme, and the compound represents a place which is interpreted as the Locative argument. Other examples of this type are given in (6b). These cases, in which one of the obligatory arguments is left unsatisfied, are not compatible with (3c). Compare them with *te-arai* in (7), which also denotes a place. In this case, since the verb is two-place, it does not violate (3c) and denotes the adjunct of the base verb, namely the place where we wash our hands, which is used as a euphemism for a lavatory.

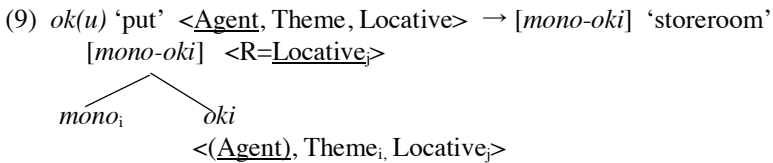
- (6) a. *kuzu o Y ni ireru* → *kuzu-ire* = Y (Locative)
 trash ACC in put 'put trash in Y' [trash-put.in] 'trash can'
- b. Other examples: *mono-oki* (thing-put) 'storeroom', *kozeni-ire* (change-put.in) 'purse', *boosi-kake* (hat-put) 'hat-rack', *kuruma-yose* (car-move.to) 'carport at the entrance'
- (7) *Z de te o arau* → *te-arai* = Z (adjunct).
 Z in hand ACC wash 'wash hands in Z' [hand-wash] 'toilet'

There are also cases in which the Locative argument is compounded, and the compound denotes the Theme. (8) shows that the same three-place verb *kake(ru)* can make compounds in either way.

- (8) a. *X o kata ni kakeru* → *kata-kake* = X (Theme)
 X ACC shoulder on put [shoulder-put] 'a shawl'
- b. *boosi o Y ni kakeru* → *boosi-kake* = Y (Locative).
 hat ACC on put [hat-put] 'a hat-rack.'

It should be noted here that in either case, the compound obligatorily denotes the internal argument that is left unsatisfied. Thus, unlike cases in which the base verb takes only one internal argument, the VCs in which the head is three-place, in principle, cannot denote an adjunct.¹ In other words, one of the internal arguments is compounded, and the one that is left unsatisfied is realized as the external argument of the VC, that is, the entity to which it refers (see Williams 1981).

As illustrated in (9), when the Theme is satisfied within the compound, the Locative argument is satisfied through being co-indexed with the referent of the VC. Based on this analysis, we can say that the argument structure of the base verb is properly interpreted through compounding of this type.



To make a condition like (3) applicable to such cases as (9), I slightly revise (3c) and propose (3c’):

- (3) c’. All internal arguments of the head must be satisfied within a VC or otherwise inherited by the VC.

Type B VCs differ from Type A in that they represent not events but concrete objects involved in the events represented by the VCs. It seems plausible to assume that the modification of the above constraint can be attributed to this categorial difference. With this modification, we can say that Type B as well as Type A VCs are constrained by the argument structure of the base verb.

Next, let us turn to the semantic interpretation of Type B VCs. Those that denote a person, such as *hana-uri*, satisfy the internal argument within compounds and represent the external argument of the base verb. (10b) schematizes the interpretation mechanism in these cases.

¹ The only exception I collected from the dictionary is *kuuki-ire* (air-put) ‘a tire inflator’. In this case, the Theme is compounded, and the compound denotes an Instrument, but the Locative argument is contextually specified as a tire; this compound cannot be used in a context other than talking about repairs on a tire.

- (10) a. X *ga hana o uru* → *hana-uri* =X ‘flower seller’
 NOM flower ACC sell [flower-sell]
 b. [*hana-uri*] <R=Agent_i>
 └───┬───┘
 *hana*_i *uri*
 <(Agent_i), Theme_i>

As we have seen, in the cases in which one of the internal arguments is left unsatisfied, following (3c’), they should, in principle, allow only a single interpretation; they should denote that argument. However, in cases where the argument structure is properly satisfied within a compound, as in (10), the interpretation cannot be derived in a straightforward manner. In (10a), the VC denotes the external argument of the base verb, but other VCs with the same internal relation represent an Instrument or a product which does not exist in the argument structure of the base verb, as shown in (11). In such cases, we can only determine the meaning in context and with the help of encyclopedic information.

- (11) a. X *de te o huku* → *te-huki* (Instrument)
 X with hand ACC wipe [hand-wipe] ‘hand towel’
 b. *yasai o itameru* → *yasai-itame* (Product)
 vegetable ACC stirfry [vegetable-stirfry] ‘fried vegetable’

Thus, Type B VCs are not as semantically transparent as Type A VCs, but we can predict the most probable interpretation from the semantic information of the constituents. For example, in the case of *yasai-itame* in (11b), the verb *itame(ru)* represents a cooking method; therefore, the purpose of the action denoted by the verb is specified as making a dish in the lexical semantic information. Then, through combining it with *yasai* ‘vegetable’, which denotes a food material, encyclopedic knowledge helps derive the meaning of the compound as the product. Such encyclopedic information can be provided by the qualia structure assumed by the Generative Lexicon theory (see Pustejovsky 1995). For the detailed mechanism of the interpretation, see Yumoto (2015).

In summary, Type B VCs can be considered synthetic in the sense that they are constrained by the condition (3c’), which defines the proper realization of the arguments, although in order to derive the interpretation, we need more lexical information beyond the argument structure or the LCS.

3 VCs that function as VNs (Type C (i)(ii))

Previous works have recognized a group of Japanese VCs that violate (3) but are quite productive. According to Sugioka (2001), in this type, the left-hand element is a modifier, and the argument of the base verb is not satisfied within a word but is realized externally, as shown in (12) and (13):

- (12) a. *Ken ga syatu o te de arau* → *syatu o [te-arai] suru*
 Ken NOM shirt ACC hand with wash shirt ACC [hand-wash] do
 ‘Ken washes a shirt by hand’
- b. *Ken ga hayaku sin da* → *Ken ga [haya-zini] si-ta*
 Ken NOM early die PAST Ken NOM [early die] do PAST
 ‘Ken died young’
- c. *hi ni yake-ta* → *[hi-yake] si-ta*
 sun by get.burned-PAST [sun-get.burned] do-PAST
 ‘(I) got sunburned’
- (13) a. *sakana ga kuroku koge ta* → *sakana ga [kuro-koge] da*
 fish NOM black burn PAST fish NOM [black-burn] COP
 ‘The fish has been burned black’
- b. *ie o renga de tukuru* → *ie ga [renga-zukuri] da*
 house ACC brick of build house NOM [brick-build] COP
 ‘(They) build a house of bricks.’

It is noticeable that those in (12) are directly followed by a light verb, *suru* ‘do’, which shows that they are not plain nominals but are verbal nouns (hereafter VN). On the other hand, the examples in (13) are followed by a copula (COP), *da*, which shows that they function as predicate nominals. They represent not a dynamic event but a temporary or permanent property. Thus, the VCs in (12) and (13) are structurally different, but as mentioned above, they show a common property: namely, they do not conform to condition (3).

In order to distinguish these types from those that conform to condition (3), Sugioka (2001, 2002) proposed analyzing them in terms of the LCS instead of the argument structure. She also claimed that only an adjunct can be compounded to make them function as VNs or predicate nominals. Briefly, she argues that the incorporated adjunct modifies one of the decomposed predicates at the level of the LCS, as schematized in (14). (14a) shows that if the adjunct represents Manner or Instrument, it modifies ACT in the LCS of the base verb. (14b) shows an example in which the incorporated element modifies BECOME. Sugioka argues that this correctly predicts that in these cases, the compounding results in VNs because they maintain the event structure of the base verb. On the other hand, if the adjunct represents the result

state, it is incorporated in State, as shown in (14c). In this case, the compound cannot function as a VN and exhibits the [-V] feature (see Sugioka 2002 for details).

- (14) a. *arau* : Event[x ACT ON y Manner/Instrument]
 [*te-arai*] : Event[x ACT ON y **hand** Instrument] (cf. (12a))
 b. *yakeru* : Event[BECOME y Cause/Manner State[BE y AT-BURNED]]
 [*hi-yake*] : Event[BECOME y **sun** Cause State[BE y AT-BURNED]]
 (cf. (12c))
 c. *kogeru* : Event[BECOME y State[BE y AT-BURNED]]
 [*kuro-koge*] : State[BE y AT-BURNED **black**] (cf. (13a))

Sugioka's main point is that the Japanese VCs should be classified into two different types, which are based on "different levels of grammar," namely argument structure and LCS (Sugioka 2002: 507). This has gained the support of researchers advocating the modularity of word formation. However, based on Yumoto (2010), I claim that the VCs that function as VNs **are** constrained by the argument structure of the base verb; unless the argument structure of the VC is derived properly through the inheritance of the arguments from the constituents, the VC cannot be accepted as a VN. In this light, we can say that the VCs that function as VNs are 'synthetic compounds' constrained by condition (3'), and it is not appropriate to say that they are regulated by a module different from Type A.

It is noticeable that the characteristic of the VCs that can function as VNs is the obligatoriness of inheriting arguments. This means that if the base verb is transitive, some of the internal arguments must be left unsatisfied within the compound so that they are inherited by the VC. This is why most of the VCs which function as VNs have an adjunct as the non-head. The validity of my claim can be shown by the fact that many VCs in which the internal argument is satisfied internally can function as VNs, contrary to Sugioka's generalization. Such examples are given in (15) and (16), in which the base verbs are three-place predicates. In (15), the Locative arguments are compounded, and the Theme arguments are realized as the object of the VNs, while the examples in (16) display the reverse pattern.

- (15) a. (X *ga*) *nimotu o hune ni tumu.* → *nimotu o [huna-zumi] suru.*
 (X NOM) cargo ACC ship on load cargo ACC [ship-load] do
 '(X) ship a cargo'
 b. Other examples: [*bin-zume*] (bottle-fill) 'bottle', [*kura-ire*] (warehouse-put) 'warehouse', [*tana-age*] (shelf-raise) 'to shelve'

- (16) a. (X *ga*) *hune ni ni o tumu* → *hune ni [ni-zumi] suru*.
 (X NOM) ship LOC freight ACC load ship LOC [freight-load] do
 ‘(X) load freight on a ship’
 b. Other examples: *iro-zuke* (colour-add), *kaza-ire* (wind-take.in),
dame-dasi (disapproval-give), *sato-gake* (sugar-cover)

Similarly, as shown in (17), the compounding of a VI and the internal argument can also form a VN.

- (17) a. *Ko ga oya kara hanareru* → *ko ga [oya-banare] suru*
 child NOM parent from leave child NOM [parent-leave] do
 ‘The child becomes independent of his parents.’
 b. Other examples: *benti-iri* (bench-enter), *nakama-iri* (company-
 enter) ‘to join’, *syoku-atari* (food-get. poisoning)

(18) schematizes how the argument structure of the base verb is inherited by the VC.

- (18) a. [*huna-zumi*]_{VN} <Agent, Theme >

$$\begin{array}{c} \diagup \quad \diagdown \\ \text{huna}_i \quad \text{zumi} \end{array}$$
 <Agent, Theme, Locative_i>
 b. [*ni-zumi*]_{VN} <Agent, Locative>

$$\begin{array}{c} \diagup \quad \diagdown \\ \text{ni}_i \quad \text{zumi} \end{array}$$
 <Agent, Theme_i, Locative>

It should be noted here that the constraint (3c’) is not sufficient to explain why VNs such as (19) are not acceptable. In (19a), in which the internal argument of the two-place verb is compounded, the unacceptability seems to be due to the fact that the VC cannot inherit any argument to be realized as the object. This leads us to assume that the VC inherits the case feature of the base verb, which necessitates the argument inheritance. (19b), in which the base verb is an unaccusative, can be explained in the same way.

- (19) a. X *ga te o arau* → *X *ga [te-arai] suru*
 X NOM hand ACC wash X NOM [hand-wash] do
 b. X *no te ga areru* → *X *ga [te-are] suru*
 X GEN hand NOM get chapped X NOM [hand-get.chapped] do

Based on this observation, I argue that the VCs that function as VNs must inherit the argument structure properly to be matched with the case feature, and this requirement takes precedence over conditions (3a, b). That is, when

the base verb takes only one internal argument, the compounding of an adjunct is obligatory in spite of the violation of (3a, b).

One remarkable fact that shows the validity of my claim is that in some examples, the valence of the base verb is maintained, although one of the internal arguments is realized internally, as shown in (20).

- (20) a. ENEOS *ga gasorin o* [*ne-age*] *si-ta*.
 ENEOS NOM gasoline ACC [price-raise] do-PAST
 ‘ENEOS raised the price of gasoline.’
- b. *Gasorin ga* [*ne-agari*] *si-ta*.
 gasoline NOM [price-rise] do-PAST
 ‘The price of gasoline went up.’
- c. Other examples: *kaku-age* (rank-raise), *ne-sage* (price-lower),
ne-biki (price-reduce), *iro-oti* (color-fade), *kata-kuzure* (shape-collapse), *dai-gawari* (generation-change)

In (20a), a transitive verb, *age(ru)* ‘to raise’, is compounded with its Theme object, *ne* ‘price’. However, the entire compound *ne-age* ‘to raise the price’ takes another object, ‘gasoline’. Similarly, the intransitive compound *ne-agari* in (20b), consisting of the unaccusative verb *aga(ru)* ‘to rise’ and its subject *ne* ‘price’, takes ‘gasoline’ as its subject. Since the verbs do not select ‘gasoline’ as their arguments, a question arises as to where this “extra” argument comes from.² The key to the question is a characteristic of incorporated nouns. Nouns such as *ne* ‘price’, *kaku* ‘rank’, and *iro* ‘color’ are so called “unsaturated nouns,” namely, nouns the extension of which cannot be determined without referring to the variable that is included in their semantic description.³ It is natural to assume that the VCs in (20) inherit the variable from the semantic description of the incorporated nouns. Thus, in these VCs, the argument structure of the base verb is satisfied internally, but they can satisfy the condition (3c’) and also the requirement that they should inherit the argument structure properly to function as VNs.

Regarding the semantic interpretation of Type C VCs which function as VNs, we should notice that those in cases like (15), (16), and (17) can simply be derived from the argument structure of the base verb; no modifier is

² One might consider these cases to be a double realization of the argument. However, if this is the case, the extra argument should be the hyponym of the incorporated nouns, as in cases such as ‘[**butter**]_v the bread with unsalted butter’. In this example, the underlined part is the hyponym of the nominal, which is realized within a word. However, such a relation does not hold between ‘gasoline’ and ‘price’ in the examples in (20).

³ See Nishiyama 2013 for the detailed characterization of unsaturated nouns.

inserted into the LCS, and the argument structure of the VN is derived in a straightforward manner, as shown in (18). It is only when an adjunct is compounded that we need to refer to the LCS of the base verb, as proposed by Sugioka (2001).

To conclude this section, compounding of this type which forms VNs is constrained both by condition (3c') and by the requirement to derive an argument structure properly. The compounding of an adjunct is not a condition to form a VN. We can say that they are synthetic compounds in the sense that they conform to condition (3c') and, thereby, are constrained by the argument structure of the base verb.

4 VCs that function as predicate nominals (Type C (iii))

As we have seen in (14c), the base verb that represents change of state can be compounded with an element that describes the resultant state, and such compounds can function as predicate nominals (other examples are given in (21b)). In addition to such compounds based on unaccusative verbs such as *kogeru* 'burn', transitive verbs which represent accomplishment can form this type of VC, as shown in (22). In (22a), the adjunct that represents material is incorporated within a compound. According to Ito and Sugioka (2002), BE in the LCS of the creation verb selects Material, and through focusing of the result State and suppression of the Agent, the Theme of the base verb is chosen as the target of the predication. One problem for this analysis is the fact that in examples like (22b), the incorporated adjunct is an Instrument which is selected by ACT and cannot appear in State, but the VC can be used as predicate nominal.⁴ If the VCs of this type are derived through focusing of the result State, it is unclear why it can be focused in this case.

- (21) a. *sakana ga kuroku kogeru* → *sakana ga [kuro-koge] da*.
 fish NOM black burn fish NOM [black-burn] COP
 'The fish has burned black.'
 b. Other examples: *koma-gire* (fine-get.cut) 'fine-cut', *bisyo-nure*
 (dripping-get.wet) 'dripping wet'

⁴ Sugioka (2001: 99) explains this phenomenon as follows: "It backgrounds the causation process and foregrounds the result state. ... We can (then) postulate that some passive-like operation is responsible for the alternation."

- (22) a. *isi de Y o tukuru* ‘build Y of stone’
 Event[[X ACT ON y] CAUSE [BECOME_y State [BE y
 OF-*stone*_{Material}]]]
 → Y *wa* [*isi-zukuri*] *da*. ‘Y is stone-built’
 Y TOP [stone-build] COP
- b. *te de Y o amu* ‘knit Y by hand’
 Event [X ACT ON y *hand*_{Instrument}] CAUSE [BECOME_y State [BE y]]]
 → Y *wa* [*te-ami*] *da*. ‘Y is hand-knit.’
 Y TOP [hand-knit] COP

It should be noted here that, contrary to Sugioka’s claim, not only an adjunct but also the internal argument of the base verb can be compounded to form this type of VC. In example (23a), the Theme *niwa* ‘garden’ is compounded, and the other internal argument, namely the Locative *ie* ‘house’ is chosen as the subject of the predicate nominal. In (24a), the Locative argument *hukuro* ‘bag’ is compounded, and the Theme *kasi* ‘sweets’ is realized as the subject. Notice that these examples conform to our condition (3c’) because both of the internal arguments selected by the base verbs are properly satisfied through being realized within a compound and being inherited by the compound as the subject of predication.

- (23) a. *ie ni niwa ga tui-teiru* → *ie ga [niwa-tuki] da*
 house DAT garden NOM attach-ASP house NOM [garden-attach] COP
 ‘This house has a garden.’
 b. Other examples: *mondai-bukumi* (problem-have), *hito-girai* (human-hate) ‘misanthropic’, *kinpaku-iri* (gold.leaf-contain)
- (24) a. *kasi ga hukuro ni hai-ru* →
 sweets NOM bag in be.contained
kasi ga [hukuro-iri] da
 sweet NOM [bag-be.contained] COP
 ‘The sweets are in a bag.’
 b. Other examples: *titiyoa-ni* (father-resemble), *migi-yori* (right-head.to) ‘slightly rightist’, *bin-zume* (bottle-fill), *soto-zuke* (outside-attach) ‘external’

The validity of (3c’) for this type can also be attested by the following data. (25) shows that an adjunct that represents the Instrument cannot be compounded with a base verb that takes two obligatory internal arguments. It is unacceptable as a predicate nominal because, although one of the internal

arguments is realized as the subject of the predicate nominal, the other internal argument is realized neither internally nor externally.

- (25) *jam o kikai de *(bin ni) tumeru.*
 jam ACC machine with bottle DAT fill
 → **kono jam wa [kikai-zume] da*
 this jam TOP [bottle-fill] COP
 ‘The jam is machine-bottled.’

Importantly, there is another fact that was ignored by previous works: there are VCs that do not include State in the event structure of the base verb but can be used as predicate nominals, as shown in (26). The base verbs *nomu* ‘drink’ and *toku* ‘tell (a lie)’ do not imply any result. Furthermore, unlike the examples we have seen, they select the external argument of the base verb as the subject of predication. In these cases, they represent the habit of the subject. For example, *sake-nomi* describes a person who habitually drinks alcohol. Thus, VCs of this type denote the property of the subject ascribed to the subject’s habit represented by the VCs.

- (26) a. *Ken wa takusan sake o nomu* → *Ken wa [sake-nomi] da.*
 Ken TOP much sake ACC drink Ken TOP [sake-drink] COP
 ‘Ken is a heavy drinker.’
 b. *Ken wa yoku uso o toku* → *Ken wa [uso-tuki] da.*
 Ken TOP frequently lie ACC tell Ken TOP [lie-tell] COP
 ‘Ken is a liar.’

There is still another type of VCs that can denote the subject’s property. These represent a certain property that results from the event denoted by the VC, but unlike examples such as *kuro-koge* (cf. (21a)) or *isi-zukuri* (cf. (22a)), they do not denote the result State in the Event structure of the base verb. For example, *daigaku-de* (cf. (27a)) represents the subject’s property by describing his/her career or personal history. According to Masuoka (2008), the property description represented by the sentences that correspond to these VCs is called the “description of background property.”

- (27) a. *Ken wa daigaku o de-teiru.*
 Ken TOP college ACC go.out-ASP
 → *Ken wa [daigaku-de] da.*
 Ken TOP [college-go.out] COP
 ‘Ken is a college graduate.’
- b. *Ken wa huransu de umare-ta* → *Ken wa [huransu-umare] da*
 Ken TOP France in be.born-PAST Ken TOP [France-be.born] COP
 ‘Ken is a person of French birth.’

Now, if we examine the VCs that represent the subject’s property and that can be used as predicate nominals, they all conform to condition (3c’). The fact that examples such as (28), in which an adjunct is compounded and the internal argument of the base verb is not realized either internally or externally, are unacceptable as predicate nominals is also explained by (3c’).

- (28) a. *K wa koppu de sake o nomu.* → **K wa [koppu-nomi] da*
 K TOP glass with sake ACC drink K TOP [glass-drink] COP
- b. *K wa wakai toki ni ie o de-ta.* → **K wa [waka-de] da.*
 K TOP young at home ACC leave PAST K TOP [young-leave] COP

To conclude, it has become clear that all types of VCs that can function as predicate nominals are constrained by condition (3c’). Therefore, we can safely say that they are synthetic compounds that are constrained by the argument structure of the base verb.

Finally, let us consider the mechanism of semantic interpretation of the VCs that can function as predicate nominals. Most of the cases considered by Sugioka (2001, 2002) can be interpreted by inserting the compounded element into the LCS of the base verb. However, as mentioned above, in the case where an adjunct which is not included in the result State is compounded, it is not easy to derive the LCS of the predicate nominal. Furthermore, the interpretations of the VCs which represent the property of the subject of the base verb (cf. (26), (27)) cannot be derived in a straightforward manner from the event description represented by the VCs, as we have just seen. It is obvious that property description in these cases cannot be represented by means of the LCS or the argument structure.

Previous works have failed to note this fact, but if we are to clarify the nature of the VCs that represent property, we should turn our attention to the semantics of property description and consider how the combination of the base verb and the incorporated element can describe property in the same way as the corresponding sentences. I would like to leave this problem open for future analysis.

5 Concluding remarks

We have examined both the internal relations and the inheritance of the argument structure in various types of VCs, namely those that represent concrete objects, those that can function as VNs, and those that represent property and can be used as predicate nominals. It has been shown that all types of Japanese VCs are constrained by the argument structure of the base verb, and I proposed a slight modification of the condition that has been considered to be a general condition for VC formation (i.e. (3)) to cover Type B and Type C compounds, and presented it as (3c'). Based on this modified condition, we can safely say that all Japanese VCs are synthetic compounds which are constrained by the same condition.

It was also shown that this condition is not sufficient to explain the acceptability of Type C VCs. To compensate for this insufficiency, I proposed that the VCs that function as VNs must inherit the argument structure properly to match the case feature of the base verb. This requirement, which takes precedence over conditions (3a, b), constrains the compound formation of Type C VCs along with condition (3').

Regarding the question of whether (3) (with (3c')) can function as a condition based on which all types of VCs can be given appropriate interpretations, it was shown that this condition can determine not only the interpretation of Type A VCs but also other VCs in Type B and Type C. However, as to Type B and Type C VCs, the meaning cannot always be derived solely from the argument structure. Some Type C VCs can be described in terms of the LCS of the base verb, as proposed in previous works. In the case of some Type B VCs, however, we need to refer to encyclopedic lexical information. Furthermore, as regards the VCs that represent property, we need to refer to the semantics of property description ascribed to the event represented by the VCs.

It remains to be seen how the property reading of VCs used as predicate nominals is derived from the event description denoted by the semantic composites of its constituents. We can expect that advances in the semantics of property description on the sentential level will help solve the problem.

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Syntactic and Prosodic Sluicing in Japanese

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1 Introduction

This paper proposes that there are two types of Sluicing in Japanese, i.e. Syntactic Sluicing and Prosodic Sluicing. We argue that while Syntactic Sluicing involves leftward movement of a single syntactic constituent to the edge of a clause in the syntactic component, Prosodic Sluicing involves rightward movement of a single prosodic constituent to the edge of an intonational phrase in the phonological component. It is shown that Single and Multiple Sluicing are derived by Syntactic and Prosodic Sluicing respectively, thereby explaining the contrast between Single and Multiple Sluicing regarding syntactic constraints and Logical Form (LF) interpretive effects. We also argue that cross-linguistic variations in the availability of Multiple Sluicing can be accommodated under the Externalization Parameter.

The organization of this paper is as follows. Section 2 proposes a Prosodic Sluicing analysis of Multiple Sluicing. Given that Sluicing is a “concealed cleft,” we argue that in Multiple Sluicing, the targeted material is packed into a single prosodic constituent and undergoes *Prosodic Movement* to the right

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edge of an intonational phrase (1) in the phonological component, followed by ellipsis of the intonational phrase corresponding to the presuppositional Complementizer Phrase (CP). Section 3 shows that Multiple Sluicing does not obey any syntactic constraints or have any LF interpretive effects, which constitutes evidence in favor of our prosodic movement analysis. We conclude with a discussion of cross-linguistic variation with respect to Multiple Sluicing in Section 4.

2 Prosodic Sluicing

It has been claimed that Multiple Sluicing as in (1) involves syntactic movement. In (1), the second conjunct contains two *wh*-phrase remnants, *dare-ni* ‘who-DAT’ and *nani-o* ‘what-ACC’, and has the full indirect question interpretation of (2):¹

- (1) Mary-ga *dareka-ni nanika-o* watasita sooda ga,
 Mary-NOM *someone-DAT something-ACC* gave I.heard but
 boku-wa [**dare-ni nani-o** (da) ka] siranai
 I-TOP **who-DAT what-ACC** (be) Q not.know

Lit. ‘I heard Mary gave *something to someone*, but I don’t know **what to whom**.’

- (2) Boku-wa [Mary-ga **dare-ni nani-o** watasita ka] siranai
 I-TOP Mary-NOM **who-DAT what-ACC** gave Q not.know

Lit. ‘I don’t know **what to whom** Mary gave.’

Takahashi (1994) and Takahashi and Lin (2012) claim that Multiple Sluicing is derived by syntactic movement of an amalgamated *wh*-phrase, formed by adjunction of a *wh*-phrase to another *wh*-phrase, as shown in (3). Kuwabara (1996) claims that Multiple Sluicing involves a cleft with multiple foci, derived by syntactic VP-cleft movement, as shown in (4):

¹ Note that Multiple Sluicing with more than two remnants is possible (Takahashi 1994: 298):

(i) Dareka-ga *nanika-o katta sooda ga*, boku-wa
 someone-NOM *something-ACC* bought I.heard but I-TOP

[**dare-ga nani-o itu dokode** ka] wakaranai
who-NOM what-ACC when where Q not.know

Lit. ‘I heard someone bought something, but I don’t know **who what when where**.’

- (3) a. Boku-wa [[Mary-ga dare-ni nani-o watasita] (da) ka]
 I-TOP Mary-NOM who-DAT what-ACC gave (be) Q
 siranai
 not.know
Amalgamated wh-phrase formation
- b. Boku-wa [[Mary-ga [dare-ni nani-o₁] t₁ watasita] (da) ka]
 siranai
Movement of the amalgamated wh-phrase to the Spec of CP and clausal ellipsis
- c. Boku-wa [[dare-ga nani-o]₂ [~~Mary-ga t₂ t_i watasita~~] (da) ka]
 siranai
- (4) a. Boku-wa [[Mary-ga [VP dare-ni nani-o watasita]](da) ka]
 I-TOP Mary-NOM who-DAT what-ACC gave (be) Q
 siranai
 not.know
Overt V-movement to T
- b. Boku-wa [[Mary-ga [VP dare-ni nani-o t_V] watasita] (da) ka]
 siranai
Movement of VP to the Spec of CP and clausal ellipsis
- c. Boku-wa [[VP dare-ni nani-o t_V] [~~Mary-ga t_{VP} watasita~~] (da) ka]
 siranai

Contrary to this view, we propose a Prosodic Sluicing analysis of Multiple Sluicing, which involves movement in the phonological component.

2.1 Sluicing as a Concealed Cleft and Syntactic/Prosodic Cleft

We claim with Kuwabara (1996), Merchant (1998), and Saito (2003), among others, that Sluicing, single or multiple, is a “concealed Cleft,” which is supported by the fact that the copula *da* ‘be’ may appear optionally after the remnant. The derivation of the second conjunct of Single Sluicing (5), for example, is represented in (6). In (6), a cleft is formed with *nani-o* ‘what-ACC’ as the focus phrase. Then, the clausal subject argument/presuppositional CP *Mary-ga e katta no* ‘Mary bought *e*’ undergoes ellipsis:

- (5) Mary-ga *nanika-o* katta sooda ga, boku-wa
 Mary-NOM *something-ACC* bought I.heard but I-TOP

[**nani-o** (da) ka] siranai
what-ACC (be) Q not.know

‘I heard Mary bought *something*, but I don’t know **what**.’

- (6) ...boku-wa [~~Mary-ga e-katta-no~~]-wa **nani-o** (da) ka] siranai
 I-TOP Mary-NOM bought C-TOP **what-ACC** (be) Q not.know

Agbayani and Ishii (to appear) argue that Cleft, whether single or multiple, changes Information Structure by inducing a focus interpretation. Following Agbayani, Golston and Ishii’s (2015) proposal for scrambling, we argue that the effects induced by Information Structure are not limited to syntax or phonology, but apply to both. We propose that material for Cleft is *targeted* within syntax and moved either in syntax or phonology, and that material targeted for Cleft must be non-predicative (saturated), maximal, and contained in a single constituent. We then propose that (i) if the targeted material is a syntactic XP, then it undergoes *Syntactic Cleft*, (ii) if the targeted material is not a syntactic XP, then that material is packed into a prosodic constituent in the phonology and undergoes *Prosodic Cleft* to the right edge of an intonational phrase ι (where ι corresponds to the presuppositional CP). It then follows that Syntactic Cleft bleeds Prosodic Cleft, which is given a principled account if syntax derivationally precedes and feeds phonology, and Cleft is subject to the derivational principle of Earliness (7) (Pesetsky 1989):

- (7) Earliness Principle

Satisfy principles as early as possible on the hierarchy of levels
 (DS) > SS > LF > LP.

Note that our proposal works only in a theory where there is a one-way feeding relation from syntax to phonology, and where information from phonology does not flow back into the syntax (contrary to Richards 2016).

Agbayani and Ishii (to appear) argue that the manipulation of structures in syntax and phonology by the outside system is heavily restricted by the constraints of the grammatical sub-systems involved. It then follows that the clefted material must be contained in a single (maximal) constituent, relativized to the component in which Cleft takes place. Syntactic Cleft moves a single syntactic XP to a clause-peripheral position. Prosodic Cleft applies to a single prosodic constituent, which we claim is the Major Phrase (MP) (Martin 1952; McCawley 1968; Poser 1984; Selkirk and Tateishi 1988; Itô and Mester 2013; Ishihara 2016), and moves MP to the edge of an intonational phrase (ι). We adopt Itô and Mester’s (2013) view that an MP may be formed

by embedding of multiple phonological phrases (Φ s). Let us illustrate the analysis by using a hypothetical indirect and direct object (8). Double underline indicates material targeted for Cleft:

- (8) $\underline{\underline{[NP-DAT] [NP-ACC]}}$ V *no* (Comp) *wa* (Top) Syntax
 (((.....) Φ (.....) Φ)_{MP})_t Phonology
 ↑

There is no way for Syntactic Cleft to apply to the targeted material, since the IO and DO are not contained in a single XP. The Information Structure requirement is then passed on to the phonological component, where a single MP is created by combining multiple Φ s in Japanese. Since Prosodic Cleft must apply to a single prosodic constituent, this acts as a constraint which forces the creation of such an MP. The targeted material is forced into a single prosodic constituent, which undergoes Prosodic Cleft to the right periphery of the intonational phrase (t) corresponding to the presuppositional CP. Note that this excludes derivations in which one of the XPs clefs syntactically, and the other clefs prosodically. Note also that although the IO and DO form a syntactic constituent under the Larsonian analysis of the double object construction, that constituent, being VP, is not a non-predicative XP and thus not eligible for Cleft.

2.2 An Analysis of Single/Multiple Sluicing

We now propose a Prosodic Sluicing analysis of Multiple Sluicing, taking (1) (repeated here in (9)) as an example:

- (9) Mary-ga *dareka-ni* *nanika-o* *watasita* *sooda* *ga*,
 Mary-NOM *someone-DAT* *something-ACC* gave I.heard but
 boku-wa [**dare-ni** **nani-o** (da) ka] *siranai*
 I-TOP **who-DAT** **what-ACC** (be) Q not.know

Lit. ‘I heard Mary gave *something to someone*, but I don’t know **what to whom**.’

The derivation of the second conjunct proceeds as represented in (10):

(11) *Syntax*:

a. boku-wa [_{TopP} [_{CP} Mary-ga *t*_{NP} katta no]-wa
 I-TOP Mary-NOM bought C TOP

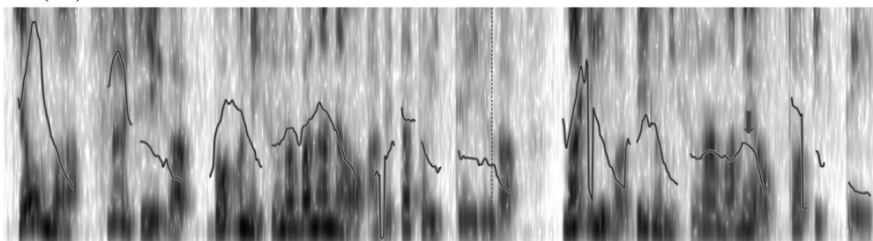
[_{FocP} [_{NP} nani-o] [_{tCP} (da)]] Top] ka siranai
 what-ACC (be) Q not.know

Phonology:

b. boku-wa (~~Mary-ga katta no wa~~)_τ nani-o (da) ka siranai

Our Prosodic Sluicing analysis is supported by pitch accent in Multiple Sluicing constructions. In the pitch track of the Multiple Sluicing sentence (12),² *Bill-ni* ‘Bill-DAT’ and *mamé-o* ‘bean-ACC’ both have H tones – *mamé* having lexical H – but the H tone on *mamé-o* is lower than the H on *Bill-ni*. The H tone of *mamé-o* is downstepped in relation to that of the H tone on *Bill-ni*. The domain of downstep in Japanese is traditionally identified as the Major Phrase (Martin 1952; McCawley 1968; Poser 1984; Selkirk and Tateishi 1988; Itô and Mester 2013; Ishihara 2016). The presence of downstep indicates that the sluicing remnants *Bill-ni* ‘Bill-DAT’ and *sono mamé-o* ‘that bean-ACC’ together form a Major Phrase.

(12)



H*L !H*L
 John-wa Suzy-ga Bob-ni banana-o ageta to itteru ga, Mary-wa Bill-ni sono mamé-o to itteru
 John-Top Suzy-Nom Bob-Dat banana-Acc gave C says but Mary-Top Bill-Dat that bean-Acc C says
 Lit. ‘John says Suzy gave a banana to Bob, but Mary says (Suzy gave) *that bean to Bill*.’

3 Evidence for a Prosodic Sluicing Analysis of Multiple Sluicing

The previous section proposed a Prosodic Sluicing analysis of Multiple Sluicing. Our proposal predicts that, unlike Single Sluicing, which involves Syntactic Sluicing, Multiple Sluicing is blind to syntactic constraints and lacks LF interpretive effects. This prediction is borne out.

² The pitch track is taken from a recording of an adult female speaker of Tokyo Japanese.

3.1 Island Constraints

The first piece of evidence comes from island effects. Single Sluicing, which involves Syntactic Sluicing, obeys syntactic island constraints like the Complex NP Constraint and the Adjunct Condition, as pointed out by, among others, Takahashi (1994), Kuwabara (1996, Fukaya (2003), and Saito (2003):³

- (13) a. *Boku-wa [keisatu-ga [[*Tanaka giin-ni* kabuken-o okutta]
I-TOP police-NOM *Rep. Tanaka-DAT* stock-ACC gave

otoko]-o taihositano]-wa sitteiru ga, [**hokano dono**
man-ACC arrested C TOP know but **else** **which**

giin-ni (da) ka]-wa siranai
representative-DAT (be) Q TOP not.know

Lit. ‘I know that the police arrested [the man who had given stocks *to Rep. Tanaka*], but I don’t know **to which other representative** (the police arrested [the man who had given stocks *e*]).’
(adapted from Fukaya 2003: 181)

- b. *Boku-wa [keisatsu-ga [denryoku gaisya-ga
I-TOP police-NOM electric power company-NOM

Tanaka giin-ni kabuken-o okutta kara] soosositeiru no]-wa
Rep. Tanaka-DAT stock-ACC gave because investigate C TOP

sitteiru ga, [**hokanodono giin-ni** (da) ka]-wa siranai
know but **else which representative-DAT** (be) Q TOP not.know

Lit. ‘I know the police are making an investigation [because the electric power company gave stocks *to Rep. Tanaka*], but I don’t know **to which other representative** (the police are making an investigation [because *Rep. Tanaka* gave stocks *e*]).’

³ Saito (2003) observes that island effects become visible only when a pronominal subject – *pro* or an overt pronoun – is disallowed in the embedded clause of the second conjunct. As pointed out by Zidai-Eroğlu (2019), when *hokano* ‘else’ modifies the *wh*-remnant, a pronominal subject cannot appear in the embedded clause of the second conjunct:

- (i) John-wa Sally-o aisiteite, hoka-ni-mo dareka-o aisiteiru ga,
John-TOP Sally-ACC love other-DAT-also someone-ACC love but
watasi-wa [(*sore-ga) hokano dare-o (da) ka]-wa siranai.
I-TOP it-NOM else who-ACC (be) Q TOP not.know

Lit. ‘John loves Mary, and loves someone else too, but I don’t know who else (it is).’
In (13) and (14), *hokano* ‘else’ modifies the *wh*-remnant, which excludes an embedded empty pronominal subject *pro* in the second conjunct. We can therefore detect whether Single and Multiple Sluicing exhibit island effects or not.

Multiple Sluicing, on the other hand, does not exhibit island effects. In Multiple Sluicing (14), two correlates *Tanaka giin-ni* ‘to representative Tanaka’ and *kabuken-o* ‘stock-ACC’ in the first conjunct are contained within a complex NP and an adjunct, respectively; the corresponding two *wh*-remnants, *hokano dono giin-ni* ‘to which representative’ and *nani-o* ‘what-ACC’, both originate within an island:

- (14) a. Boku-wa [keisatu-ga [[*Tanaka giin-ni kabuken-o* okutta]
I-TOP police-NOM *Rep. Tanaka-DAT stock-ACC* gave
otoko]-o taihositano]-wa sitteiru ga, [**hokano dono**
man-ACC arrested C TOP know but **else which**
dono giin-ni nani-o (da) ka]-wa siranai
which Rep.-DAT what-ACC (be) Q TOP not.know

Lit. ‘I know that the police arrested [the man who had given *a bribe to Rep. Tanaka*], but I don’t know **what, to which other representative** (the police arrested the man who had given *e e*).’

- b. Boku-wa [keisatsu-ga [denryoku gaisya-ga
I-TOP police-NOM electric power company-NOM
Tanaka giin-ni kabuken-o okutta kara] soosaitteiru no]-wa
Rep. Tanaka-DAT stock-ACC gave because investigate C TOP
sitteiru ga, [**hokanodono giin-ni nani-o** (da) ka]-wa siranai
know but **else which Rep.-DAT what-ACC** (be) Q TOP not.know

Lit. ‘I know the police are making an investigation [because the electric power company gave *stocks to Rep. Tanaka*], but I don’t know **what, to which other representative** (the police are making an investigation [because Rep. Tanaka gave *e e*]).’

Our Prosodic Sluicing analysis straightforwardly explains the lack of island effects with Multiple Sluicing. If Multiple Sluicing were derived by Syntactic Sluicing, however, (14) should be worse than (13), where only one constituent undergoes movement out of an opaque domain. However, the result is the opposite of what any Syntactic Sluicing analysis of Multiple Sluicing predicts.

3.2 Single/Multiple Sluicing with a Nominative Phrase Remnant

Second, Single Sluicing with a nominative phrase remnant is not possible, as pointed out by Kizu (1997). In (15a), for example, Single Sluicing with the nominative phrase remnant *dare-ga* ‘who-NOM’ is deviant. Multiple Sluicing with a nominative phrase remnant together with another remnant, on the other hand, is acceptable, as shown in (15b). In (15b), the nominative phrase

remnant *dare-ga* ‘who-NOM’ appears with another remnant *nani-o* ‘what-ACC’, and the result is acceptable:

- (15) a.?*John-wa [*dareka-ga* sono hon-o katta to] itta
 John-TOP *someone-NOM* that book-ACC bought C said
 sooda ga, boku-wa [**dare-ga** ka] siranai
 I.heard but I-TOP **who-NOM** Q not.know
 Lit. ‘I heard John said *someone* bought that book, but I don’t know **who** (*e* bought that book).’
- b. John-wa [*dareka-ga nani-o* katta to] itta
 John-TOP *someone-NOM something-ACC* bought C said
 sooda ga, boku-wa [**dare-ga nani-o** ka] siranai
 I.heard but I-TOP **who-NOM what-ACC** Q not.know
 Lit. ‘I heard John said *someone* bought *something*, but I don’t know **who what** (*e* bought *e*).’

Whatever syntactic constraint we adopt to rule out Single Sluicing of a nominative phrase remnant, (15b) shows that Multiple Sluicing is not subject to that syntactic constraint, which follows naturally from our Prosodic Sluicing analysis of Multiple Sluicing. Under a Syntactic Sluicing analysis, it is hard to explain why moving a nominative phrase with another XP is acceptable, but simply moving the nominative phrase by itself is not.

3.3 Single/Multiple Sluicing of an Adjunct Remnant

Third, Single Sluicing with an adjunct remnant is not possible. In (16a), for example, the adjunct *wh*-phrase *donoyoona riyuu-de* ‘for what reason’, being a remnant, is intended to be interpreted as modifying the most embedded clause, i.e. asking for the reason why Bill gave a bribe to that man; the result is deviant under this interpretation. Multiple Sluicing with an adjunct remnant like (16b), on the other hand, is possible. In (16b), the adjunct *wh*-remnant *donoyoona riyuu-de* ‘for what reason’ appears with another remnant *nani-o* ‘what-ACC’; the result is acceptable under the interpretation where the adjunct *wh*-remnant modifies the most embedded clause, i.e. asking for the reason why Bill gave what to that man. This shows that Multiple Sluicing does not have LF interpretive effects on modification; the remnant phrases in Multiple Sluicing are interpreted *in-situ* at LF. This follows from our Prosodic Sluicing analysis of Multiple Sluicing but not from a Syntactic Sluicing analysis.

- (16) a.?*Masukomi-wa [Mary-ga [Bill-ga sono okoto-ni
 Mass.media-TOP Mary-NOM Bill-NOM that man-DAT
 wairo-o *donoyoona riyuu-de* watasita to] syoogensita ka]
 bribe-ACC *what reason-for* gave C witnessed Q
 siranai ga, boku-wa [**donoyoona riyuu-de** ka] sitteiru
 not.know but I-TOP **what reason-for** Q know
 Lit. ‘The mass media don’t know [Mary witnessed [Bill gave a bribe to that man *for what reason*]], but I know **for what reason** (Mary witnessed [Bill gave a bribe to that man *e*]).’
- b. Masukomi-wa [Mary-ga [Bill-ga sono otoko-ni *nani-o*
 Mass.media-TOP Mary-NOM Bill-NOM that man-DAT *what-ACC*
donoyoona riyuu-de watasita to] syoogensita ka] siranai ga,
what reason-for gave C witnessed Q not.know but
 boku-wa [**nani-o donoyoona riyuu-de** ka] sitteiru
 I-TOP **what-ACC what reason-for** Q know
 Lit. ‘The mass media don’t know [Mary witnessed [Bill gave *what* to that man *for what reason*]], but I know **what, for what reason** (Mary witnessed [Bill gave *e* to that man *e*]).’

3.4 Single/Multiple Sluicing of an NPI Remnant

Fourth, Multiple Sluicing with a negative polarity item (NPI) remnant is possible while Single Sluicing with an NPI remnant is not. In (17a), the NPI *ringo-o hitotumo* ‘any apple’ appears as a remnant; the result is deviant. In (17b), the NPI remnant *ringo-o hitotumo* ‘any apple’ appears with another remnant *Lily-ni* ‘to Lily’; the result is acceptable. Whatever LF interpretive constraint we adopt to rule out Single Sluicing with an NPI remnant, the acceptability of (17b) shows that the remnants in Multiple Sluicing are interpreted *in-situ* at LF. This also follows from our Prosodic Sluicing analysis of Multiple Sluicing. It should be noted that non-*wh*-elements may be sluicing remnants in Japanese, as pointed out by Takahashi (1994).

- (17) a. ?*John-wa [Bill-ga Suzy-ni *mikan-o hitotumo* age-nakatta
John-TOP Bill-NOM Suzy-DAT *orange-ACC one.even* gave-not

to] itta ga, Mary-wa [**ringo-o hitotumo** to] itta
C said but Mary-TOP **apple-ACC one.even** C said

Lit. 'John said that Bill didn't give *any orange* to Suzy, but Mary said that **any apple** (Bill didn't give *e* to Suzy).'

- b. John-wa [Bill-ga Suzy-ni *mikan-o hitotumo* age-nakatta
John-TOP [Bill-NOM Suzy-DAT *orange-ACC one.even* gave-not

to] itta ga, Mary-wa [**Lily-ni ringo-o hitotumo** to] itta
C said but Mary-TOP **Lily-DAT apple-ACC one.even** C said

Lit. 'John said that Bill didn't give *any orange to Suzy*, but Mary said that **any apple, to Lily** (John didn't give *e e*).'

3.5 Single/Multiple Sluicing and Variable Binding

Finally, variable binding into a remnant is not possible with Single Sluicing, as shown in (18a), but it becomes possible with Multiple Sluicing (18b). This indicates that the remnant containing the bound variable pronoun *soko* 'that place' in Multiple Sluicing is interpreted *in-situ* at LF, where it is licensed by the QP *Toyota-sae* 'even Toyota'; this naturally follows from our Prosodic Sluicing analysis of Multiple Sluicing.

- (18) a. ?*Masukomi-wa [Toyota-sae₁-ga *soko*₁-no *kabunusi-ni*
Mass.media-TOP Toyota-even-NOM *that-GEN stockholder-DAT*

sikinzuyo-o *yooseisita* to] itta ga,
financial support-ACC asked.for C said but

seihi-wa [**soko**₁-no **meinbanku-ni** to] itta
government-TOP **that-GEN main.bank-DAT** C said

Lit. 'The mass media said that even Toyota₁ asked *its*₁ *stockholders* for financial support, but the government said that **its**₁ **main bank** (even Toyota₁ asked *e* for financial support).'

- b. *Masukomi-wa* [Toyota-sae₁-ga *soko₁-no kabunusi-ni*
 Mass.media-TOP Toyota-even-NOM *that-GEN stockholder-DAT*
sikinenzyo-o yooseisita to] itta ga, seihu-wa
 financial support-ACC asked.for C said but government-TOP
 [soko₁-no meinbanku-ni yakuinhaken-o to] itta
 that-GEN main.bank-DAT dispatch.executive-ACC C said
 Lit. ‘The mass media said that even Toyota₁ asked *its₁ stock-*
holders for financial support, but the government said that **its₁**
main bank, for a dispatch executive (even Toyota₁ asked *e*
e).’

4 Cross-Linguistic Variation with Multiple Sluicing

We have proposed a Prosodic Sluicing analysis of Multiple Sluicing in Japanese, arguing that Multiple Sluicing can be accounted for by *Prosodic Cleft* together with subject argument ellipsis. There is, however, cross-linguistic variation in Multiple Sluicing. Languages like Japanese seem to freely allow Multiple Sluicing, while languages like English generally do not, as shown in (19) (Lasnik 2014: 8):

(19)?*Someone saw something, but I can’t remember **who what**.

As pointed out by, among others, Bolinger (1978), Nishigauchi (1998), Richards (1997), and Lasnik (2014), some instances of ostensible multiple sluicing appear to be marginally possible in English (Lasnik 2014: 4, 9):

- (20) a. ?One of the students spoke to one of the professors, but I don’t know **which to which**.
 b. ?Some linguist criticized (yesterday) some paper about sluicing, but I don’t know **which linguist which paper about sluicing**.

Lasnik (2014) argues convincingly, however, that examples like (20) are only apparent instances of Multiple Sluicing; in these cases the second *wh*-phrase, which is limited to a PP or a heavy NP, does not undergo leftward *wh*-movement but rightward focus movement.

The question then arises as to how to account for this cross-linguistic variation in (true) Multiple Sluicing. Fukui (1999) identifies what he calls “uniqueness effects” observed in languages like English but not in languages like Japanese (see also Takeda 1999). Languages like Japanese lack uniqueness effects, allowing relatively free word order, i.e. multiple scrambling, as well as Multiple Cleft, Multiple Sluicing, multiple occurrences of Case like

multiple nominative, multiple-headed relative clauses and other *non*-uniqueness behaviors. Languages like English, on the other hand, show uniqueness effects, lacking such multiple phenomena. Fukui proposes the Uniqueness Parameter, a macro-parameter, which is intended to capture this cross-linguistic variation.

Based on the proposed analysis of Multiple Sluicing and the analysis of multiple scrambling put forward by Agbayani et al. (2015), we suggest that among the non-uniqueness effects in Japanese, at least those relating to movement operations like Multiple Scrambling, Multiple Sluicing, and Multiple Cleft should be accounted for not by the Uniqueness Parameter but by a difference between these two languages in the mapping from syntactic structures to prosodic structures. In other words, the Uniqueness Parameter is not involved in the cross-linguistic variation regarding syntactic movement. Both English and Japanese show uniqueness effects, i.e. there are no multiple applications of syntactic movement. In Japanese, more than one syntactic XP – crucially XPs which do not form a constituent together – can be packed into a Major Phrase in the phonology of Japanese, which creates apparent non-uniqueness effects, i.e. what appears to be the result of multiple applications of scrambling and Cleft/Sluicing. In English, on the other hand, we speculate that such phonological phrasing (combining multiple XPs that do not form a single constituent) is not available. This would explain the lack of Multiple Sluicing/Cleft in English. Further investigation is needed to determine if indeed English does not allow for this type of phonological phrasing. In this view, the difference between English and Japanese would reside in the mapping from syntactic structures to prosodic structures, and would be compatible with the Uniformity Hypothesis and the Externalization Parameter (Berwick and Chomsky 2011, 2016; Chomsky 2001, 2010), i.e. that languages are uniform within the computational system and parameterization is restricted to externalization processes.

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Part II

Oral Semantics and Pragmatics

Left Branch Extraction in Coordinated *Wh*-Questions in Japanese and English*

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1 Introduction

The study aims to (i) demonstrate that otherwise illicit Left Branch Extraction (LBE) appears to be possible in coordinated *wh*-questions (CWHs) in both Japanese and English, (ii) explain the observation in terms of a pure PF operation called *String Deletion* (SD) (Mukai 2003), and, finally (iii) claim that the properties of CWHs, which have been one of the central motivations for operations such as Parallel Merge and structures like multidominance

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(Gračanin-Yuksek 2007; Citko 2011, a.o.), can be explained without such complications. Against this background, the study argues in favor of the research guideline put forward by Chomsky et al. (2019).

2 Previous analyses of CWHs employing *wh*-movement

CWHs in English and Japanese are illustrated in examples (1) and (2) (for CWHs in English, see Browne 1972; Grosu 1985; Kazenin 2002; Zhang 2007; Whitman 2004; Merchant 2007; Gribanova 2009; Gračanin-Yuksek 2007; Haida and Repp 2011; Lipták 2003, 2011; Tomaszewicz 2011; Citko and Gračanin-Yuksek 2019, a.o.; for CWHs in Japanese, see Ishii 2014, Kasai 2016, a.o.). As demonstrated by the following examples, *wh*-phrases with different grammatical functions are exceptionally coordinated in CWHs (indicated by italics).

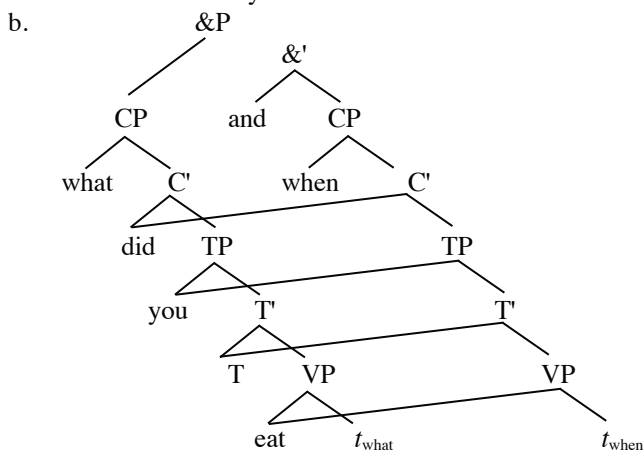
- (1) a. *What and when* does John (normally) eat? (Grosu 1985: 232)
 b. *How and what* does John eat? (Whitman 2004: 404)
- (2) a. *Dare-ga sosite nani-o* Bill-ni nomaseta no?
 who-NOM and what-ACC Bill-DAT drink.let Q
 ‘(Intended) Who made Bill drink what?’
 b. *Nani-o sosite ikura-de* kimi-wa katta no?
 what-ACC and how.much-with you-TOP bought Q
 ‘(Intended) Who made Bill drink what?’ (Ishii 2014: 89)

Although previous studies have proposed various analyses of English CWHs (see Giannakidou and Merchant 1998; Zhang 2007; Gračanin-Yuksek 2007, a.o. for the backward sluicing, sideward movement, and non-bulk sharing analyses, respectively), an apparent consensus is that CWHs include *wh*-movement. For instance, under the sideward movement analysis proposed by Zhang (2007), the two *wh*-phrases in (1a) are base-generated within a single clause, and then undergo sideward movement to a different workspace to form a coordination phrase (*what and when*). The coordinated phrase is eventually merged with the original structure, yielding the surface string of (1a). The derivation is schematically represented in example (3), where (3a-i) and (3a-ii) correspond to different workspaces.

- (3) a. i. [_{C'} John eat *t_{what} t_{when}*]
 ii. [_{&P} *what* [_& and when]]
 b. [_{CP} [_{&P} *what* [_& and when]] [_{C'} John eat *t_{what} t_{when}*]]

Moreover, under the bi-clausal non-bulk sharing analysis, which assumes that the coordinated *wh*-phrases in CWHs are base-generated in two different clauses, whereas other identical elements are each shared between the clauses as shown in (4b), the *wh*-phrases undergo movement to Spec, CP within their respective clauses.

(4) a. *What and when did you eat?*



Yet another analysis of CWHs is the backward sluicing analysis proposed by Giannakidou and Merchant (1998) and Ishii (2014). As shown in example (5), what appear to be directly coordinated *wh*-phrases are derived by clausal conjunction with backward sluicing applied to the first clausal conjunct. Again, the *wh*-phrases are assumed to undergo *wh*-movement to the edge of their respective clauses before the TP in the first conjunct is elided.

(5) a. [*What* ~~_{TP} John eats~~] and [*when* does John eat]?

b. [*Dare-ga* ~~_{TP} Bill ni nomaseta~~] *sosite*
 who-NOM Bill-DAT drink.let and

[*nani-o* [Bill-ni nomaseta] no]?
 what-ACC Bill-DAT drink.let Q

‘(Intended) Who made Bill drink what?’

Notably, the coordinator *sosite* ‘and’ appearing in Japanese CWHs only selects clauses and cannot coordinate NPs, as the ungrammaticality of example (6) shows. Instead of *sosite*, the coordinator *to* should be used.

- (6) John-wa Mary-ni [ame {?*sosite / to} pan-o] ageta.
 John-TOP Mary-DAT candy and and bread-ACC gave
 ‘John gave Mary candies and bread.’

Furthermore, Kasai (2016) points out that Japanese CWHs cannot be constructed by employing the coordinator *to*, as shown in example (7).¹

- (7) **Dare-ga to nani-o yomimasita ka?*
 who-NOM and what-ACC read Q
 ‘(Intended) Who read what?’

(Kasai 2016: 129)

Thus, at least a bi-clausal source for Japanese CWHs should be assumed.

3 Left branch extraction in coordinated *wh*-questions

The main observation of this paper is that there is a case which appears to be an instance of LBE in CWHs. Before viewing the crucial CWH data, let us observe that *wh*-phrases in English and Japanese cannot undergo LBE, as shown in examples (8) and

- (9). First, consider the acceptable example (8c). Here the entire noun phrase containing *what* undergoes *wh*-movement. As shown in example (8a–b), however, if the left branch elements of the noun phrases (i.e. *what* or *what new* in example (8a–b)) are extracted, the resulting sentences are degraded. The same holds for Japanese, as shown in example (9), where *dorekurai kireina* ‘how beautiful’ is extracted out of the noun phrase headed by *doresu* ‘dress’. The resulting sentence is unacceptable.

- (8) a. *What will there be new rules?
 b. *What new will there be rules?
 c. What new rules will there be? (Yokota and Radford 2012: 61–62)
- (9) **Dorekurai kireina_i Yuki-wa [_i doresu]-o katta no?*
 how beautiful Yuki-TOP dress-ACC bought Q
 ‘(Lit.) How beautiful_i did Yuki buy [_i dress]?’

As mentioned in Section 2, previous studies on CWHs somehow employ *wh*-movement. Thus, it is expected that LBE is blocked under CWHs. However, there is a case which appears to be an instance of LBE in CWHs. As

¹ Kasai (2016) attributes this observation to Whitman (2006), to which we could not gain access.

shown in example (10), English CWHs appear to allow LBE because *what* in these examples should be a part of the bracketed nominal phrases. Otherwise, *what* will not fill any gap position

- (10) a. *Just what and when* [extra security precautions] will be required by an insurer can vary.
- b. FEMA chief James Lee Witt was to hold a conference call this morning with forecasters, other federal agencies and state emergency chiefs to determine *what and where* [federal response] will be needed. (Nagahara 2003: 456–457)

In addition, Japanese CWHs allow LBE, as the grammaticality of the examples in (11) shows. In (11a), two pronominal modifiers appear to be conjoined by *sosite* ‘and’. Given that the coordinator *sosite* coordinates clausal elements, however, they cannot simply be analyzed as the coordination of modifiers (namely, [_{NP} [&P Adj and Adj] N]). In this regard, example (11b) is more striking because the pronominal modifier *dorekurai kireina* ‘how beautiful’ appears to be conjoined with the temporal adjunct *itu* ‘when’. Therefore, the pronominal modifiers in both examples are separated from the host nouns.

- (11) a. *Donna_i sosite naniiro-no_j [t_{ij} doresu]-o*
 what.kind.of and what.color-GEN dress-ACC
 Yuki-wa katta no?
 Yuki-TOP bought Q
 ‘(Lit.) What kind of_i and what color_j did Yuki buy [t_{ij} dress]?’
- b. *Dorekurai kireina_i sosite itu [t_i doresu]-o*
 how beautiful and when dress-ACC
 Yuki-wa katta no?
 Yuki-TOP bought Q
 ‘(Lit.) What kind of_i and when did Yuki buy [t_i dress]?’

If CWHs were derived by *wh*-movement, as argued by previous studies, then examples (10) and (11), which appear to involve LBE, would be ungrammatical, which is contrary to fact.

One may claim that the backward sluicing approach to CWHs can capture such an observation if sluicing can remedy island violations including the Left Branch Condition (LBC) (Ross 1969; Merchant 2001, a.o.). However, Barros, Elliot and Thoms (2014, henceforth BET) argue that LBC remains

operative even under ellipsis. One piece of evidence for this argument comes from sluicing with adjectival remnants. Adjectives like *hard* yield different interpretations according to whether they occur in the prenominal position (e.g. a *hard* worker) or predicative position (e.g. #The worker is *hard*). But BET demonstrate that sluicing yields not the prenominal interpretation but the predicative interpretation, as the infelicity of example (12) indicates (the symbol Δ indicates an ellipsis site).

(12) #The library hired [a hard worker], but I don't know [how hard] Δ .

This would not be expected if sluicing could repair LBC violations, because the structure in example (13a) should be available. In fact, to obtain the intended prenominal interpretation, the remnant should be the entire nominal, as in example (13b), where no LBC violation is induced.²

(13) a. ... but I don't know [[how hard]_i; ~~the library hire [a *t* worker]]_j]
 b. ... but I don't know [[how hard a worker]_i; ~~the library hired *t*]_j]~~~~

Takita (2019) replicates their results in Japanese using the so-called *na*-adjectives, which end with *-na*. These kinds of adjectives have different morphological forms depending on whether they are in the prenominal or predicative position (in contrast to *i*-adjectives such as *akai* 'red' or *tuyoi* 'strong', which have identical forms in both positions). In example (14), the adjective meaning 'strange' has the prenominal form *henna* in the antecedent clause, and adjectival sluicing in this form is illicit. For example (14) to be licit, the predicative form *henda* should be used.

(14) Taroo-wa [henna sigusa]-o sita-ga, kare-wa
 Taroo-TOP strange behavior-ACC did-but he-TOP
 [dorekurai {*henna / henda} Δ ka] wakatteinai.
 how strange strange Q not.understand
 '(Lit.) Taroo showed a strange behavior, but he didn't understand
 [how strange Δ].'

If ellipsis could repair the illicitness of LBE, then the structure in example (15) would be licit, where the adjectival remnant undergoes LBE from the

² To explain the fact that the sluiced sentence in example (12) only allows the predicative interpretation, BET argue that the underlying form is something like (i), where the adjectival remnant originates from the predicative position.

(i) #The library hired [a hard worker], but I don't know [[how hard]_i; ~~the person the library hired is *t*]_j].~~

prenominal position. But then the patterns found in examples (10)–(11) would be left unexplained.³

- (15) Taroo-wa [henna sigusa]-o sita-ga, kare-wa [_{CP} [dorekurai henna]_i [_{TP} Taroo wa [_t sigusa]-o sita] ka] wakatteinai

Given that English and Japanese obey LBC and that ellipsis cannot remedy their violations, the fact that CWHs in English and Japanese do not exhibit an LBC violation constitutes a real problem for the previous analyses of CWHs, which would employ otherwise illicit LBE of a *wh*-phrase to derive the relevant examples.

4 Proposal: PF string deletion analysis

We propose that CWHs are derived by non-constituent deletion at PF, whereby *wh*-phrases are exempt from undergoing LBE. Specifically, we first assume that the apparently conjoined prenominal *wh*-modifiers in question do not undergo LBE but pied-pipe the entire nominal (via *wh*-movement or scrambling), as illustrated in example (16). Then, we propose that the elements in TP as well as the sub-part of the dislocated *wh*-phrase undergo *String Deletion* (SD), which operates on a phonological string in the presence of another phonologically identical string (Mukai 2003). In the present case, the string in the second conjunct serves as the antecedent for SD to yield the desirable surface forms (antecedents are underlined).

- (16) a. [[just what extra security precautions] will be required by an insurer] and when extra security precautions will be required by an insurer can vary. (cf. (10a))
- b. [[dorekurai kireina dore-su]-o Yuki-wa katta no] sosite [itu dore-su-o Yuki-wa katta no] (cf. (11b))

³ Takita (2019) argues that example (14) with the predicative adjectival remnant has the structure depicted in (i), where the adjective serves as the predicate, in line with BET (see footnote 2). This analysis is compatible with the idea that sluicing in Japanese is derived from copula/cleft clauses (Saito 2004, a.o.)

(i) Taroo-wa [henna sigusa]-o sita-ga, kare-wa [{sore-ga/pro} dorekurai henna
Taroo-TOP strange behavior-ACC did-but he-TOP it-NOM how strange
ka] wakatteinai
Q not.understand
'Taroo showed a strange behavior, but he doesn't understand [how strange it (= the behavior he showed) was].'

Note that SD is a purely PF process, such that it may disregard constituency at the syntactic derivation, which leads to an apparent LBE(-repair) effect. In the remainder of this section, we provide three pieces of evidence for the proposed analysis.

4.1 Linear adjacency

The SD-based analysis for CWHs is supported by the fact that an apparent LBE is in fact impossible and can thus be ruled out as a violation of LBC if the prenominal *wh*-modifier cannot be linearly adjacent to its modiffee at the stage where SD applies. The relevant example is given as example (17a), which is minimally different from example (11b) in that *Yuki-wa* precedes the object *doresu-o* ‘dress’.

- (17) a. **Dorekurai kireina*_i *sosite itu* *Yuki-wa* [_{*t*_i} *doresu*]-*o*
 how beautiful and when *Yuki*-TOP dress-ACC
 katta *no*?
 bought Q
 ‘(Lit.) How beautiful_i and when did Yuki buy [a *t*_i dress]?’
- b. *[[*dorekurai kireina*]_i; ~~*Yuki-wa* [_{*t*_i} *doresu*]-*o* *katta* *no*]~~
 sosite [*itu* *Yuki-wa doresu-o katta no*]
- c. [[*dorekurai kireina* *doresu*]-*o*_i *Yuki-wa* *t*_i *katta no*]
 sosite [*itu* *Yuki-wa doresu-o katta no*]

The surface string in example (17a) forces the first conjunct to have the underlying structure in (17b), which involves LBE. SD can be applied, but LBC violations cannot be repaired. On the other hand, the entire nominal undergoes movement in (17c). Hence, no LBC violation is induced. In this case, however, SD cannot be applied due to the non-existence of an identical string with *doresu-o Yuki-wa katta no*. Therefore, (17a) cannot be derived. Notice that sensitivity to linear order strongly supports that SD is a PF-oriented process.

4.2 Apparent P-stranding

The proposed analysis can be extended beyond cases of LBE. In example (18a), both of the conjoined *wh*-phrases are interpreted as the complement of the postposition *kara* ‘from’. However, the clausal coordinator *sosite* ‘and’ excludes the simple possibility of the form [_{PP} [_{&P} DP and DP] P]. Hence, previous analyses employing usual *wh*-movement/scrambling should invoke

not only LBE but also P-stranding, which is also impossible in Japanese, as shown in example (18b).

- (18) a. Ken-wa *dono daigaku* *sosite dare-kara-no* [tegami]-o
 Ken-TOP which university and who-from-GEN letter-ACC
 mottekita no?
 brought Q

‘(Intended) From which university_i and from whom_j did Ken bring [letters t_{ij}]?’

- b. *Dono daigaku_i Ken-wa [DP [PP t_i kara]-no tegami]-o
 which university Ken-TOP from-GEN letter-ACC
 mottekita no?
 brought Q

On the other hand, the SD-based analysis successfully accounts for this observation because it only concerns phonological strings at PF and ignores syntactic constituency. Thus, example (18a) can be analyzed as having the structure in example (19).

- (19) Ken-wa [DP [PP [*dono daigaku*] ~~kara]-no tegami]-o mottekita no
sosite [[*dare* ~~kara]-no tegami]-o mottekita no~~~~

The grammaticality of example (18) is straightforwardly captured because no LBE nor P-stranding is necessary.

4.3 Complex NP island

Another piece of evidence for the SD-based analysis is related to the fact that *wh*-movement in CWHs does not obey the Complex NP Constraint (CNPC) in Japanese. A relevant example is given in example (20). Just like the other examples discussed thus far, the clausal coordinator *sosite* ‘and’ blocks the possibility that the two *wh*-nominals are simply coordinated.

- (20) *Dare-ga* *sosite doko-ni* [CNP *kakusita takaramono*]-o
 who-NOM and where-at hid treasure-ACC
 Ken-wa *sagasteiru* no?
 Ken-TOP looking.for Q

‘(Int.) What is a pair of x_{person} and y_{place} such that Ken is looking for [CNP the treasure [that x hid at y]]?’

Thus, previous analyses would assume the otherwise banned *wh*-movement/scrambling out of the Complex NP (CNP) structure to derive the surface string. Example (21) illustrates this point under the backward sluicing analysis. The fact that neither *dare-ga* ‘who’ nor *doko-ni* ‘where’ can be extracted out of the CNP is shown in example (22). Furthermore, the structure in example (21) should be illegitimate irrespective of whether sluicing can repair a violation of CNPC because no sluicing applies to the second conjunct. That is, even if the violation of CNPC in the first conjunct can be repaired, there is no way to repair the violation in the second conjunct.

(21) [_{CP} *dare-ga*_i [_{TP} [_{CNP} [_{t_i} *kakusita*] *takaramono*]-o *Ken-wa sagasiteiru*]_i]
sosite [_{CP} *doko-ni*_j [_{TP} [_{CNP} [_{t_j} *kakusita*] *takaramono*]-o *Ken-wa*
sagasiteiru *no*

- (22) a. **Dare-ga*_i *Ken-wa* [_{CNP} [_{t_i} *kakusita*] *takaramono*]-o *sagasiteiru no*?
 who-NOM *Ken*-TOP hid treasure-ACC looking.for Q
 ‘(Lit.) Who_i is *Ken* looking for [_{CNP} the treasure [that *t_i* hid]?’
- b. **Doko-ni*_i *Ken-wa* [_{CNP} [_{t_i} *kakusita*] *takaramono*]-o *sagasiteiru no*?
 where-at *Ken*-TOP hid treasure-ACC looking.for Q
 ‘(Lit.) Where_i is *Ken* looking for [_{CNP} the treasure [that he hid *t_i*]?’

Under the proposed analysis, there are at least two possible underlying structures for example (20) according to what the coordinator conjoins. The first one is illustrated in example (23a), where the *wh*-phrases in both conjuncts pied-pipe the entire CNP. In this case, two full clauses are conjoined. The second structure is given in example (23b), where two relative clauses are conjoined (following Murasugi 1991, we assume that relative clauses are TPs in Japanese). In both cases, SD applies to non-constituents.

- (23) a. [_{CNP} [*dare-ga* *kakusita*] *takaramono*]-o *Ken-wa sagasiteiru no*
sosite [_{CNP} [*doko-ni* *kakusita*] *takaramono*]-o *Ken-wa sagasiteiru no*
- b. [_{CNP} [[_{TP} *dare-ga* [_{VP} *kakusi*] [_T *-ta*]]
sosite [_{TP} *doko-ni* [_{VP} *kakusi*] [_T *-ta*]] *takaramono*]-o *Ken-wa*
sagasiteiru no

No violation of CNPC is involved because no extraction out of the relative clause occurs. Hence, the grammaticality of example (20) readily follows.

5 Further evidence

This section discusses further evidence for our analysis of English CWHs.⁴

5.1 Subject Aux inversion

The proposed analysis of CWHs requires the antecedent, the phonological string immediately after the *wh*-expression in the second conjunct, to be phonologically identical with the deleted, corresponding part in the first conjunct because the PF-identity is crucial, as discussed in Section 4.

In this respect, a comparison of the embedded and main CWHs in English lends further support to the analysis. Consider the following example constructed out of the embedded CWH in example (10a), which is repeated as example (24a).

- (24) a. *Just what and when* [extra security precautions] will be required by an insurer can vary. (= (10a))
 b. ^{??}*Just what and when* will [extra security precautions] be required by an insurer?

The contrast can be explained in terms of linear adjacency. In contrast to example (24a), the antecedent in (24b) involves Subject Aux Inversion (SAI). However, the deleted part cannot involve SAI because, if it does, *what* and the part *extra security precautions* (the bracketed part in (24b)) will be separated from each other by the inverted auxiliary *will*, which indicates that *what* should undergo LBE, as shown in example (25).

- (25) **what*_i will [_i extra security precautions] be required by an insurer ...

Alternatively, if the deleted part does not involve SAI, then SD cannot be applied because the antecedent lacks a phonological string identical with the deleted part, as illustrated in example (26).

- (26) *[~~what extra security precautions~~] will be required by an insurer and when will extra security precautions be required by an insurer can vary.

⁴ The acceptability judgment test has been conducted with only one informant as a preliminary study. Thus, future research may verify whether the same or a similar result is obtained from a large sample of informants. We greatly appreciate the comments and questions from Peter Sells (p.c.), on which basis the discussions in this section are made.

Thus, PF-identity plays a crucial role, thus strengthening the idea explored in Section 4.1.

Note that the antecedent to the deleted part cannot be identified as *extra security precautions be required by an insurer*, excluding the offending auxiliary *will*. While an LBE violation is circumvented, the first conjunct as a whole must be *what extra security precautions be required by an insurer*, which is a non-finite clause and, thus, cannot stand alone. In other words, it cannot be coordinated with a finite standalone clause *when will extra security precautions be required by an insurer*.

5.2 Mismatches in number

Peter Sells (p.c.) kindly points out that the current analysis predicts that each conjunct should also be an independently grammatical sentence in addition to the PF-identity condition. In other words, they must not violate any grammatical rules if they occur in isolation. This prediction is also borne out, as the contrast in example (27) indicates.

- (27) a. *I'd like to know *what type of and why book* can be revisited time and time again.
 b. I'd like to know *what type(s) of and why books* can be revisited time and time again.

In example (27a), the antecedent clause (i.e. *why book can be revisited time and time again*) is not a grammatical sentence in isolation because a bare countable noun (i.e. *book*) occupies a subject position. Accordingly, the entire sentence is unacceptable, although the deleted part forms a grammatical sentence when combined with the *wh*-expression in the first conjunct (i.e. *what type of book can be revisited time and time again* as an embedded clause). On the other hand, example (27b) is acceptable because the antecedent clause in example (27b) (i.e. *why books can be revisited time and time again*) is grammatical with a plural subject.

The contrast in example (28) further indicates that not only the antecedent clause but also the deleted part with the *wh*-expression in the first conjunct should form a grammatical sentence.

- (28) a. *I would like to know *how many and why* cash is needed.
 b. I would like to know *how much and why* cash is needed.

Since the noun *cash* in example (28) is uncountable, it requires *how much* but not *how many* as a degree expression to be combined with it, as in example (29).

(29) I would like to know [[how much/*many cash] is needed].

Only example (28b) is grammatical because (28a) requires the structure depicted in example (30) before SD is applied.

(30) *I would like to know [*how many* cash is needed] *and* [*why* cash is needed].

6 Conclusion

In summary, the study puts forward a purely PF-oriented analysis of CWHs, attributing the apparently exceptional possibility of LBE to the PF-process SD. The proposed analysis thus enables its underlying structures to be generated by the simplest Merge (external and internal) without positing other complicated variants. Since the narrow syntactic computation is kept simple, the proposed analysis is consistent with the general idea advocated by Chomsky et al. (2019).

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NPI Intervention Effects in ‘Why’ Questions in Child Japanese*

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1 Introduction

Children’s acquisition of constraints on syntactic dependencies has been a central topic in the first language acquisition literature (see Otsu 1981; de Villiers et al. 1990 for earlier investigations, and see also Roeper and de Villiers 2011 for an extensive literature review.) For example, English has island constraints on *wh*-gap dependencies. *Wh*-dependencies usually cannot span a relative clause.

- (1) a. *What did you meet the man [who ate ___]?
b. What did you think [the man ate ___]?

The question of how children acquire these constraints seems non-trivial for at least two reasons. First, these constraints involve sophisticated grammatical knowledge in that they can only be stated in hierarchical terms. Second, because these are constraints, their acquisition would have to face

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the unavailability of negative evidence. Namely, the learner would directly learn the constraint if they had access to the fact that, say, the sentence in (1a) is ungrammatical. That information, however, is not likely to be accessible in a direct manner to the learner and therefore if they do learn the constraint from evidence, the evidence they use would have to be indirect, which might require elaborate prior knowledge (see Pearl and Sprouse 2013 for island learning from positive evidence). These properties of the constraints thus tightly connect to the fundamental issues as to how humans obtain possibly hard-to-acquire knowledge (see, for instance, Chomsky 1975; Legate and Yang 2002; Pearl 2020).

In the case of Japanese as well, the acquisition of what we call *wh*-Q dependencies has been studied for some time (see Section 2 for references). In *wh*-in-situ languages like Japanese, *wh*-phrases do not undergo overt *wh*-movement. Thus, the kind of dependency at issue is one that exists between a *wh*-phrase and a question complementizer, sometimes called the Question-particle or Question-marker. These *wh*-Q dependencies, like *wh*-gap dependencies in English, obey island constraints, although the way the constraints work is not identical in the two language types (Huang 1982; Lasnik and Saito 1984). (2) is an illustration: (2a) involves a relative clause island, while (2b) does not.

- (2) a. *Kimi-wa [nattoo-o naze tabeta] hito-ni atta-no?
 you-TOP natto-ACC why ate person-DAT met-Q
 Lit. ‘You met the man who ate natto why?’
- b. Kim-wa [sono hito-ga naze natto-o tabeta-to] omotta-no?
 you-TOP that person-NOM why natto-ACC ate-C thought-Q
 Lit. ‘You thought the man ate natto why?’

The present paper has three goals. First, we attempt to elucidate some potential methodological challenges we might be faced with in studying hierarchical constraint acquisition in *wh*-in-situ languages (Section 2). Then, we propose an experimental design that may get around the potential problems with previous studies that we review in the second section (Section 3). Finally, we present the results of the preliminary experimental study where we tested 5-to-6-year-olds on NPI (Negative Polarity Item) intervention effects on *wh*-Q dependencies (Section 4). It is shown that NPI intervention is possibly a very good place to look at in accessing children’s knowledge about structure-dependent constraints.

2 Previous studies

Some previous studies on restrictions on *wh*-Q dependency formation reported that children around age 5 have adult-like knowledge of island constraints (Sugisaki 1999, 2007, 2012; Kabuto 2007; Sugisaki and Murasugi 2015). The participants' age ranges and mean ages reported in these studies are shown in Table 1 together with the names of the constraints examined.

Table 1. Participants' age ranges and mean ages found in previous studies that reported that their participants successfully handled hierarchical constraints on *wh*-Q dependencies in Japanese.

Source	Constraint	Age range (Mean age)
Kabuto (2007)	Adjunct Island	3;0–6;7 (Mean: 5;2)
Sugisaki (2012)	Adjunct Island	3;10–6;5 (Mean: 5;1)
Sugisaki (2007)	<i>Wh</i> -Island	3;10–6;0 (Mean: 5;0)
Sugisaki & Murasugi (2015)	<i>Wh</i> -Island	3;9–5;5 (Mean: 4;7)

All these experiments, though they differ in detail, used the question-after-story task (de Villiers and Roeper 1996). There, participants are typically tested in two conditions concerning *wh*-question formation. One condition involves a *wh*-question that has only one reading due to a violation of the constraint under discussion but which would be ambiguous if the constraint had no effect. The control condition, in contrast, involves a *wh*-question that respects the constraint and therefore may have a reading comparable to the one missing in the experimental condition.

We, however, observe that the question-after-story methodology may face methodological challenges, and that these challenges seem not to have necessarily been overcome in at least some influential previous studies. Take Sugisaki's (2012) insightful study, for instance.

- (3) a. Naze gohan-o taberu maeni kaerusan-wa
 why meal-ACC eat before frog-TOP
 ohuro-ni hairimasita-ka?
 bath-DAT took-Q
 ‘Why did the frog take a bath before having dinner?’
- b. Naze kaerusan-ga kaettekita-to okaasan-wa
 why frog-NOM came.home-C mother-TOP
 omoimasita-ka?
 thought-Q
 ‘Why did Mother think the frog came home?’

(3a) involves an adjunct island while (3b) contains a standard complement clause headed by *to*. In the former, *naze* ‘why’ should not be able to modify the embedded clause due to the Adjunct Island Constraint (and it actually does not). In the latter, the complement clause is not an island and therefore either the matrix or embedded reading should be possible. The reported results were in accord with this expectation.

The design of the experiment is not without problem, however. The biggest challenge appears to be that it is hard to construct ‘why’ questions in which *naze* would felicitously modify the adjunct clause were it not for the island condition. To see what it means, consider (4), which is a ‘for what reason’ question minimally different from the ‘why’ question in (3a).

- (4) # Donna riyuu-de gohan-o taberu maeni kaerusan-wa
 what reason-with meal-ACC eat before frog-TOP
 ohuro-ni hairimasita-ka?
 bath-DAT took-Q

‘For what reason did the frog take a bath before having dinner?’

As Huang (1982) noted, *wh*-nominals such as ‘what reason’ can circumvent islands. To our ear at least, however, the question sounds awkward under the low reading of the *wh*-phrase. Although exactly what causes the degradation in judgment is unclear, the effect found with (4) makes it hard to claim that the Adjunct Island Constraint is responsible for the unambiguity of (3a).¹

The other methodological challenge to studying children’s acquisition of constraints on *wh*-Q dependencies has to do with ‘linear’ or structure-independent interpretations of the constraints. Sugisaki and Murasugi (2015) observed that 5-year-old children followed the *Wh*-Island Constraint (Nishigauchi 1990; Lasnik and Saito 1992; Watanabe 1992): while their participants had access to a long-distance interpretation such as the one available in (5b) below, they never interpreted a *wh*-phrase long distance when the *wh*-phrase was embedded inside an indirect question, as in (5a). (5a) means ‘Did Elephant say to his father what he likes best?’ but not ‘There is a thing such that Elephant said to his father whether he likes it best or not. What is the thing?’

¹ Citing an anonymous reviewer’s comment, Sugisaki mentioned as a possible interfering factor that the question under the embedded-modifier reading might be too obvious to ask.

- (5) a. Zoosan-wa [nani-ga itiban suki-ka] Otoosan-ni
 elephant-TOP what-NOM best like-Q father-DAT
 itta-kana?
 said-Q
 Lit. ‘Elephant said to his father what he likes what best?’
- b. Osarusan-wa [nani-ga itiban suki-to] Zoosan-ni
 monkey-TOP what-NOM best like-C elephant-DAT
 itta-kana?
 said-Q
 ‘What did Monkey say to Elephant he likes best?’

The experiment is nicely designed to probe children’s understanding of long-distance dependencies and capability of structurally constraining them. Unfortunately, however, there is another interpretation of the results. What the learner might know is a structure-independent constraint, rather than a structure-dependent one. The ungrammaticality of matrix *wh*-scope in (5a) would follow even if we formulated the constraint as follows: Associate a *wh*-phrase with the closest Q-particle that follows. Thus, a pair of conditions such as those given in (5) cannot be used to assess children’s understanding of structure-dependent constraints on *wh*-Q dependencies as it stands.

3 Intervention effects with *sika*-NPIs

This section proposes using the intervention effects with *sika*-NPIs in order to investigate children’s acquisition of structure-dependent constraints. (6) illustrates the phenomenon (Hoji 1985; Takahashi 1990; Beck 1996; Beck and Kim 1997; Tanaka 2003; Miyagawa 1997, 2017; Kuwabara 1998; Ko 2005; Tomioka 2007, 2009; Tomioka et al. 2013, a.o.). Although the exact reason for the ungrammaticality of sentences like (6) is still debated (see, e.g., a prosody-centered approach proposed by Tomioka 2007, 2009), we take NPI-intervention effects as a structure-dependent constraint on *wh*-Q dependency formation. The relevant generalization is that *scope-bearing elements* such as *sika*-NPI are not allowed to occur in the c-command path of an interrogative C and the *wh*-phrase that it licenses. To put it another way, *wh*-phrases cannot be extracted out of the surface scope of an NPI to move to Spec, CP, as shown in (7).

- (6) *Taro-sika nani-o kaw-anakatta-no?
 Taro-SIKA what-ACC buy-NEG.PAST-Q
 ‘What did only Taro buy?’

- (7) [CP ___ [TP **Taro-sika** [VP nani-o kawanakatta] C+Q]
-

In the present paper, we focus on a particular case of NPI-intervention effects found in ‘why’-questions, which was discovered by Miyagawa (1997) and extensively investigated by Ko (2005), for example. Consider (8) first. As shown in the bracket representations in (9), when *naze* occurs in between the matrix and the embedded subject, the sentence is ambiguous between the matrix-modifier reading of the reason adverbial and the embedded-modifier reading thereof.

- (8) Taro-wa naze ziko-ga okotta-to itta-no?
Taro-TOP why accident-NOM happened-C said-Q

Matrix-modifier reading: ‘What is the reason for Taro having said the accident happened?’

Embedded-modifier reading: ‘What is the reason for the accident having happened that Taro said?’

- (9) a. [CP Taro-wa naze [CP . . . to] itta-no]?
b. [CP Taro-wa [CP naze . . . to] itta-no]?

The ambiguity, however, disappears when the matrix subject is replaced by an NP-*sika* (and negation is attached in order for the NPI to be licensed), as shown in (10). Their structural analyses are shown in (11).

- (10) Taro-sika naze ziko-ga okotta-to iw-anakatta-no?
Taro-SIKA why accident-NOM happened-C say-didn’t-Q

✓ *Matrix-modifier reading*: ‘What is the reason for only Taro having said the accident happened?’

* *Embedded-modifier reading*: ‘What is the reason for the accident having happened that only Taro said?’

- (11) a. [CP Taro-sika naze [CP . . . to] iw-anakatta-no]?
b. *[CP Taro-sika [CP naze . . . to] iw-anakatta-no]?

The ungrammaticality of the embedded-modifier reading in (11b) immediately follows from the intervention effects. The *wh*-phrase would have to move across the *sika*-NPI on its way to the matrix interrogative CP at LF. To account for the grammaticality of the pattern in (11a), Ko (2005) assumes that reason *wh*-adverbs like *naze* are base-generated above the

canonical subject position – more specifically, in the specifier of the CP that they modify (Rizzi 1997, 2001).² Thus, the matrix-modifier reading can be licensed without ‘why’ moving across the matrix subject NP-*sika*. Note that *Taro-sika* precedes *naze* even in the representation for the matrix-modifier reading. We adopt the idea of Ko that this is due to scrambling of the NP-*sika* to CP-adjoined position. See (12).

(12) [_{CP} Taro-sika₁ [_{CP} naze [_{TP} t₁ . . .] C+Q]]

It should be noted that the availability of the matrix-modifier reading under NPI-‘why’ order has an important consequence with regard to the second above-mentioned challenge for studying acquisition of structural constraints; see (5a). It helps to get rid of the conceivable structure-independent interpretation of the constraint, i.e., that *wh*-phrases cannot be preceded by NPIs (cf. Tanaka 2003 for another possible structure-independent formulation of the constraint). That means in turn that we can use the lack of the embedded-modifier reading in cases like (10) to assess children’s knowledge of structure-dependent constraints. This is contrasted with the situations found in the prior studies of acquisition of the island constraints.

How about the first challenge? The problem was that an example considered as violating an island constraint might be unacceptable for a non-structural reason, as seen in (4). In the current case of NPI intervention, reason *wh*-adverbials are in principle capable of modifying the complement clause in a construction semantically similar to the *sika . . . nai* construction but without an NPI. If the NP-*sika* is replaced with NP-*dake* (and negation is removed from the matrix predicate), ‘for what reason’ seems able to modify the embedded clause, as in (13); see Tomioka et al. (2013), who conducted rating experiments and concluded that NP-*dake* does not give rise to an intervention effect (cf. Tomioka 2007).³

² See Ko (2006) and Ikeda et al. (2019) for evidence from naturalistic speech corpora in Korean and Japanese, respectively, that children treat ‘why’ and other *wh*-phrases distinctively in relation to canonical subject position.

³ Two things are noteworthy here. First, we find the *sika . . . nai* question equivalent to (13) degraded, as in (i). This is presumably due to NPI-intervention; see Ko (2005: 892), who cited a similar judgment.

- (i) ?? Taro-sika donna riyuu-de ziko-ga okotta-to iw-anakatta-no?
 Taro-SIKA what reason-with accident-NOM happened-C say-didn’t-Q
 ‘For what reason did only Taro say the accident happened?’

Second, the ‘why’ question equivalent to (13) does not seem to allow the embedded-modifier reading of the *wh*-phrase.

- (13) Taro-dake-ga donna riyuu-de ziko-ga okotta-to
 Taro-only-NOM what reason-with accident-NOM happened-C
 itta-no?
 said-Q

‘For what reason did only Taro say the accident happened?’

Given the synonymy of *NP-dake* and *NP-sika ... nai*, (13) suggests that there is no reason to believe that the equivalent embedded-modifier reading in (10) is infelicitous for a non-structural reason.

To summarize, NPI-intervention effects may provide a way out of the two methodological challenges that the previous studies suffered from.

4 Experiment

We conducted a question-after-story experiment (de Villiers and Roeper 1996) to determine if children can avoid assigning the embedded-modifier reading to ‘why’ questions in the presence of a matrix subject NPI. Although the results of the experiment have to be considered preliminary for reasons that will be mentioned, it is shown that an experimental design can be instantiated that can cope with the aforementioned challenges.

4.1 Participants, materials, and procedure

The experiment was conducted in a between-subjects fashion, where eighteen Japanese children (5;10–6;10) participated. The data from five children (5;10, 5;11, 6;0, 6;1, 6;2) had to be excluded because they could not complete the task. Two of them could not understand the question (5;10, 5;11). One could not focus on the experiment (6;0). Two answered “I don’t know” (6;1, 6;2). The remaining thirteen children were all 6 years old or older. Those thirteen children were divided into two groups: six children were given the [+NPI] condition in the experimental group (6;1–6;9, mean = 6;3), and seven children were given the [–NPI] condition in the control group (6;0–6;10, mean = 6;4).

-
- (ii) Taro-dake-ga naze ziko-ga okotta -to itta-no?
 Taro-only-NOM why accident-NOM happened-C said-Q
 ‘Why did only Taro say the accident happened?’ (Matrix; *Embedded)

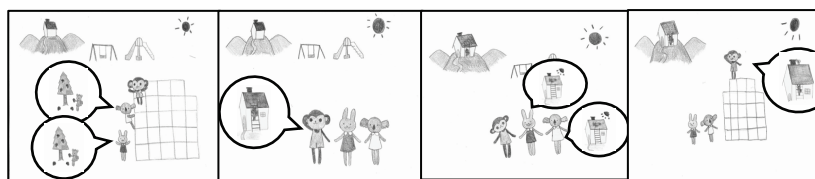
The contrast between (ii) and (13) suggests that the effect found in (ii) is not an intervention effect but something else. We suspect it is an effect of a weak island, yet another structure-dependent constraint. We thank Satoshi Tomioka for the valuable conversation that we had with him on the differences between *sika ... nai* and *dake*.

(14a) and (14b) are the two test sentences used. We call the former the experimental, or +NPI, condition and the latter for the control, or –NPI, condition. (We used *nande*, a variety of ‘why’ that is more colloquial and presumably more familiar to children; see Fujii et al. 2014 for comparison of different versions of ‘why’.)

- (14) a. Sarukun-sika nande Risusan-ga hasigo-o
 monkey-SIKA why squirrel-NOM ladder-ACC
 nobotteiru-to iwa-nakatta-no?
 is.climbing-C say-didn’t-Q
 ‘Why did only Monkey say that Squirrel climbed a ladder?’
- b. Sarukun-wa nande Risusan-ga hasigo-o
 monkey-TOP why squirrel-NOM ladder-ACC
 nobot-teiru-to itta-no?
 is.climbing-C said-Q
 ‘Why did Monkey say that Squirrel was climbing a ladder?’

The participants were asked to answer these *nande*-questions after they listened to a story presented with pictures by the experimenter. The storyline and the pictures used are given in Figure 1. In the actual experimental sessions, the pictures were shown on a computer screen, and a recording of the story was played by the computer. All four pictures were shown on the computer screen at the end of each story in order for the participants to remember the details of the story.

The (un)availability of the matrix- and embedded-modifier readings in the two conditions (according to adults’ judgments) is summarized in Table 2.



Picture 1	Monkey, Koala and Rabbit are playing together. They wonder about Squirrel. Koala and Rabbit say: “She must have gone to look for tree nuts.”
Picture 2	Monkey notices that Squirrel is climbing a ladder to get to the roof of her house. He can do this because he has very good sight. He tells Koala and Rabbit that Squirrel is climbing the ladder.
Picture 3	Koala and Rabbit say: “Squirrel may be climbing the ladder to sunbathe.”
Picture 4	Monkey says: “No,” confirming with Koala and Rabbit that Squirrel is trying to get her hat, which has been blown off onto the roof by a strong wind.

Figure 1. The storyline and pictures used for both conditions.

Table 2. (Un)availability of two interpretations in the control and experimental questions.

	Matrix-modifier reading	Embedded-modifier reading
-NPI question (Control)	✓M said for reason x that S was climbing the ladder. What is x? (Ans.: Because he had very good sight.)	✓M said this: S was climbing the ladder for reason x. What is x? (Ans.: In order to reach her hat.)
+NPI question (Experimental)	✓Only M said for reason x that S was climbing the ladder. What is x? (Ans.: Because he had very good sight.)	(Coherent but unavailable) *Only M said this: S was climbing the ladder for reason x. What is x? (Ans.: In order to reach her hat.)

Given that the –NPI question is ambiguous, adult speakers would be expected to answer the question either with “In order to reach his hat” (hereinafter the “embedded-modifier response”) or “Because he had very good sight” (hereinafter the “matrix-modifier response”). When presented

with the +NPI question, by contrast, adult speakers would be expected only to make the matrix-modifier response. Crucial is that the embedded-modifier reading in the latter condition is a coherent thought given the storyline – only Monkey came up with a different reason for Squirrel having taken the ladder-climbing action – but the reading is unavailable due to the intervention effect. Thus, if children sometimes made embedded-modifier responses in the –NPI condition and made no such responses in the +NPI condition, it would suggest that they had acquired the NPI-intervention constraint.

4.2 Results and discussion

Table 3 shows the percentages of the matrix and embedded responses in the control group and the experimental group.

Table 3. Percentages of matrix- and embedded-modifier responses in the experimental and control groups.

	Matrix-modifier responses	Embedded-modifier responses
Control (–NPI) group (<i>n</i> = 7)	28.6% (2/7)	71.4% (5/7)
Experimental (+NPI) group (<i>n</i> = 6)	100% (6/6)	0.0% (0/6)

In the control group, 28.6% of the responses were matrix-modifier responses and 71.4% of the responses were embedded-modifier responses. This shows that the –NPI question is ambiguous for children, too. The embedded-modifier reading was preferred, but the matrix-modifier reading was also accessible.

In the experimental group, all six children gave the matrix-modifier response 100% of the time. The embedded-modifier response was 0%. In other words, all the children interpreted ‘why’ in the matrix clause and none of them interpreted the *wh*-phrase in the embedded clause under the +NPI condition. The difference between the two groups in terms of the frequencies of the two types of response is statistically significant (Fisher’s Exact Test; $p = 0.0278$).

As we saw above, the children in the control group (i.e., the –NPI condition) gave more embedded-modifier responses than matrix-modifier responses. This confirms Omaki et al.’s (2014) finding about the processing of fronted *wh*-adverbials. They found that both adults and children preferred associating the adverbial *where* with the first verb they encountered. Namely, it is the matrix verb in English (e.g., *Where did Lizzie tell someone that she was gonna catch butterflies?*) and the embedded verb in Japanese (e.g., *Doko-de Lizzie-ga tyoo-o tukamaeta-to dareka-ni osieta no?* ‘Where-at Lizzie-

Nom butterflies-ACC catch-C someone-to tell Q'). Our study shows that the same is true of *why* in child Japanese. Given this preference, our subjects' behavior in the [+NPI] condition is even more striking. The children in the experimental group never gave embedded-modifier responses when the matrix subject was an NPI.

The results presented above, together with what is discussed in Section 3, indicate that the children in the above experiment know (i) that NPI-spanning *wh*-Q dependencies are disallowed, (ii) that *naze* is special in that it can be base-generated in the left periphery of the clause, and (iii) that a modifier that occurs in between the matrix and embedded subject gives rise to structural ambiguity.

Before concluding the paper, let us mention some limitations. One immediate issue is that it would be desirable to test more participants with more items. We could only test one item and include the data from thirteen participants. As noted earlier, five children could not complete the task. One possible reason for that, we suspect, is because the *sika . . . nai* construction requires more processing load than children can deal with. Thus, it would be good if there were any alternative to the *sika . . . nai* construction we could use (cf. (13) and footnote 3).

5 Conclusion

We have addressed certain issues that arose in the previous studies on first language acquisition of structure-dependent constraints on *wh*-Q dependencies in Japanese. It is shown that there are at least two methodological challenges in assessing children's knowledge and that we might be able to avoid them by testing learners on NPI-intervention effects. We have presented the preliminary results of our experiment, which suggest that at least children at age 6 have adult-like knowledge of the constraint.

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A Finer-Structural Analysis of the Japanese Politeness Morphology*

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1 Introduction

This paper presents a syntactic analysis of the five politeness morphemes in Japanese, i.e. *-masu*, *-masita*, *-desu*, *-desita*, and *-ssu*.¹

- (1) a. Taroo-wa maiasa rokuzi-ni oki-**masu**.
Taroo-TOP every.morning 6.o'clock-at get.up-POL.PRS
'Taro gets up at six every morning.'
- b. Taroo-wa maiasa rokuzi-ni oki-**masita**.
Taroo-TOP every.morning 6.o'clock-at get.up-POL.PST
'Taro got up at six every morning.'

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Abbreviations used are: ACC = accusative, CAS = casual, COP = copula, GEN = genitive, NEG = negative, NOM = nominative, NONMSC = non-masculine, POL = polite, PRG = progressive, PRS = present, PST = past, Q = interrogative, TOP = topic.

¹ To the best of our knowledge, this study is the first to examine *-ssu*, the politeness morpheme of casual masculine speech of younger generations, in a theoretical setting.

- c. Taroo-wa mazimena gakusee-**desu**.
Taro-TOP serious student-COP.POL.PRS
'Taro is a serious student.'
- d. Taroo-wa mazimena gakusee-**desita**.
Taro-TOP serious student-COP.POL.PST
'Taro was a serious student.'
- (2) a. Taroo-wa maiasa rokuzi-ni okiru-**ssu**.
Taro-TOP every.morning 6.o'clock-at get.up-CAS.POL.PRS
'Taro gets up at six every morning.'
- b. Taroo-wa maiasa rokuzi-ni okita-**ssu**.
Taro-TOP every.morning 6.o'clock-at got.up-CAS.POL.PRS
'Taro got up at six every morning.'
- c. Taroo-wa mazimena gakusee-**ssu**.
Taro-TOP serious student-CAS.POL.PRS
'Taro is a serious student.'
- d. Taroo-wa mazimena gakusee-datta-**ssu**.
Taro-TOP serious student-COP.PST-CAS.POL.PRS
'Taro was a serious student.'

While *-masu* and *-masita* are suffixed to a verbal stem, (1a) and (1b), *-desu* and *-desita* are suffixed to a non-verbal stem, (1c) and (1d), and *-ssu* is unselective in the category of the host, (2), they all add a polite tone to the sentences in their own right.

Although these morphemes commonly occur sentence-finally, there is no guarantee that they all occupy one and the same syntactic position on the surface or at LF. The possibility that they may occupy different syntactic positions is initially hinted at by the fact that, unlike the other four morphemes, category-neutral, casually oriented *-ssu* does not carry the tense of the proposition, as illustrated in (2), and the fact that it has no productively used past counterpart, i.e. **-ssita*.

The goal of this paper is two-fold. First, we propose a three-headed, "ditransitive" structure of "Speech Act" that constitutes the topmost layer of the clausal syntax (Speas and Tenny 2003). Second, we designate the five politeness morphemes in Japanese as representing one of the three heads of the ditransitive structure being proposed.

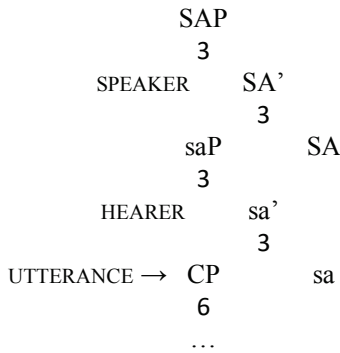
The paper is organized as follows. Section 2 briefly introduces the theoretical background of the present study to introduce our ditransitive Speech Act structure. Section 3 then applies the proposed Speech Act structure to the analysis of the five politeness morphemes in question. We

devote Section 4 to discussing consequences of our syntactic analysis of the Japanese politeness morphology. Section 5 concludes the paper, and concisely explores the implications of the present study for the syntax of Japanese matrix questions.

2 Proposal

The politeness morphology in Japanese was initially analyzed in terms of Ross’s (1970) “performative analysis” (see Harada 1976; Uyeno 1971). The performative analysis, once lost, was resurrected by Speas and Tenny (2003) in the form of Speech Act structure. Reviving Miyagawa (1987) in the wake of Speas and Tenny, Miyagawa (2017) was the first to characterize the syntactic behavior of the Japanese politeness morphology by means of the Speech Act structure in (3).

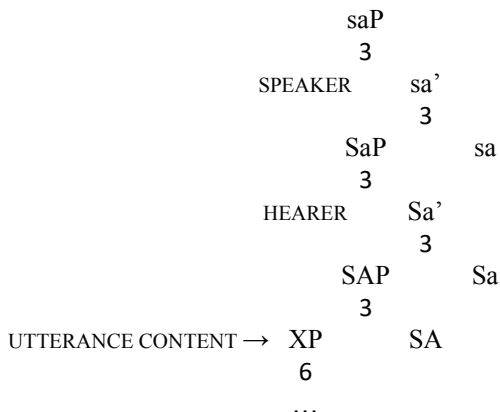
(3) *Miyagawa’s (2017) Speech Act Structure for Japanese*



This structure is “two-headed” in that it consists of the projection of SA, the higher head introducing the speaker argument, and that of sa, the lower head introducing the hearer argument as well as the utterance argument (CP).

Introducing three arguments is a signature of ditransitive predicates, and ditransitive predicates are analyzed in the current minimalist syntax as involving three heads, each head introducing one argument (see Ura 2000). It is therefore natural to extend the three-headed structure of ditransitive verbs to the structure of Speech Act projections.

We thus propose that the Speech Act structure universally consists of three heads, rather than two, and that each Speech Act head introduces one and only one Speech Act argument. The head-final Speech Act structure in (4) is geared to Japanese.

(4) *Three-Headed Speech Act Structure for Japanese*

The topmost head, “small” sa, introduces the speaker argument and the intermediate head, “middle” Sa, introduces the hearer argument. Small saP and middle SaP constitute the “indexical domain” of the Speech Act in that this domain is where the speech participants, i.e. the speaker and the hearer, are present. The bottommost head, “large” SA, introduces the utterance content argument, whose category is left unspecified (i.e. XP).

3 Analysis

We analyze the five politeness morphemes in question as representing one of the three Speech Act heads as follows: (i) *-ssu* is base-generated at small sa; (ii) *-desu* is base-generated within the utterance content and undergoes movement to middle Sa; (iii) *-desita*, *-masu*, and *-masita* are base-generated within the utterance content and move to large SA.² The distribution of these morphemes in the ditransitive Speech Act structure is depicted by (5).³

² The base-generated position of *-desu*, however, may as well be higher, possibly at middle Sa, as it is suffixed to tensed adjectival stems: e.g. *uresikatta-desu* (happy.PST-COP.POL.PRS).

³ For Miyagawa (2017), the politeness morphology is the ϕ -feature probe originating at C to later undergo movement to sa in (3). Taking a Distributed Morphology view of the Japanese politeness morphology, Yamada (2019) proposes that politeness morphemes are post-syntactically inserted (or “sprouted”) within TP, i.e. *-masu/-masita* at Neg and *-desu/-desita* at T. Since our syntactic analysis of the Japanese politeness morphology is somewhat programmatically driven, it is not our present concern to compare it to the above authors’ analyses (or those cited in their works) from any empirical or theoretical perspective.

(5) *Distribution of the Politeness Morphemes*

	saP	
	3	
SPEAKER	sa'	
	3	
	SaP	sa ← -ssu
	3	
HEARER	Sa'	
	3	
	SAP	Sa ← -desu
	3	
U. CONTENT →	XP	SA ← -desita, -masu, -masita
	6	
	...	

We associate *-ssu* with small *sa*, the speaker-introducing head, because *-ssu* indicates the gender of the speaker: it characteristically identifies utterances as those of casual masculine speech of younger generations. The association of *-desu* with the hearer-introducing head, middle *Sa*, is supported by the fact that while it does not indicate the gender of the speaker (or that of the hearer, for that matter), it has some function of an indexical nature, i.e. directly relating to the speech participants. Consider the following dialogue:

- (6) a. Kesa-wa rokuzi-ni oki-nakatta-no?
 this.morning-TOP 6.o'clock-at get.up-NEG.PST-Q
 'Didn't you get up at six this morning?'
- b. Hai, soo-ssu/-desu/*-desita.
 yes so-CAS.POL.PRS/-COP.POL.PRS /-COP.POL.PST
 'Yes, it is/*was so.'
- b'.*Hai, oki-masu/-masita.
 yes get.up-POL.PRS/-POL.PST

Only by using the *-ssu* or the *-desu* form can the speaker make an affirmative answer to the query that the other speech participant (i.e. the hearer) has without being committed to the tense or the polarity of the propositional content.⁴ This fact, we suggest, is indicative of *-ssu* and *-desu* be-

⁴ Although *-degozaimasu* can be substituted for *-ssu* or *-desu* in (6b) and contains *-masu* in it, we take it to be an analytical simplex as the "hyper-polite" variant of *-desu*.

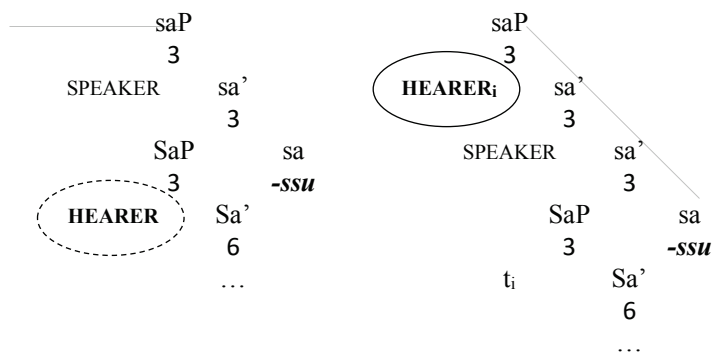
longing to the indexical domain and representing either one of the indexical heads, i.e. small *sa* or middle *Sa*. Since *-ssu* is already designated as small *sa*, *-desu* is identified as middle *Sa*. The ungrammatical forms in (6b) and (6b') suggest that *-desita*, *-masu*, and *-masita* fail to head indexical utterances, allowing us to associate them with large *SA*, the non-indexical Speech Act head.

We further propose that the politeness morphology must be licensed by the hearer argument in its c-command domain. This licensing condition is motivated by the fact that the politeness that those morphemes convey is directed toward the hearer. In fact, politeness morphology is not permitted in monologues, which arguably lack the hearer argument in the Speech Act structure (i.e. without the projection of middle *Sa*).

The hearer argument in the specifier of *SaP* licenses *-desu* at middle *Sa* and *-desita*, *-masu*, and *-masita* at large *SA*, as it c-commands them in (5). But what about *-ssu*, for it is at small *sa*, thus not c-commanded by the hearer argument in *SpecSaP* as it is? How can it be licensed?

Here is what we propose for *-ssu*: *-ssu* as small *sa* initially c-commands and attracts the hearer argument to the outer specifier of *saP*, from which the hearer argument then c-commands *-ssu*, as illustrated by (7), cf. (5).

- (7) a. HEARER moves to *SpecsaP* b. HEARER c-commands *-ssu*



We conjecture that the movement of the hearer argument introduced here is a by-product of the well-acknowledged development of *-ssu* from *-desu*, which is described in the present terms as the (upward) shift from middle *Sa* to small *sa*. If so, it is the operation to, as it were, “restore” the pre-shift configuration in which the hearer argument in *SpecSaP* c-commands *-desu* at middle *Sa*. The movement in question is thus motivated as such.

4 Consequences

The proposed analysis of the Japanese politeness morphology has several consequences. Four issues are examined in this report, three concerning the size of the category involved, and one concerning the relation between the speaker and the hearer. We will discuss them in turn.

4.1 Non-restrictive relative clauses

Non-restrictive relative clauses are one of the several non-root environments in which the politeness morphology occurs (see Yuasa 2005: 146–147, adopted from Ueno 1994: 154–155; see also Harada 1976: 557–558). The five politeness morphemes in question, however, seem to vary as to whether they can occur in non-restrictive relative clauses. As (8) and (9) show, while *-masu*, *-masita*, and *-desita* can occur in non-restrictive relative clauses, *-ssu* and *-desu* are impossible in the same environment.

- (8) a. [Mada benkyoosi-tei-**masu**] uti-no musuko-ga
 still study.do-PRG-POL.PRS home-GEN son-NOM
 kekkonsi-masita.
 marry.do-POL.PST

‘My son, who is still studying, got married.’

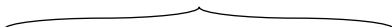
- b. [Mada benkyoosi-tei-**masita**] uti-no musuko-ga
 still study.do-PRG-POL.PST home-GEN son-NOM
 kekkonsi-masita.
 marry.do-POL.PST

‘My son, who was still studying, got married.’

- (9) a. *[Mada gakusei-**desu**] uti-no musuko-ga
 still student-COP.POL.PRS home-GEN son-NOM
 kekkonsi-masita.
 marry.do-POL.PST
 ‘My son, who is still a student, got married.’ [intended]
- b. [Mada gakusei-**desita**] uti-no musuko-ga
 still student-COP.POL.PST home-GEN son-NOM
 kekkonsi-masita.
 marry.do-POL.PST
 ‘My son, who was still a student, got married.’
- c. *[Mada gakusei-**ssu**] uti-no musuko-ga
 still student-CAS.POL.PRS home-GEN son-NOM
 kekkonsi-masita.
 marry.do-POL.PST
 ‘My son, who is still a student, got married.’ [intended]

We argue that this state of affairs follows if non-restrictive relative clauses can be as large as large SAP:

- (10) [_{SAP} [_{SaP} [_{SAP} XP SA = *-masu/-masita/-desita*] Sa = *-desu*] sa = *-ssu*]


 the maximal domain of non-restrictive relative clauses

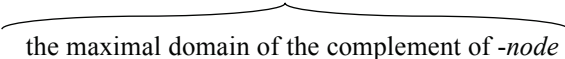
Representing middle Sa and small sa, respectively, *-desu* and *-ssu* lie outside SAP, thus fail to occur in non-restrictive relative clauses.

4.2 *-Node* reason clauses

Reason clauses ending with *-node* are known to allow the politeness morphology (see Minami 1974). The fact, however, is that among the five politeness morphemes, *-ssu* solely cannot occur in *-node* reason clauses:

- (11) a. Taroo-wa mada benkyoosi-tei-**masu**-node, ...
 Taro-TOP still study.do-PRG-POL.PRS-because
 ‘Because Taro is still studying, ...’
 b. Taroo-wa mada benkyoosi-tei-**masita**-node, ...
 Taro-TOP still study.do-PRG-POL.PST-because
 ‘Because Taro was still studying, ...’
- (12) a. Taroo-wa mada gakusee-**desu**-node, ...
 Taro-TOP still student-COP.POL.PRS-because
 ‘Because Taro is still a student, ...’
 b. Taroo-wa mada gakusee-**desita**-node, ...
 Taro-TOP still student-COP.POL.PST-because
 ‘Because Taro was still a student, ...’
 c. *Taroo-wa mada gakusee-**ssu**-node, ... cf. (15c)
 Taro-TOP still student-CAS.POL.PRS-because
 ‘Because Taro is still a student, ...’ [intended]

This fact immediately follows, we argue, if *-node* takes a constituent as SaP for its complement:

- (13) [_{SaP} [_{SaP} [_{SaP} XP SA = -masu/-masita/-desita] Sa = -desu] sa
 = -ssu]
- 

 the maximal domain of the complement of *-node*

Being small sa, *-ssu* is complemented by SaP, thus falling outside it.

It is not entirely clear how semantic consideration may help to describe the grammaticality pattern here, as semantically comparable *-kara* reason clauses allow all five politeness morphemes:

- (14) a. Taroo-wa mada benkyoosi-tei-**masu**-kara, ...
 Taro-TOP still study.do-PRG-POL.PRS-because
 ‘Because Taro is still studying, ...’
 b. Taroo-wa mada benkyoosi-tei-**masita**-kara, ...
 Taro-TOP still study.do-PRG-POL.PST-because
 ‘Because Taro was still studying, ...’

- (15) a. Taroo-wa mada gakusee-**desu-kara**, ...
 Taro-TOP still student-COP.POL.PRS-because
 ‘Because Taro is still a student, ...’
- b. Taroo-wa mada gakusee-**desita-kara**, ...
 Taro-TOP still student-COP.POL.PST-because
 ‘Because Taro was still a student, ...’
- c. Taroo-wa mada gakusee-**ssu-kara**, ... cf. (12c)
 Taro-TOP still student-CAS.POL.PRS-because
 ‘Because Taro is still a student, ...’

A straightforward account of the contrast is available if the largest category to be selected for complementation is SaP for *-node*, but saP for *-kara*; why that should be so will be explicated toward the end of the next subsection.


4.3 *-Noni* concessive clauses

There is another context in which only *-ssu* is excluded but the other four politeness morphemes are allowed. That is *-noni* concessive clauses. The following examples illustrate:

- (16) a. Taroo-wa mada benkyoosi-tei-**masu-noni**, ...
 Taro-TOP still study.do-PRG-POL.PRS-though
 ‘Although Taro is still studying, ...’
- b. Taroo-wa mada benkyoosi-tei-**masita-noni**, ...
 Taro-TOP still study.do-PRG-POL.PST-though
 ‘Although Taro was still studying, ...’
- (17) a. Taroo-wa mada gakusee-**desu-noni**, ...
 Taro-TOP still student-COP.POL.PRS-though
 ‘Although Taro is still a student, ...’
- b. Taroo-wa mada gakusee-**desita-noni**, ...
 Taro-TOP still student-COP.POL.PST-though
 ‘Although Taro was still a student, ...’
- c. *Taroo-wa mada gakusee-**ssu-noni**, ... cf. (20c)
 Taro-TOP still student-CAS.POL.PRS-though
 ‘Although Taro is still a student, ...’ [intended]

We argue that the same explanation as applied to *-node* reason clauses also applies to *-noni* concessive clauses: *-noni* can be complemented by a Speech Act category as large as SaP, but not the largest one, i.e. saP:

- (18) [_{saP} [_{SaP} [_{SaP} XP SA = *-masu/-masita/-desita*] Sa = *-desu*] sa = *-ssu*]



the maximal domain of the complement of *-noni*

Heading saP, *-ssu* fails to occur in *-noni* concessive clauses.

Just like the case of *-node* reason clauses examined in the previous subsection, no semantic account of the ill-formedness of (17c) is readily available, as its *-kedo* concessive counterpart is well-formed, as exemplified by (20c).⁵

- (19) a. Taroo-wa mada benkyoosi-tei-**masu**-*kedo*, ...
Taro-TOP still study.do-PRG-POL.PRS-though
'Although Taro is still studying, ...'
- b. Taroo-wa mada benkyoosi-tei-**masita**-*kedo*, ...
Taro-TOP still study.do-PRG-POL.PST-though
'Although Taro was still studying, ...'
- (20) a. Taroo-wa mada gakusee-**desu**-*kedo*, ...
Taro-TOP still student-COP.POL.PRS-though
'Although Taro is still a student, ...'
- b. Taroo-wa mada gakusee-**desita**-*kedo*, ...
Taro-TOP still student-COP.POL.PST-though
'Although Taro was still a student, ...'
- c. Taroo-wa mada gakusee-**ssu**-*kedo*, ... cf. (17c)
Taro-TOP still student-CAS.POL.PRS-though
'Although Taro is still a student, ...'

Again, the contrast can be described as the size difference of the complement category: the complement can be as large as saP, the largest Speech Act category, for *-kedo*, but it can only be SaP at its maximum for *-noni*.

Before closing this subsection, a word is in order as to the morphological composition of *-node* and *-noni* and its implications about their syn-

⁵ The concessive morpheme *-kedo* is a shortened form of more formal *-keredo(mo)*. The combination of casual *-ssu* and *-keredo* is very rare, but not unheard of.

tactic structure. We suspect that the *-no* of *-node* and *-noni* is the same *-no* found in non-masculine speech of the following kind:

- (21) a. Kyoo-wa dekakeru-**no**. (plain feminine/infant)
 today-TOP go.out-NONMSC
 'I will go out today.'
- b. Kyoo-wa dekake-*masu-no*. (classy feminine)
 today-TOP go.out-POL.PRS-NONMSC
 'I will go out today.'

It is therefore natural that non-masculine *-no* does not co-occur with *-ssu*, the polite morpheme for the casual masculine speech of younger generations:

- (22) a. Taroo-wa gakusee-**desu-no**. (classy feminine)
 Taro-TOP student-COP.POL.PRS-NONMSC
 'Taro is a student.'
- b.* Taroo-wa gakusee-**ssu-no**.
 Taro-TOP student-CAS.POL.PRS-NONMSC

The incompatibility of non-masculine *-no* with *-ssu*, however, may be but a reflex of complementary distribution: non-masculine *-no* is small *sa*, on a par with *-ssu*. Now, if non-masculine *-no* is small *sa*, and if it is identified as *-no* of *-node* and *-noni* (*-de* and *-ni* being postpositions), then the ungrammaticality of (12c) and (17c) falls into place in a more syntactically grounded manner: *-no* cannot be complemented by *saP*, because *saP* is the very category that *-no* projects.

After all, both *-node* and *-noni* clauses have some polite or mild tone to them (as compared to *-kara* and *-kedo* clauses), reminiscent of the use of non-masculine *-no* in (21) and (22).

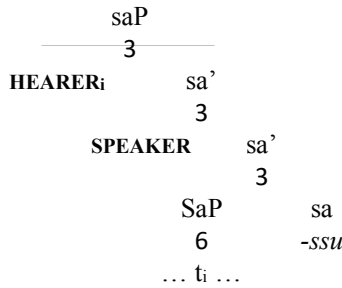
If we are on the right track, that the two conjunctions that prevent *-ssu* from occurring in their complement category begin with the same CV sequence is by no means an accident; the CV sequence in question is actually an independent morpheme identifiable with non-masculine *-no*, a realization of small *sa*, i.e. the topmost head of the three-headed Speech Act structure.

4.4 Hearer–speaker relationship of “superiority”

The casual politeness morpheme *-ssu* of younger masculine speech is used in a somewhat restricted context; it is used if and only if the hearer argument is socially superior to the speaker argument.

We argue that this “superiority” condition is an effect concomitant with the hearer argument ending up in the outer Spec of *saP*, attracted by *-ssu* at small *sa*, in order for the hearer argument to license *-ssu* (see the discussion surrounding (7)):

(23) *Hearer and Speaker Interact in the Spec Domain of saP*



In this derived configuration, the hearer argument is in the same specifier domain as the speaker argument in the inner Spec of *saP*, making it possible for the two Speech Act arguments to interact in one way or another. We suggest that those two arguments in the same specifier domain interact in such a way that the hearer argument is acknowledged as socially superior to the speaker argument.

Theoretically farfetched though it may seem, it is possible, we contend, that the social superiority in question literally reflects the configurational superiority of the hearer argument over the speaker argument in (23).

5 Conclusion

We have proposed a three-headed, ditransitive Speech Act structure on the analogy of the three-headed structure of ditransitive predicates lower down in the verbal spine and distributed the five politeness morphemes over three different Speech Act heads: *-ssu* as small *sa*, *-desu* as middle *Sa*, and *-desita*, *-masu*, and *-masita* as large *SA*. The validity of the proposed three-headed Speech Act structure has been ascertained to the extent that it can provide a mode of explanation not only for the availability of the Japanese politeness morphology in non-root environments, but for the hearer–speaker relation peculiar to the use of *-ssu*. Although the empirical cover-

age of the present study is rather limited at present, we hope to extend it to a wider range of data from within and beyond Japanese.

Among many a residual issue for us to handle is the syntax and semantics of matrix questions:

- (24) a. Taroo-wa mazime-datta-**ssu-ka**?
 Taro-TOP serious-COP.PST-CAS.POL.PRS-Q
 ‘Was Taro serious?’
- b. *Taroo-wa mazime-datta-**ka-ssu**?
 Taro-TOP serious-COP.PST-Q-CAS.POL.PRS

The so-called question particle *-ka* is conventionally analyzed as an interrogative complementizer, i.e. C. If that is also true of matrix *-ka*, and if the casual politeness morpheme *-ssu* is base-generated at small sa, as has been argued, and CP complements the bottommost Speech Act head, i.e. large SA, then the expected morpheme order is ill-formed **-ka-ssu* in (24b), not attested *-ssu-ka* in (24a). What conclusions can one draw, or more modestly, what conjectures can one make, from this state of affairs?

Holding the thesis that *-ssu* is small sa as it stands, one can conclude that matrix *-ka* is not at C on the surface; either it is adjoined to *-ssu* as small sa or it heads a functional projection external to saP. Matrix question formation, therefore, does not hinge upon *-ka* clinging to the C position or being a complementizer in the first place. In fact, complementizerhood is not necessary for a morpheme to be recognized as a question particle, as the case of non-masculine *-no* demonstrates:

- (25) a. Taroo-wa mazime-**desita-no**? (classy feminine)
 Taro-TOP serious-COP.POL.PST-NONMSC
 ‘Was Taro serious?’
- b. *[Taroo-ga mazime-datta-**no**] tazuneta.
 Taro-NOM serious-COP.PST-NONMSC asked
 ‘I asked whether Taro was serious.’ [intended]

It appears that non-masculine *-no* behaves as a question particle in the matrix question, (25a), but it cannot head the interrogative CP, (25b). After all, its appearance as question particle is a derived one, as we have already observed in (21) and (22) that non-masculine *-no* is used in declarative utterances. And if we are correct, non-masculine *-no* is at small sa, not C.

Returning to matrix *-ka*, given the preceding discussion, one can draw the strongest conclusion that it occupies a non-C position in the matrix

context; the position that matrix *-ka* occupies may be a functional head above the Speech Act structure (or it may be adjoined to *-ssu* at small *sa*).

Whether matrix *-ka* is base-generated there or has moved there, it may be that more dynamism is involved in forming matrix questions, much in line with Speas and Tenny's (2003) thesis. Its occurrence at a high, non-C position may then be required for that purpose, with the side effect of adding a masculine tone to utterances (with no politeness morphology present):

- (26) Nani kuu-**ka**? (blunt masculine)
 what eat-Q
 'What will you eat?'/ 'What shall we eat?'

If the speaker gender is encoded on small *sa* (see Section 3), *-ka* either is at small *sa* or has moved through it to a higher functional head.

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Subject Honorific Mismatches in Korean and Japanese RNR

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1 Introduction

According to Ross (1970), gapping is an ellipsis occurring only in coordinate structures in which a verb (plus something else) is missing in one or more conjuncts. For instance, English gapping, as in (1a), is an instance of forward ellipsis, and the Japanese counterpart, as in (1b), is backward ellipsis.

- (1) a. Leo teased Bella, and Noah ___ Emily.
 b. Leo-ga Bella-o ____, (soshite) Noah-ga
 L-NOM B-ACC (and) N-NOM
 Emily-karakatta.
 E-ACC teased

‘Leo (teased) Bella, and Noah teased Emily.’

Considering the directionality of ellipsis, Korean and Japanese gapping-like ellipsis resembles Right-Node-Raising (RNR; the term coined by Postal

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1974), as in (2), which may be a case of backward ellipsis (Wexler and Culicover 1980; Kayne 1994; Bošković 2004; Ha 2008, etc.).

(2) Leo teased ____, and Noah flattered, Emily.

In this light, Korean and Japanese gapping-like ellipsis has often been called RNR (Saito 1987; An 2007) in the literature.¹ In this paper, we will call Korean and Japanese gapping-like ellipsis *JK RNR*, for the sake of convenience.

Meanwhile, it has been reported that some languages require subject–verb agreement under RNR (or gapping, according to Ross) only in the full-fledged conjunct, allowing the agreement mismatch in the gapped conjunct, as in the Russian data in (3).

(3) Ivan vod-u ____ I Anna vodk-u pil-a.
 Ivan_{MASC} water-ACC and Anna_{FEM} vodka-ACC drank_{FEM}

[based on Ross 1970: (10b)]

In (3), the verb *pil-a* ‘drank’ marked with the feminine ending *-a* agrees in gender with the full conjunct subject *Anna* but not with the gapped conjunct subject *Ivan*. Despite the subject–verb agreement mismatch of gender in the gapped conjunct, (3) is acceptable. Since Ross (1970), such ϕ -feature agreement mismatches between subject and verb under ellipsis have been commonly observed in other languages (Citko 2018; Ince 2009).

However, it is controversial whether Korean and Japanese allow subject–verb agreement mismatches with respect to honorification under RNR. For instance, Mukai (2003) and Chung (2005) observe that the Japanese RNR data in (4) and the Korean RNR data in (5) are unacceptable due to the morphological mismatch between the gapped conjunct verb (i.e. putatively, *tabeta* and *chwu-essta*) and the full conjunct verb (i.e. *mesiagatta* and *chwu-si-essta*). On the other hand, Lee (2005) and Shiraishi (2018) judge that (4) and (5) are acceptable, suggesting that subject honorific agreement is required only in the full conjunct in JK RNR.

(4) (*)Boku-ga raamen-o, sensei-ga udon-o mesiagatta.
 I-NOM ramen-ACC teacher_{HON}-NOM udon-ACC ate_{HON}
 ‘I (ate) ramen, and the teacher_{HON} ate_{HON} udon.’

[based on Mukai 2003: (22)]

¹ Alternative terms such as Verbless Conjunction (Mukai 2003; Chung 2005) or Right-Node-Sharing (Chung 2004, 2005) have also been used.

- (5) (*)Na-nun thayngo-lul, apenim-un tisukho-lul
 I-TOP tango-ACC father_{HON}-TOP disco-ACC

chwu-si-essta
 dance-HON-PAST

‘I (danced) tango, and father_{HON} danced_{HON} disco.’

[Chung 2005: (7)]

These varying acceptability judgments among linguists leave the discussion of JK RNR fundamentally unsettled, calling for the need for quantitative methods via formal judgment experiments to eliminate such data disputes.

This paper aims to provide solid empirical evidence for the discussion of JK RNR with respect to the (un)availability of honorific mismatches in these languages, by conducting two formal acceptability judgment experiments. Based on the experimental evidence, we investigate whether and how the previous analyses of JK RNR may explain the result. The rest of this paper is organized as follows. Section 2 reports the details of the two acceptability experiments of subject honorific mismatches in JK RNR. Section 3 presents the general discussion of experimental findings. Section 4 discusses the theoretical implications of the result for some previous analyses of JK RNR and proposes an alternative analysis. Section 5 concludes the paper.

2 Experiments

2.1 Predictions

We conducted two formal acceptability judgment experiments. Experiment 1 explored subject honorific mismatches in Korean RNR, and Experiment 2 those in Japanese RNR. For both experiments, we set up four experimental conditions of the honorific mismatches, as schematized in (6).

- (6) a. [Con | NorV]: congruent and normal verb condition
 b. [InCon | NorV]: incongruent and normal verb condition
 c. [Con | HonV]: congruent and honorific verb condition
 d. [InCon | HonV]: incongruent and honorific verb condition

For all these four conditions, the gapped conjunct subject and the full conjunct subject are contrasted in terms of honorability, with one being an honorable referent and the other being a normal (i.e. non-honorific) referent. The full-conjunct predicates are either an Hon(orific)V(erb) involving an honorific verbal marker (i.e. *si* in Korean or *o...ninar* in Japanese) or are a Nor(mal)V(erb) without the marker. They are Con(gruent) if the verb and the

subject are in concord in terms of honorability within the full conjunct (i.e. (6a) and (6c)), and InCon(gruent) if they are not (i.e. (6b) and (6d)).

We hypothesize that JK RNR favors certain honorific mismatches over others, which would result in a varying degree of acceptability across the conditions. We predict that honorific agreement in JK RNR is triggered only when an honorific marker appears in the verb, and that its markedness will lower acceptability. Also, we predict that acceptability will decrease generally when the verb is incongruent with the local subject in terms of honorability. Most importantly, we expect to see an acceptability contrast between (6c) and (6d), with (6d) being significantly less acceptable than (6c) due to the agreement failure in the local domain. If this turns out to be the case, it would suggest that honorific agreement in JK RNR is also a local process within the full conjunct (cf. Ross 1970; Citko 2018; Ince 2009), showing asymmetry between the conjuncts.

2.2 Design and procedure

Both experiments employed a 2×2 factorial design, crossing two factors: CONGRUENCE and PREDICATE, which generated the four conditions presented in (6). A total of 16 lexically matched sets of experimental items were constructed for each experiment. Each set had four experimental items, generating 64 experimental items in total. A sample set is provided below.²

- (7) a. [Con | NorV]
 Sensayngnim-i eyseyi-lul, John-i sosel-ul ilk-essta.
 Oshishoosan-ga essei-o, John-ga shoosetsu-o yon-da.
 teacher_{HON-NOM} essay-ACC John-NOM novel-ACC read-PAST
 ‘Teacher_{HON} (read) an essay, and John read a novel.’
- b. [InCon | NorV]
 John-i sosel-ul, sensayngnim-i eyseyi-lul ilk-essta.
 John-ga shoosetsu-o, oshishoosan-ga essei-o yon-da.
 John-NOM novel-ACC teacher_{HON-NOM} essay-ACC read-PAST
 ‘John (read) a novel, and teacher_{HON} read an essay.’

² In Lee et al.’s (2020) experiment, NP-*nim-kkeyse* nominals were employed as honorable referents in order to investigate the honorific mismatch effect in Korean RNR. *Nim* is an honorific nominal morpheme, and *kkeyse* is the honorific nominative marker (giving the feeling of excessive honorification (Lee and Ramsey 2000)). Note, however, that Japanese does not have the honorific nominative marker. In order to control the two experiments as uniformly as possible, we used the unmarked nominative marker *i/ka* for the Korean experiment, as in (7).

- c. [Con | HonV]
 John-i sosel-ul, sensayngnim-i eyseyi-lul ilku-si-essta.
 John-ga shoosetsu-o, oshishoosan-ga essei-o oyomininat-ta.
 John-NOM novel-ACC teacher_{HON-NOM} essay-ACC read-HON-PAST
 ‘John (read) a novel, and teacher_{HON} read_{HON} an essay.’
- d. [InCon | HonV]
 Sensayngnim-i eyseyi-lul, John-i sosel-ul ilku-si-essta.
 Oshishoosan-ga essei-o, John-ga shoosetsu-o oyomininat-ta.
 teacher_{HON-NOM} essay-ACC John-NOM novel-ACC read-HON-PAST
 ‘Teacher_{HON} (read) an essay, and John read_{HON} a novel.’

The experimental sets were counterbalanced across four lists using a Latin Square Design so that the items were equally distributed into each list. Accordingly, each participant was provided with four tokens from each condition. A total of 64 filler items (16 of acceptable, moderate, unacceptable, and unrelated sentences, respectively) were also added to each list.

For both experiments, a 7-point Likert scale task was employed in the acceptability judgment test (from 1 “completely unacceptable” to 7 “perfectly acceptable”). The task was presented as a web-based experiment using Ibex. Fifty-one self-reported native Korean speakers and fifty self-reported native Japanese speakers were recruited online for each experiment. There were three outliers in Experiment 1 and two outliers in Experiment 2, and they were excluded from the analysis because they were not paying attention during the task. Each participant was paid 5,000 won (about \$4.50) and 700 yen (about \$6.50), respectively, for their participation. They were asked to rate the acceptability of all the experimental and filler items randomly appearing on the screen. Trials were presented at the beginning of the experiment to familiarize them with the task.

2.3 Results

2.3.1 Experiment 1: Korean RNR

Figure 1 represents the mean and standard error of the converted z-scored responses for the four conditions in Experiment 1.

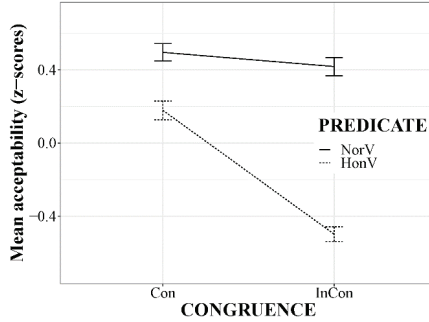


Figure 1. Mean acceptability of experimental conditions (error bars indicate *SE*)

In Figure 1, the downward slope of the lines represents the CONGRUENCE effect, and the vertical separation between the two lines represents the PREDICATE effect. For the experimental conditions, we found that [HonV] conditions were rated as less acceptable than [NorV] conditions (*mean*: -0.160 vs. 0.457). Within [HonV] conditions, [Con] condition was rated as more acceptable than [InCon] condition (*mean*: 0.178 vs. -0.498). Within [NorV] conditions, no significant difference in acceptability was found between [Con | NorV] and [InCon | NorV] (*mean*: 0.495 vs. 0.418).³ In sum, Figure 1 seems consistent with the hypothesis and predictions laid out in Section 2.1.

Table 1 presents the estimated coefficients and the standard error for the Linear Mixed-Effects Regression (LMER) model with CONGRUENCE and PREDICATE as fixed effects.

	<i>Estimate</i>	<i>SE</i>	<i>t</i>	<i>p</i>
(Intercept)	0.178	0.079	2.267	*
CONGRUENCE	-0.676	0.088	-7.701	***
PREDICATE	0.319	0.080	3.944	***
CONGRUENCE \times PREDICATE	0.599	0.114	5.273	***

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 1. Fixed effects summary for Experiment 1

There was a main effect of CONGRUENCE in that [Con] conditions were significantly more acceptable than [InCon] conditions (*mean*: 0.337 vs. -0.040). There was a main effect of PREDICATE in that [NorV] conditions

³ The experimental results of Lee et al. (2020) showed that there is a significant difference ($p < 0.05$) between [NorV] conditions with NP-*nim-kkeyse* referents. See Lee et al.'s (2020: fn. 5) suggestion for this somewhat unexpected result.

were significantly more acceptable than [HonV] conditions, too. There was also a significant super-additive interaction between CONGRUENCE and PREDICATE, meaning that the honorific verbal marker *si* had a significant effect on the acceptability of [InCon | HonV], but not on that of [Con | HonV].

Pairwise comparison revealed that the interaction was driven by the acceptability difference between the two [HonV] conditions; i.e. the [InCon | HonV] condition was rated as significantly less acceptable than the [Con | HonV] condition ($\beta = -0.676$, $SE = 0.085$, $t = -7.982$, $p < 0.001$). The two [NorV] conditions were not significantly different from each other ($\beta = -0.077$, $SE = 0.095$, $t = -0.810$, $p = 0.424$). Also, within [Con] conditions, the [Con | NorV] condition was significantly more acceptable than the [Con | HonV] condition ($\beta = 0.137$, $SE = 0.096$, $t = 3.286$, $p < 0.01$).

2.3.2 Experiment 2: Japanese RNR

The mean acceptability (in z-scores) and standard errors for the four conditions in Experiment 2 are shown in Figure 2.

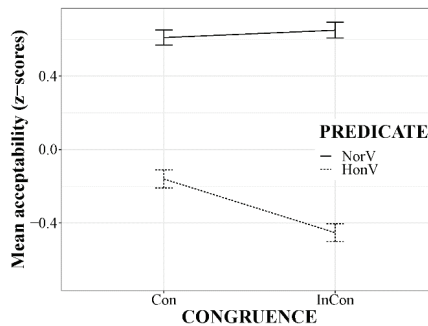


Figure 2. Mean acceptability of experimental conditions (error bars indicate *SE*)

Similar to Figure 1, we found that [HonV] conditions were rated as significantly less acceptable than [NorV] conditions (*mean*: -0.307 vs. 0.630). Within [HonV] conditions, the [Con] condition was rated as more acceptable than the [InCon] condition (*mean*: -0.161 vs. -0.453). Within [NorV] conditions, no significant difference in acceptability was found between [Con | NorV] and [InCon | NorV] conditions (*mean*: 0.610 vs. 0.650). In sum, Figure 2 revealed the similar gradience patterns as in Figure 1.

Table 2 presents the estimated coefficients and the standard error for the LMER model with CONGRUENCE and PREDICATE as fixed effects.

	<i>Estimate</i>	<i>SE</i>	<i>t</i>	<i>p</i>
(Intercept)	-0.159	0.071	-2.256	*
CONGRUENCE	-0.292	0.093	-3.130	**
PREDICATE	0.771	0.093	8.251	***
CONGRUENCE × PREDICATE	0.332	0.132	2.517	*

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2. Fixed effects summary for Experiment 2

There was a main effect of CONGRUENCE such that [Con] conditions were significantly more acceptable than [InCon] conditions (*mean*: 0.225 vs. 0.099). The PREDICATE effect was significant too, such that [NorV] conditions were significantly more acceptable than [HonV] conditions (*mean*: 0.630 vs. -0.307). In addition, the interaction between CONGRUENCE and PREDICATE was significant, suggesting that the honorific verbal marker such as *o...ninar* had a significant effect in [InCon | HonV], but not in [Con | HonV].

Pairwise comparison revealed a significant difference between the two [HonV] conditions ($\beta = -0.289$, $SE = 0.093$, $t = -3.111$, $p < 0.01$) and between the [Con] conditions ($\beta = 0.811$, $SE = 0.084$, $t = 9.679$, $p < 0.001$), but not between the two [NorV] conditions ($\beta = 0.040$, $SE = 0.104$, $t = 0.384$, $p = 0.704$).

2.4 Discussion

The results of Experiments 1 and 2 indicate that Korean and Japanese pattern together with respect to the subject honorific mismatches under RNR. Both experiments showed varying acceptability depending on the two factors, CONGRUENCE and PREDICATE. The honorific mismatch in the full conjunct degrades the acceptability dramatically but only when the verb carries the honorific marker. This finding indicates that the honorific agreement is not triggered by an honorable subject in the local domain (cf. Song et al. 2019), but by the presence of the honorific marker *si* or *o...ninar*. More importantly, the degradation induced by the markedness of the honorific marker is remedied when the verb containing it agrees with the local subject in honorability. This asymmetric congruence effect within [HonV] conditions provides empirical evidence that honorific agreement is a local process: the degradation induced by the honorific mismatch effect is modulated by the local requirement, and the successful fulfillment of the requirement reduces the processing cost of honorific mismatches in JK RNR, confirming the informal acceptability judgment in Lee (2005), Kim (2006, 2019), and Shiraishi (2018).

3 General discussion

We obtained three findings from the experiments reported above. First, JK RNR with honorific mismatches was not uniformly unacceptable. This finding poses a challenge to some previous symmetric approaches to JK RNR which predict honorific mismatches to be invariably unacceptable. Such varying acceptability across the conditions may be better explained by an asymmetric approach.

Second, in both experiments, the congruence of honorability between the predicate and the local subject did not matter with normal verbs but did matter with honorific verbs. This result might support the syntactic account of JK honorification in line with Chomsky's (2000) theory of Agree; an uninterpretable [*u*Hon] feature exists in honorific verbs, and it probes down for a suitable goal NP with [*i*Hon] to value its uninterpretable honorific feature (cf. Choi 2010; Kishimoto 2012). Given this, the acceptability of [NorV] conditions is naturally explained: with a normal verb, there should be no honorific agreement failure involved that induces degradation since it lacks [*u*Hon] to be valued, irrespective of the (in)congruence of honorability between the verb and the local subject.

Third, the [InCon | HonV] condition was extremely less acceptable than the other conditions in both experiments, exhibiting the super-additive interaction effect between CONGRUENCE and PREDICATE. This super-additive degradation effect is not incompatible with the common assumption that complexity increases processing cost (cf. Wagers et al. 2009). Given that honorific verbs generally have a richer morphosyntactic content than normal verbs do, the super-additive degradation effect could be due to the extra processing costs demanded by the syntactic honorific agreement (Lee et al. 2020).

4 Implications for syntactic analyses

4.1 Previous analyses

In the literature, there have been two main approaches to JK RNR: symmetric vs. asymmetric approaches. The symmetric approaches (Saito 1987; Abe and Hoshi 1997; Kim 1997; Mukai 2003; Chung 2004, 2005) assume that the gapped conjunct and the full conjunct have identical structure, whereas the asymmetric approaches (Lee 2005; An 2007) do not.

As noted earlier, there was a sharp acceptability contrast between [Con | HonV] and [InCon | HonV]. This challenges the previous symmetric approaches. For instance, under Chung's (2004, 2005) Multiple Dominance (MD) analysis, a verbal complex V + T marked with the honorific marker *si*

or *o...ninar* – which triggers obligatory honorific agreement – is shared for both conjuncts under JK RNR, as schematized in (8).

(8) a. [Con | HonV]: acceptable

[_{TP1} *NorS	...	}	V + T + <i>si</i> / <i>o...ninar</i>]
[_{TP2} √HonS	...		

b. [InCon | HonV]: unacceptable

[_{TP1} √HonS	...	}	V + T + <i>si</i> / <i>o...ninar</i>]
[_{TP2} *NorS	...		

Since the honorific marker is shared for both TP₁ and TP₂, the conjunct with a non-honorable subject (i.e. TP₁ in (8a) and TP₂ in (8b)) would necessarily be ruled out under both conditions. Then, MD would predict both (8a) and (8b) to be equally unacceptable, which is not the case. In short, MD – including other previous symmetric accounts – fails to account for the sharp acceptability contrast between [Con | HonV] and [InCon | HonV].

On the other hand, the asymmetric approaches, which do not assume the morphological identity between conjuncts, may deal better with the acceptability contrast between [Con | HonV] and [InCon | HonV]. An (2007), for instance, proposes that Korean RNR is derived by full sentential coordination, reduced by deletion under identity at PF. More precisely, adopting Oku's (1998) Subset Copy Principle, he argues that the gapped conjunct verb in RNR can be deleted in PF if its morphological content is a subset of the full conjunct verb's content. Consider the following:

(9) a. [Con | HonV]: acceptable

[John _{-i} ₁	sosal _{-ul} ₂	[TP t₁ t₂ ilku-ess]	and
[sensayngnim _{-i} ₁	eyseyi _{-lul} ₂	[TP t ₁ t ₂ ilku-si-ess]	

b. [InCon | HonV]: unacceptable

[sensayngnim ₁ -i	eyseyi ₂ -lul	[TP t₁ t₂ ilku-(si)-ess]	and
*[John ₁ -i	sose ₂ -ul	[TP t ₁ t ₂ ilku-*si-ess]	

In [Con | HonV], as in (9a), the gapped conjunct verb's morphology is a subset of the full conjunct verb's: [*ilk-ess*]_{morph} ⊂ [*ilku-si-ess*]_{morph}. As its morphological content is recoverable from that of the full conjunct verb, PF deletion is allowed. The full conjunct is ruled in because the verb agrees with the local honorable subject. Therefore, no honorific agreement violation is involved, and the output of [Con | HonV] is correctly ruled in. On the other hand, in (9b), the full conjunct is ruled out due to the honorific mismatch. Therefore, the acceptability of [Con | HonV] is also explained.

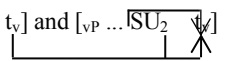
However, An’s (2007) PF deletion analysis could be problematic for honorifically irregular verb pairs. Consider the following Japanese RNR under [Con | HonV] as in (10).

- (10) [Con | HonV]
 Hitomi-ga raamen-o *~~tabeta~~, kootyoosensei-ga udon-o meshiagatta.
 H-NOM ramen-ACC ~~ate~~ principal_{HON}-NOM udon-ACC ate_{HON}
 ‘Hitomi (ate) ramen, and the principal_{HON} ate_{HON} udon.’

In (10), the normal verb *tabeta* ‘ate’ and its honorific suppletive *meshiagatta* ‘ate_{HON}’ are morphologically remote, not being related via the regular subject honorific verbal marker *o...ninar*. Then, PF deletion cannot be sanctioned due to the morphological remoteness between the verbs not being a subset of each other. Therefore, An’s proposal would have to predict that such morphological mismatches under RNR invariably result in ungrammaticality. However, this prediction is rather questionable.⁴

The previous analyses discussed above assume that the coordination site in JK RNR is TP. Lee (2005), on the other hand, adopts a small conjunct approach, proposing that the coordination site is vP (Chomsky’s (1995) light verb) in Korean RNR, and the *v* moves across-the-board to a higher position Agr (cf. Johnson 2009, 2018). Given that the honorific marker *si* or the past-tense morpheme *ess* cannot appear in the gapped conjunct in Korean RNR, she argues that the gapped conjunct lacks Agr or T since it is a vP.

- (11) *adjunction to vP*

$$[_{CP} [_{TP} [_{AgrP} [_{vP} \dots SU_1 t_v] \text{ and } [_{vP} \dots [_{SU_2} v] v^{+SiAgr} T] C] \dots$$

ATB movement out of coordinated vPs [based on Lee 2005: (30)]

Following Niinuma and Park (2003), Lee assumes that SU_2 overtly adjoins to *v* and asymmetrically c-commands SU_1 . Then, SU_2 is the closest NP within the c-command domain of Agr and forms a local relation with *si* in Agr. These assumptions may explain the acceptability contrast between [Con | HonV] and [InCon | HonV]. That is, [Con | HonV] is more acceptable because SU_2

⁴ In order to verify the potential difference between regular pairs and irregular pairs, Kim and Jung (in progress) conducted a separate experiment, which shared the same experimental design as the current study, except that 8 regular pairs and 8 irregular pairs were lexicalized as target items. The results of the LMER model revealed no different pattern between those pairs. More importantly, [InCon | HonV] was rated as significantly less acceptable than [Con | HonV] for both pairs: regular pairs ($\beta = 0.625, SE = 0.112, t = 5.559, p < 0.001$) vs. irregular pairs ($\beta = 0.537, SE = 0.154, t = 3.478, p = 0.01$). In short, these experimental findings showed that An’s (2007) analysis is not correct.

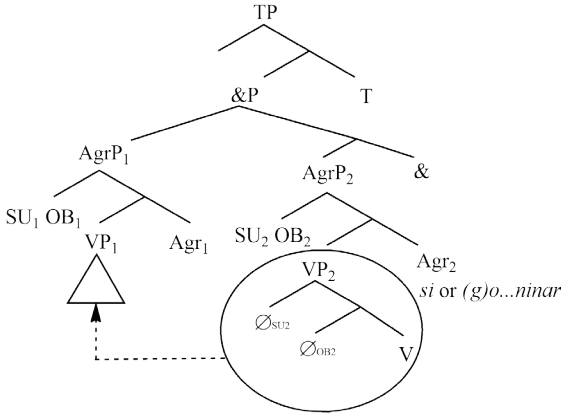
agrees with *si* in a local domain, whereas SU_1 does not. However, her assumption of SU_2 adjoining to *v* is a stipulation without any independent evidence.

4.2 Proposal: LF copying of VP

So far, we have shown that the honorific mismatch effect found in our experiments challenges some previous accounts of JK RNR.

In this light, we propose an alternative analysis of JK RNR, that is, small conjunct (AgrP) + LF copying of VP preceded by a prior movement (such as Scrambling or focus movement (cf. Kim 1997) of remnants). The derivation is illustrated in (12).

(12)



In (12), the coordination site is AgrP, which is between TP and VP (cf. Chomsky 1993; Lasnik 1999; Kim 1997). The gapped conjunct AgrP₁ contains an empty VP₁, whose content is filled via LF copying from the antecedent VP₂ dominated by the full conjunct AgrP₂. The remnants (i.e. SU_1 and OB_1) in the gapped conjunct are base-generated outside of the missing site VP₁. Given this proposal, the gapped VP₁ is not part of the full conjunct AgrP₂. Therefore, the argument SU_1 within the gapped conjunct does not have a local relation with the honorific verbal marker *si* or *o...ninar* in Agr₂ within the full conjunct. This accounts for the fact that the predicate in JK RNR agrees only with the full conjunct subject. The formal feature of the honorific *si* or *o...ninar* is uninterpretable [*uHon*], and thus should be checked or valued by the interpretable feature [*iHon*] of an honorable subject in a local domain because failure to eliminate uninterpretable [*uHon*] via feature checking or valuation results in ungrammaticality (Chomsky 1995, 2000). Thus, the acceptability

contrast between [Con | HonV] and [InCon | HonV] is naturally explained by the implementation of the feature checking or valuation. Finally, the ellipsis of the gapped VP₁ is resolved by LF copying (cf. Abe and Hoshi 1997) from the full VP₂. The representation of honorific mismatches in JK RNR under our proposal is schematized in (13).

- (13) a. [Con | NorV]
 [_{AgrP} sensayngnim_[iHon]-i eyseyi-lul] & [_{AgrP} John-i soseul-ul ilku]-essta
 [_{AgrP} oshishoosan_[iHon]-ga essei-o] & [_{AgrP} John-ga shoosetsu-o yon]-da
- b. [InCon | NorV]
 [_{AgrP} John-i soseul-ul] & [_{AgrP} sensayngnim_[iHon]-i eyseyi-lul ilku]-essta
 [_{AgrP} John-ga shoosetsu-o] & [_{AgrP} oshishoosan_[iHon]-ga essei-o yon]-da
- c. [Con | HonV]
 [_{AgrP} John-i soseul-ul] &
 [_{AgrP} John-ga shoosetsu-o] &
 [_{AgrP} sensayngnim_[iHon]-i eyseyi-lul ilku]-si_[uHon]-essta
 [_{AgrP} oshishoosan_[iHon]-ga essei-o yomi]-o...ninat_[uHon]-ta
- d. [InCon | HonV]
 [_{AgrP} sensayngnim_[iHon]-i eyseyi-lul] &
 [_{AgrP} oshishoosan_[iHon]-ga essei-o] &
 [_{AgrP} John-i soseul-ul ilku]-*si_[uHon]-essta
 [_{AgrP} John-ga shoosetsu-o yomi]-*o...ninat_[uHon]-ta

As in (13a) and (13b), in [NorV] conditions, the (nominal) honorific feature of an honorable subject does not trigger honorific agreement because it is interpretable [*i*Hon]. As in (13c), in [Con | HonV], the uninterpretable honorific feature [*u*Hon] of *si* or *o...ninar* is checked off or valued by the interpretable honorific feature [*i*Hon] of the local honorable referent. Therefore, the entire sentence is acceptable. However, as in (13d), in [InCon | HonV], the uninterpretable honorific feature [*u*Hon] of *si* or *o...ninar* is not checked off or valued because the local subject is a non-honorable referent without [*i*Hon], which makes the entire sentence unacceptable.

5 Conclusion

In this paper, we explored the acceptability judgment on subject honorific mismatches in Japanese and Korean (JK) RNR via an experimental approach. The results of the experiments showed that JK RNR appeared to favor certain honorific mismatches over others. Particularly, there was asymmetry between the full conjunct and the gapped conjunct in JK RNR: the honorific agreement occurred locally only in the full conjunct, and the honorific marker *si* or *o...ninar* did not appear in the gapped VP.

Also, we showed that the asymmetric honorific mismatch effect in JK RNR places a theoretical burden on the previous syntactic analyses, such as Chung's (2004, 2005) Multiple Dominance analysis, An's (2007) PF deletion analysis based on Subset Copy Principle, or Lee's (2005) small conjunct analysis supplemented by PF deletion. As an alternative, we proposed the small conjunct analysis along with LF copying of VP, which incorporates the distinctness between the uninterpretable feature [μ Hon] of an honorific (verbal) marker and the interpretable feature [i Hon] of an honorable subject (cf. Kim and Sells 2007). Under this proposal, the gapped conjunct is VP, and the meaning of a gapped VP is recovered via LF copying from the full VP dominated by a full AgrP, which accounts for the absence of an honorific verbal marker in the gapped conjunct as well as the honorific mismatch effect in JK RNR.

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Apparent VP-ellipsis in Japanese: An Argument Ellipsis Account¹

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1 Introduction

VP-ellipsis is one of the most investigated phenomena in the literature on English anaphora (Sag 1976; Johnson 2001, among many others), a typical example of which is shown in (1).

(1) You do not [_{VP} like argument ellipsis], but I do [~~_{VP} like argument ellipsis~~].

Here, the first and the second clauses contain the identical VP *like argument ellipsis*, and the second VP is elided with *do*-support in T.

It has been standardly assumed that Japanese lacks English-type VP-ellipsis, e.g. on the basis of the following example (Hinds 1973; Kuno 1978).

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- (2) a. Taroo-wa [_{VP} fugu-o sabai] -ta.
 Taro-TOP blowfish-ACC dress -PST
 ‘Taro [_{VP} dressed a blowfish].’
- b. *Hanako-mo [_{VP} fugu-o ~~_____~~ sabai] si-ta.
 Hanako-also blowfish-ACC dress do-PST
 ‘Hanako also did [_{VP} dress a blowfish].’

Although the VP in (2a) and (2b) is identical, VP-ellipsis is inapplicable whether or not we have *do*-support.²

However, Fujii (2016) and Funakoshi (2019) argue that English-type VP-ellipsis becomes possible if a focus particle is attached to an antecedent VP, as shown in (3).

- (3) a. Taroo-wa [_{VP} fugu-o sabaki]-sae si-ta.
 Taro-TOP blowfish-ACC dress-even do-PST
 (Lit.) ‘Taro did even-_{VP} dress a blowfish].’
- b. Hanako-mo [_{VP} fugu-o ~~_____~~ sabaki]-sae si-ta.
 Hanako-also blowfish-ACC dress-even do-PST
 (Lit.) ‘Hanako also did even-_{VP} dress a blowfish].’

In the antecedent sentence (3a), the focus particle *-sae* ‘even’ is attached to the VP, and with (3a) as its antecedent, (3b), where the VP that is identical to the antecedent VP is elided with *su-* ‘do’-support in T, is grammatical, which Fujii and Funakoshi take to indicate that English-type VP-ellipsis is available in Japanese at least in certain cases.

In this paper, I investigate what Fujii and Funakoshi take to be an instance of English-type VP-ellipsis in Japanese, e.g. (3b), from the viewpoint of the extraction possibility out of its domain, showing that the con-

² The type of VP-ellipsis that I investigate in this paper is VP-ellipsis with *do*-support. It has sometimes been claimed that Japanese allows V-stranding VP-ellipsis, where V overtly moves to T followed by VP-ellipsis (cf. Otani and Whitman 1991; Funakoshi 2016) as in (i).

- (i) a. Taroo-wa [_{VP} fugu-o *t_V*] sabai-ta.
 Taro-TOP blowfish-ACC dress-PST
 (Lit.) ‘Taro dressed [_{VP} *t* a blowfish].’
- b. Hanako-mo [_{VP} fugu-o ~~_____~~ *t_V*] sabai-ta.
 Hanako-also blowfish-ACC dress-PST
 (Lit.) ‘Hanako also dressed [_{VP} *t* a blowfish].’

With (ia) as its antecedent, (ib), where the verb *sabak-* ‘dress’ overtly raises out of the VP which is to be elided, is grammatical. Whether this type of VP-ellipsis, i.e. V-stranding VP-ellipsis, is available in Japanese is beyond the scope of this paper.

struction in question should involve argument ellipsis, where arguments directly undergo ellipsis (cf. Oku 1998; Saito 2007; Takahashi 2008a, b; Sakamoto 2019, 2020), rather than English-type VP-ellipsis under Saito's (2006) proposal that a focus particle nominalizes a VP which it attaches to and *su-* 'do' is a main verb, selecting a nominal argument.

The organization of the following discussions is as follows. In section 2, I examine the extraction possibility out of the Japanese "VP-ellipsis" domain, demonstrating that the extraction pattern that Japanese "VP-ellipsis" exhibits is different from the one that English VP-ellipsis does, which leads us to conclude that Japanese "VP-ellipsis" does not involve VP-ellipsis of the English-type. In section 3, I argue that the extraction pattern that Japanese "VP-ellipsis" shows is exactly the same as the one that argument ellipsis does (Sakamoto 2019, 2020), maintaining that what appears to be English-type VP-ellipsis in Japanese is an instance of argument ellipsis under Saito's (2006) treatment of focus particles as nominalizers. Section 4 concludes the paper.

2 Extraction Possibility out of a VP-ellipsis Site

2.1 English VP-ellipsis

It has been observed in the literature that extraction is possible out of a site of English VP-ellipsis: the English VP-ellipsis domain can accommodate a position for a trace (cf. Depiante 2000; Johnson 2001; Merchant 2013). For example, consider the following *wh*-extraction case (Δ = an ellipsis site).

- (4) I know which book_i Max [_{VP} thinks Mary read t_i], and *which book* Bill doesn't [_{VP} Δ].

(Fiengo and May 1994: 229)

Here, the *wh*-phrase *which book* has been extracted out of a site of VP-ellipsis and the sentence is grammatical, which indicates that *wh*-movement, i.e. overt \bar{A} -movement, is possible out of the domain in question.

Furthermore, the following examples demonstrate that extraction is uniformly allowed out of a VP-ellipsis site regardless of the type of movement.

- (5) One theory claims that *they*₁ can't [_{VP} be distinguished *t*₁], while another claims that *they* can [_{VP} Δ].
(Levin 1986: 156)
- (6) I rolled up a newspaper, and Lynn did *a magazine* [_{VP} Δ].
(Lasnik 1999: 142)
- (7) The galaxy contains more stars than *Op* the solar system does [_{VP} Δ].
(Kennedy 2002: 555)

In (5), the pronoun *they* has undergone passive movement, i.e. overt A-movement, out of a VP-ellipsis domain and the sentence is grammatical; in (6), the DP *a magazine* has undergone overt focus movement out of a VP which is to be elided (cf. Jayaseelan 1990; Lasnik 1999; Gengel 2007); given that comparative deletion involves null operator (Op) movement, i.e. covert \bar{A} -movement (Chomsky 1977), (7) is the case where Op has been extracted out of a VP-ellipsis site.³ That all the above data are grammatical indicates that VP-ellipsis uniformly allows extraction out of its domain.

2.2 Japanese “VP-ellipsis”

In this subsection, I will investigate the extraction possibility out of what Fujii (2016) and Funakoshi (2019) take to be an instance of English-type VP-ellipsis in Japanese. It will be shown that the extraction pattern that Japanese “VP-ellipsis” exhibits is different from the one that we observed in the last subsection regarding English VP-ellipsis.

2.2.1 Overt \bar{A} -movement: Long-distance Scrambling and Wh-movement

First, let us examine whether long-distance scrambling, i.e. an instance of overt \bar{A} -movement (Tada 1990; Saito 1992), is possible out of a Japanese “VP-ellipsis” site. Consider the following examples.^{4,5}

³ Throughout this paper, by covert movement I mean movement that does not affect word order.

⁴ Two notes are in order here. First, (8b) is grammatical if there is no extraction out of the “VP-ellipsis” site as in (i).

(i) [Antecedent: (8a)]
Hanako-mo [_{VP} Δ] si-ta.
Hanako-also do-PST
(Lit.) ‘Hanako also did [_{VP} Δ].’

Thus, what matters in (8b) is in fact extraction. Second, if we topicalize the extracted DP *bana-na* ‘bananas’ in (8b), the sentence gets better as in (ii).

- (8) a. Ringo₁-o Taroo-wa [_{VP} [_{CP} Mary-ga nusun-da to]
 apple-ACC Taro-TOP Mary-NOM steal-PST C
 ii]-sae si-ta.
 say-even do-PST
 (Lit.) ‘Apples₁, Taro did even-[_{VP} say [_{CP} that Mary stole t₁]].’
- b. **Banana*₂-o Hanako-wa [_{VP} Δ] si-ta.
 banana-ACC Hanako-TOP do-PST
 (Lit.) ‘Bananas₂, Hanako did [_{VP} Δ].’

With (8a) as its antecedent, (8b), where the DP *banana* ‘bananas’ has undergone extraction out of a “VP-ellipsis” site, is ungrammatical, which indicates that long-distance scrambling, i.e. overt \bar{A} -movement, is impossible out of the domain in question.

Now, let us turn to whether *wh*-movement (or long-distance scrambling without radical reconstruction), i.e. another instance of overt \bar{A} -movement, is possible out of a site of Japanese “VP-ellipsis.” Consider the following examples.

-
- (ii) [Antecedent: (8a)]
 ?*Banana*-wa Hanako-ga [_{VP} Δ] si-ta.
 banana-TOP Hanako-NOM do-PST
 (Lit.) ‘Bananas, Hanako did [_{VP} Δ].’

However, it has been shown that DP topicalization can involve base-generation (Saito 1985), so the grammaticality of (ii) does not undermine the claim that overt \bar{A} -movement is disallowed out of a Japanese “VP-ellipsis” site.

⁵ Unlike English VP-ellipsis, there seems to be a restriction on the type of a matrix verb in Japanese “VP-ellipsis.” To be more specific, verbs like *iw-* ‘say’ can be involved in Japanese “VP-ellipsis,” as in (8b), but verbs like *omow-* ‘think’ cannot be, as illustrated in (i).

- (i) a. Taroo-wa [_{VP} [_{CP} Hanako-ga ringo-o nusun-da to] omoi]-sae si-ta.
 Taro-TOP Hanako-NOM apple-ACC steal-PST C think-even do-PST
 (Lit.) ‘Taro did even-[_{VP} think [_{CP} that Hanako stole apples]].’
- b. **Hanako*-mo [_{VP} Δ] si-ta.
 Hanako-also do-PST
 (Lit.) ‘Hanako also did [_{VP} Δ].’

With (ia) as its antecedent, (ib) is ungrammatical. Given that, as shown in (4), the verb *think* is compatible with VP-ellipsis in English, the ungrammaticality of (ib) constitutes another discrepancy between Japanese “VP-ellipsis” and English VP-ellipsis.

- (9) A¹: Nani₁-o Taroo-wa [_{VP} [_{CP} Mary-ga nusun-da ka]
 what-ACC Taro-TOP Mary-NOM steal-PST Q
 tazune]-sae si-ta no?
 ask-even do-PST Q
 (Lit.) ‘What₁ Q Taro did even-[_{VP} ask [_{CP} Q Mary stole t₁]]?’

B: Ringo da yo.
 apples COP SFP
 ‘Apples.’

- A²: *Zyaa, nani-o Hanako-wa [_{VP} Δ] si-ta no?
 then what-ACC Hanako-TOP do-PST Q
 (Lit.) ‘Then, what Q Hanako did [_{VP} Δ]?’

What is important for us here is that (9A¹) has only the matrix *wh*-question interpretation: if the *wh*-phrase *nani* ‘what’ underwent radical reconstruction (Saito 1989), (9A¹) should be able to yield an embedded *wh*-question interpretation (Takahashi 1993). Given this, the fact that (9A²), where the *wh*-phrase *nani* ‘what’ has undergone extraction out of a Japanese “VP-ellipsis” site, is ungrammatical shows that overt \bar{A} -movement is banned out of the domain in question whether or not radical reconstruction applies.

2.2.2 Overt A-movement: Passive Movement

Next, I will investigate whether passive movement, i.e. an instance of overt A-movement (Ishizuka 2010), is allowed out of the site of Japanese “VP-ellipsis.” Consider the following example.

- (10) *Akai nanika-ga [_{VP} dono heya-ni-mo ok-are]-sae
 red something-NOM every room-in-MO put-PASS-even
 si-ta-no-ni-wa odoroka-nakat-ta-ga, aoi
 do-PST-NML-at-TOP be.surprised-NEG-PST-though blue
 nanika-ga [_{VP} Δ] si-ta-no-ni-wa odoroi-ta.
 something-NOM do-PST-NML-at-TOP be.surprised-PST

(Lit.) ‘I was not surprised that something red₁ did even-[_{VP} be put t₁ in every room], but I was surprised that something blue did [_{VP} Δ].’

Here, the DP *aoi nanika* ‘something blue’ has been extracted out of a “VP-ellipsis” site, and the sentence is ungrammatical. This indicates that passive movement, i.e. overt A-movement, is banned out of the domain in question.⁶

2.2.3 Overt Movement: Clause-internal Scrambling

Now, let us turn to whether clause-internal scrambling is possible out of a Japanese “VP-ellipsis” site. Consider the following examples.⁷

- (11) a. Taroo-wa *Mary*₁-o [_{VP} *t*₁ *sikari*]-sae si-ta.
 Taro-TOP *Mary*-ACC scold-even do-PST
 (Lit.) ‘Taro did *Mary*₁ even-[_{VP} scold *t*₁].’
- b. **Hanako*-mo *kanozyo*_i-o [_{VP} Δ] si-ta.
 Hanako-also she-ACC do-PST
 (Lit.) ‘Hanako also did her [_{VP} Δ].’

In (11a), the DP *Mary* has undergone clause-internal scrambling out of a VP. Of particular interest for us here is that with (11a) as its antecedent, (11b), where the DP *kanozyo* ‘she’ has been extracted out of a “VP-ellipsis” site via clause-internal scrambling, is ungrammatical, which indicates that clause-internal scrambling is disallowed out of the site of Japanese “VP-ellipsis.”

However, one might wonder if the ungrammaticality of (11b) is caused by the absence of contrastive focus on the extracted object DP *kanozyo* ‘she’ given that VP-ellipsis is involved there. To be more specific, when an object is extracted out of an English VP-ellipsis site, it must receive con-

⁶ That overt A-movement is banned out of a Japanese “VP-ellipsis” site is further confirmed by the following data on an interaction between Raising-to-Object (RtO) and “VP-ellipsis.”

- (i) a. Taroo-wa *Mary*₁-o [_{VP} *orokanimo* [_{CP} *t*₁ *tensai da to*] *ii*]-sae si-ta.
 Taro-top *Mary*-ACC stupidly genius COP C say-even do-PST
 (Lit.) ‘Taro did *Mary*₁ even-[_{VP} stupidly say [_{CP} that *t*₁ be genius]].’
- b. **Hanako*-wa *Nancy*-o [_{VP} Δ] si-ta.
 Hanako-TOP *Nancy*-ACC do-PST
 (Lit.) ‘Hanako did *Nancy* [_{VP} Δ].’

In (ia), the DP *Mary* has undergone RtO, i.e. an instance of overt A-movement (Tanaka 2002) out of an embedded clause, moving to a position in a matrix clause. Crucial for us here is that with (ia) as its antecedent, (ib), where the DP *Nancy* has been extracted out of an elided “VP” via RtO, is ungrammatical, which indicates that RtO as well as passive movement is disallowed out of a Japanese “VP-ellipsis” site.

⁷ It has been standardly assumed in the literature that clause-internal scrambling is ambiguous between \bar{A} -movement and A-movement (cf. Saito 1992).

trastive focus, as illustrated in (12) and (13) (Levin 1978; Jayaseelan 1990; Lasnik 1999; Gengel 2007).

- (12) John invited him_i more often than Bill did $HIM_j/*him_i$ [_{VP} Δ].
(Gengel 2007: 178)

- (13) ... than Bill did [_{XP} HIM_1 [_{VP} ~~invite t_1~~]].

(12) is what has been called pseudogapping in English, whose derivation has been standardly assumed to involve overt focus movement of an object out of a VP which is to be elided as shown in (13). Crucially, (12) is grammatical only when an extracted item receives contrastive focus. Given this, one might argue that (11b) is ungrammatical since the extracted DP object *kanozjo* ‘she’ does not bear contrastive focus. However, the following data demonstrates that the presence/absence of contrastive focus on an extracted object does not matter.

- (14) a. Taro-wa KOTTI-no seito₁-o [_{VP} t_1 sikari]-sae si-ta.
Taro-TOP this-GEN student-ACC scold-even do-PST
(Lit.) ‘Taro did THIS student₁ even-[_{VP} scold t_1].’
- b. *Hanako-wa ATTI-no seito-o [_{VP} Δ] si-ta.
Hanako-TOP that-GEN student-ACC do-PST
(Lit.) ‘Hanako did THAT student [_{VP} Δ].’

With (14a) as its antecedent, (14b), where the DP *atti-no seito* ‘that student’ is contrastively focused with the DP *kotti-no seito* ‘this student’ in (14a), is ungrammatical, which indicates that clause-internal scrambling is banned out of a Japanese “VP-ellipsis” site regardless of the presence/absence of contrastive focus on an extracted item.

2.2.4 Covert Movement: Null Operator Movement

Finally, let us consider whether null operator movement is possible out of a “VP-ellipsis” site in Japanese. Given that comparative deletion in Japanese involves null operator movement (Kikuchi 1987), consider the following example.

- (15) Taroo-wa [*Op* Hanako-ga [_{VP} Δ] si-ta yori(mo)] ooku-no
 Taro-TOP Hanako-NOM do-PST than many-GEN
 fugu-o sabaki-sae si-ta.
 blowfish-ACC dress-even do-PST
 (Lit.) ‘Taro did even-[_{VP} dress more blowfish] [than *Op* Hanako did
 [_{VP} Δ]]’

Here, the null operator has undergone extraction out of a “VP-ellipsis” site, but unlike the former cases, the sentence is grammatical, which indicates that null operator movement, an instance of covert \bar{A} -movement, is possible out of the domain in question.⁸

2.2.5 *Interim Summary*

The following table summarizes the observations that have been made in the above discussions.

(16)

	Overt Movement	Covert Movement
English VP-ellipsis	✓	✓
Japanese “VP-ellipsis”	✗	✓

As shown in section 2.1, English VP-ellipsis uniformly allows extraction out of its domain: both overt and covert movement is possible out of the domain in question. On the other hand, as illustrated in section 2.2, the extraction possibilities are more restricted in Japanese “VP-ellipsis”: only covert movement, i.e. movement that does not affect word order, is allowed out of the site of Japanese “VP-ellipsis.” This leads us to two theoretical conclusions. First, what has been identified as Japanese “VP-ellipsis” does not involve proform (pro) and involves ellipsis since proform is by assumption atomic so that extraction should be uniformly banned out of its domain (Hankamer and Sag 1976; Depiante 2000; Johnson 2001; Merchant 2013, among others), contrary to facts. Second, Japanese “VP-ellipsis” should involve a different operation from English VP-ellipsis since they exhibit a discrepancy regarding the possibility of extraction. In the next section, I will discuss how the overt/covert extraction asymmetry that the Japanese “VP-ellipsis” construction exhibits can be accommodated theoretically.

⁸ As mentioned in footnote 2, by covert movement, I mean movement that does not affect word order.

3 Japanese “VP-ellipsis” as Argument Ellipsis

As has been discussed in section 2, Japanese “VP-ellipsis” exhibits the overt vs. covert extraction asymmetry out of its domain. What is particularly interesting for us here is that the extraction pattern that Japanese “VP-ellipsis” exhibits is exactly the same as the extraction pattern that argument ellipsis (cf. Oku 1998; Saito 2007; Takahashi 2008a, b), which directly elides arguments, does (Sakamoto 2019, 2020): only covert movement, i.e. movement that does not affect word order, is possible out of an argument ellipsis site. For example, consider the following data.

- (17) a. Taroo-wa [_{DP} onigiri]-o tabe-ta.
 Taroo-TOP rice.ball-ACC eat-PST
 ‘Taro ate [_{DP} a rice ball].’
 b. Hanako-mo ~~f_{DP} onigiri~~-o tabe-ta.
 Hanako-also rice.ball-ACC eat-PST
 (Lit.) ‘Hanako also ate ~~f_{DP} rice ball~~.’
- (18) a. Taroo-wa [_{CP} Ken-ga hon-o yon-da to] omot-ta.
 Taroo-TOP Ken-NOM book-ACC read-PST C think-PST
 ‘Taro thought [_{CP} that Ken read a book].’
 b. Hanako-mo ~~f_{CP} Ken-ga hon-o yon-da to~~ omot-ta.
 Hanako-also Ken-NOM book-ACC read-PST C think-PST
 (Lit.) ‘Hanako also thought ~~f_{CP} that Ken read a book~~.’
- (19) Overt Movement: Long-distance Scrambling (cf. Shinohara 2006; Saito 2007)
- a. Hon₁-o Taroo-wa [_{CP} Hanako-ga t₁ yon-da to]
 book-ACC Taroo-TOP Hanako-NOM read-PST C
 omot-ta.
 think-PST
 (Lit.) ‘Books₁, Taro thought [_{CP} that Hanako read t₁].’
- b. *Zassi-o Ziroo-wa [_{CP} Δ] omot-ta.
 magazine-ACC Ziro-TOP think-PST
 (Lit.) ‘Magazines, Ziro thought [_{CP} Δ].’

(20) Covert Movement: Null Operator Movement (Sakamoto 2019, 2020)

- a. [[Op₁ [_{CP} Taro_o-ga t₁ yon-da to] Kanako-ni
 Taro-NOM read-PST C Kanako-by
 iw-are-te-iru] yori(mo)] Hanako_r-wa takusan
 say-PASS-PROG-PRES than Hanako-TOP many
 hon-o yon-de-ita.
 book-ACC have-PROG-PST
 (Lit.) ‘Hanako_i read more books [than [Op₁ it is said by Kanako
 [_{CP} that Taro read t₁]].’
- b. Sarani, [[Op₂ [_{CP} Δ] Ayaka-ni iw-are-te-iru
 furthermore Ayaka-by say-PASS-PROG-PRES
 yori(mo)] kanozyo_r-wa takusan hon-o yon-de-ita.
 than she-TOP many book-ACC have-PROG-PST
 (Lit.) ‘Furthermore, she_i read more books [than [Op₂ it is said
 by Ayaka [_{CP} Δ]].’

(17) and (18) show that arguments, i.e. DPs and CPs, can undergo argument ellipsis.⁹ (19) is the case where overt movement, i.e. long-distance scrambling, is applied out of an argument ellipsis site, and the ungrammaticality of (19b) indicates that such movement is banned out of the domain in question. (20) is the comparative deletion construction, where null operator movement is claimed to be involved (Kikuchi 1987). Importantly, with (20a) as its antecedent, (20b), where the null operator has been extracted out of an argument ellipsis site, is grammatical, which indicates that null operator movement, i.e. covert \bar{A} -movement, is possible out of the site of argument ellipsis.¹⁰

Given that both Japanese “VP-ellipsis” and argument ellipsis exhibit the overt/covert extraction asymmetry out of their domain, I argue that what Fujii (2016) and Funakoshi (2019) take to be an instance of Japanese “VP-ellipsis” does not involve English-type VP-ellipsis and that it should

⁹ In the literature, *pro* as well as argument ellipsis is claimed to be available in Japanese. Important for us here is that Japanese null arguments cannot be uniformly *pro* because e.g. certain types of extraction are possible out of a Japanese null argument (see (20) and Sakamoto 2019, 2020), which cannot be accounted for under the *pro* analysis because *pro* is by assumption an instance of Hankamer and Sag’s (1976) deep anaphora, being atomic and unable to accommodate an appropriate position for a trace.

¹⁰ See Sakamoto (2019, 2020) for the observations that other types of overt movement, e.g. Rto, are uniformly banned out of an argument ellipsis site and other types of covert movement, e.g. QR, are uniformly allowed out of the domain in question.

be attributed to argument ellipsis. To put it theoretically, I assume the following with Saito (2006).

- (21) a. A focus particle nominalizes a VP which it attaches to.
 b. *Su* ‘do’ is a main verb which takes a nominal argument.

To illustrate, let us consider how the simple case of Japanese “VP-ellipsis” (3), repeated here as (22), can be analyzed under the argument ellipsis analysis in concert with the assumptions in (21).

- (22) a. Taro-wa [_{VP} fugu-o sabaki]-sae si-ta.
 Taro-TOP blowfish-ACC dress-even do-PST
 (Lit.) ‘Taro did even-[_{VP} dress a blowfish].’
 b. Hanako-mo [_{VP} fugu-o ~~sabaki~~]-sae si-ta.
 Hanako-also blowfish-ACC dress-even do-PST
 (Lit.) ‘Hanako also did even-[_{VP} dress a blowfish].’
- (23) a. Taro did even-[_{VP+N}] dress a blowfish]. [= (22a)]
 b. Hanako also did even-[_{VP+N}] dress a blowfish]. [= (22b)]

In (22b), the verb *si-ta* ‘did’ is a main verb which takes a nominalized argument to be elided, as illustrated in (23b). Thus, the assumptions in (21) allow us to analyze what has been identified as “VP-ellipsis” in Japanese as an instance of argument ellipsis.

Regarding the overt/covert extraction asymmetry out of a Japanese “VP-ellipsis” site (now identified as an argument ellipsis site), I adopt the LF-copy analysis of argument ellipsis (Oku 1998; Saito 2007; Sakamoto 2019, 2020), assuming the following.

- (24) a. LF-copying is a recycling operation of already spelled-out elements
 (Fortin 2007 and Chung, Ladusaw, and McCloskey 2006, 2011).
 b. Spell-Out is an operation which deprives syntactic objects of phonological features
 (Nissenbaum 2000).

4 Conclusion

In this paper, I discussed what Fujii (2016) and Funakoshi (2019) refer to as VP-ellipsis in Japanese, having shown that the construction in question exhibits a different behavior from English VP-ellipsis regarding the extraction possibilities, so that I concluded that they cannot be unified. Specifically, I showed that English VP-ellipsis uniformly allows extraction out of its domain, but Japanese “VP-ellipsis” exhibits an overt/covert contrast regarding the possibility of extraction out of its domain. Given that the overt/covert extraction asymmetry is also observed in argument ellipsis (Sakamoto 2019, 2020), I claimed that what appears to be English-type VP-ellipsis in Japanese in fact involves argument ellipsis. If the discussions in this paper are on the right track, we can attribute what appears to be English-type VP-ellipsis in Japanese to argument ellipsis, supporting Hinds’s (1973) and Kuno’s (1978) original claim that Japanese does not have English-type VP-ellipsis. Furthermore, we can provide further evidence that argument ellipsis is operative and is implemented via LF-copying in Japanese grammar.

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The Japanese Reactive Attitudinal *Nani-mo*: Polarity Sensitivity and the Function of Objection

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1 Introduction

In Japanese, there are two types of *nani-mo*, as shown in (1) and (2) below:¹

- (1) Taro-wa *nani-mo* tabe-nakat-ta. (Quantifier *nani-mo*)
Taro-TOP what-MO eat-NEG-PAST
'Taro didn't eat anything.'
- (2) *Nani-mo* zenbu suru hituyoo-wa nai. (Reactive *nani-mo*)
What-MO all do necessity-TOP exist.NEG
At-issue: You needn't do everything.
Implication: I am thinking that "to do everything" is too much.

(1) means that Taro did not eat anything, and *nani-mo* 'what-MO' is interpreted as the English *any*. In contrast, the reactive attitudinal *nani-mo* behaves as an expressive. Intuitively, *nani-mo* in (2) conveys that the speaker feels that "to do everything" is too much (extreme) and is not necessary. (2) is natural in a situation in which someone asks whether he/she should do everything, and the speaker replies to the question negatively. In this paper, I will call the former type of *nani-mo* a quantifier *nani-mo* and the latter type a reactive

¹ The following abbreviations are used for glosses: ACC: accusative, CONT: contrastive, MO: Japanese particle *mo*, NEG: negation, NOM: nominative, NON.PST: non-past tense, POLITE: polite, PRED: predicative, PROG: progressive, Prt: particle, PST: past, Q: question, TOP: topic.

attitudinal *nani-mo*.² Note that the quantifier *nani-mo* (=1) and the reactive attitudinal *nani-mo* (= 2) are pronounced differently. In the reactive attitudinal *nani-mo*, *nani* receives a pitch accent, whereas in the quantifier *nani-mo*, the accent pattern is flat (see Inoue 1986).

In terms of polarity sensitivity, we can say that both the quantifier *nani-mo* and the reactive attitudinal *nani-mo* are negative polarity items (NPIs); if there is no negation, the sentences become ill-formed:

- (3) *Taro-wa nani-mo tabe-ta. (Quantifier *nani-mo*)
 Taro-TOP what-MO eat-PAST
 ‘Taro ate anything.’
- (4) *Nani-mo zenbu suru hituyoo-ga aru. (Reactive *nani-mo*)
 What-MO all do necessity-NOM exist
 At-issue: You need to do everything.
 Implication: I am thinking that “to do everything” is too much.

Although both types of *nani-mo* are NPIs, their distribution patterns are different. Unlike the quantifier *nani-mo*, negation alone is not sufficient in the case of the reactive attitudinal *nani-mo*, and a modal (or a modal-like element) is necessary:

- (5) *Nani-mo zenbu si-nai.
 What-MO everything do-NEG
 ‘lit. *Nani-mo* you don’t do everything.’

Kawase (2011) observes that the reactive attitudinal *nani-mo* co-occurs with negative expressions such as *nakutemo yoi* ‘needn’t’ or *nodewa nai* ‘it is not necessarily the case that’, which have to do with the speaker’s negative construal of an event.

What exactly is the meaning and use of the reactive attitudinal *nani-mo*? How can we explain the polarity sensitivity of the reactive attitudinal *nani-mo* and its concord(-like) relationship with a modal? The purpose of this study is to investigate the meaning and distribution of the reactive attitudinal *nani-mo* and to attempt to answer these questions.

Regarding the meaning of the reactive attitudinal *nani-mo*, I will argue that it differs largely from that of the quantifier *nani-mo*. While the meaning of the quantifier *nani-mo* is at-issue (i.e., part of “what is said” (Grice 1975; Potts 2005), the meaning of the reactive attitudinal *nani-mo* is conventional implicature (CI) (i.e., not part of “what is said”). More specifically, I claim that the reactive attitudinal *nani-mo* conventionally implies that the speaker

² Inoue (1986) calls *nani-mo* in (2) a modal adverb (*modaritii fukushi*), while Kawase (2011) calls it a mood adverb (*johou fukushi*).

considers that the given proposition p , which is salient in discourse, is extreme and unnecessary, and he/she is objecting to p in a weak manner (i.e., not totally objecting to p).

I will then argue that the polarity sensitivity of the reactive attitudinal *nani-mo* and its co-occurrence with a modal can be explained based on the interaction between the lexical meaning of the reactive attitudinal *nani-mo* and the general pragmatic constraint of attitude matching: The speaker's attitude in the CI dimension and the at-issue dimension must match. This study demonstrates that there is another kind of NPI, a reactive attitudinal NPI that is not licensed by logical operators but rather requires a negative element due to its pragmatic function.

2 The meaning of the quantifier *nani-mo*

Before considering the meaning and use of the reactive attitudinal *nani-mo*, let us first briefly consider the meaning of the quantifier *nani-mo*:

- (6) Taro-wa nani-mo tabe{-na-katta /*-ta}. (Quantifier use)
 Taro-TOP what-MO eat-NEG-PAST /PAST
 'Taro did not eat anything./ *Taro eat anything.'

Regarding the syntax and semantics of the quantifier NPI, there have been two major approaches: a narrow-scope existential approach and a wide-scope universal approach. In the former approach, *nani-mo* can be viewed as an existential and it is scoped over by negation as demonstrated below:

- (7) $\neg\exists xP(x)$ (Narrow-scope existential)

This approach is consistent with the widely accepted assumption that NPIs are licensed by negation, downward-entailing operators (Ladusaw 1980) or non-veridical operators, such as question, modal, or conditional (Giannakidou 1998).

In contrast, in the wide-scope universal approach, *wh-mo* (including *nani-mo* 'what-MO' in (1)) is considered to have a universal quantifier that takes scope over negation (Shimoyama 2011; Kataoka 2006), similar to the case of *n*-words in Hungarian (Szabolcsi 1981) and Greek (Giannakidou 2000):

- (8) $\forall x\neg P(x)$ (Wide-scope universal)

(7) and (8) are logically equivalent and it is not easy to determine which approach is better/more plausible. Since the purpose of this study is to investigate the meaning and use of the reactive attitudinal *nani-mo*, I will not go into detail on the two competing views on the quantifier *wh-mo* the important point here is simply that in either approach, the meaning of the quantifier *nani-mo* is interpreted as "at-issue". It is a part of the propositional content

(“what is said” in the sense of Grice (1975)). This is supported by the fact that a denial can target the meaning of the quantifier *nani-mo*:

- (9) A: Taro-wa nani-mo tabe-na-katta.
 Taro-TOP what-MO eat-NEG-PAST
 ‘Taro did not eat anything.’
- B: Iya, sore-wa uso-da. Susi-wa tabe-ta-yo.
 No that-TOP false-PRED Sushi-CONT.TOP eat-PAST-Prt
 ‘No, that’s false. He ate Sushi.’

The meaning of the quantifier *nani-mo* is at-issue.

3 The basic semantic/pragmatic properties of the reactive attitudinal *nani-mo*

Let us now consider the meaning of the reactive attitudinal *nani-mo*.³ This section discusses its basic semantic/pragmatic properties.

3.1 The semantic properties of the reactive attitudinal *nani-mo*

In this study, I argue that the reactive attitudinal *nani-mo* is an expressive that triggers a conventional implicature (CI), and its meaning is logically independent of “what is said” (at-issue meaning) (e.g., Grice 1975; Potts 2005). Typical examples of expressives such as *damn* and *ouch* are shown below:

- (10) a. Ouch, I’ve hit my thumb! (Kaplan 1999)
 b. I have to mow the damn lawn. (Potts 2005)

Similar to *ouch* and *damn*, the reactive attitudinal *nani-mo* conveys a speaker’s negative emotion, but it is more discourse-oriented and has a pragmatic function of objection:

- (11) The reactive attitudinal *nani-mo* conventionally implies that the speaker considers that the given proposition *p*, which is salient in discourse, is extreme and unnecessary, and he/she is objecting to *p* in a weak manner (i.e., not totally objecting to *p*).⁴

³ Historically, the attitudinal *nani-mo* developed from the quantifier *nani-mo*. Kawase (2011) postulates that among non-existential sentences with the quantifier *nani-mo*, sentences that express the non-existence of events may reflect the speaker’s judgment of the event as being “unnecessary” and, according to Kawase (2011), the reactive attitudinal *nani-mo* (the “mood” *nani-mo* in the terminology of Kawase (2011)) developed through these usages in the late Edo period (18th-19th centuries). From a point of semantic change, we can say that there was a semantic shift from an at-issue meaning (quantifier *nani-mo*) to an expressive (the reactive attitudinal *nani-mo*) in the sense of Traugott (1989).

⁴ Inoue (1986) also posits that the reactive attitudinal *nani-mo* (what he calls a modal *nani-mo*) has a pragmatic function of objection to an established proposition.

Although the above properties may seem to be highly specific/ad hoc, they naturally fit in Israel's typology of NPIs. The quantifier *nani-mo* is an emphatic NPI, whereas the reactive attitudinal *nani-mo* is an attenuating NPI in the sense of Israel (1996, 2004). The reactive attitudinal *nani-mo* belongs to the understating (attenuating) NPIs (similar to *all that* or *sonnani* 'that much'). Namely, it has a high scalar meaning (i.e., extreme) and an attenuating function (i.e., *p* is unnecessary, and the speaker is objecting to *p* in a weak manner).

Let us consider the important parts of the above definition in detail. First, the at-issue proposition *p* (i.e., the proposition without a modal and negation) must be salient in discourse.⁵ This is supported by the fact that the sentence with the reactive attitudinal *nani-mo* can be natural as a reply to a yes/no question, but it is not natural as a reply to a *wh*-question:

- (12) (Natural: As an answer to the question
 "We should finish it by tomorrow, right?")
 Odd: As an answer to the question "By when should we finish it?")
 Nani-mo asita-madeni kansei-sase-ru hituyoo-wa
 What-MO tomorrow-by finish-make-Non.PST necessity-TOP
 nai-desu.
 exist.NEG-PRED.POLITE

'You needn't finish it by tomorrow.'

Another important semantic property of the reactive attitudinal *nani-mo* is that *p* must be extreme for the speaker. This is corroborated by the fact that the at-issue proposition cannot be a "normal" proposition:

- (13) Nani-mo {ima / ?? ato-de} yaru hituyoo-wa nai.
 What-MO now / later-LOC do necessity-TOP exist.NEG
 'You needn't do it {now/??}later.'

Usually, "to do it now" is extreme, while "to do it later" is normal. Note that it is often the case that part of the given proposition (here, *ima* 'now') receives stress, which contributes to highlighting that a given proposition (rather than its alternative propositions) is extreme (focus creates a set of alternative propositions that are less extreme than the given proposition).

3.2 Evidence that the reactive attitudinal *nani-mo* is a CI

In the previous section, I assumed that the reactive attitudinal *nani-mo* is a CI expression. In the Gricean theory of implicature, CIs are considered part

⁵ This component is a precondition for the use of the reactive attitudinal *nani-mo*. Thus, this part can be assumed to be a presupposition in a broad sense.

of the meanings of words, but they are (logically and compositionally) independent of “what is said” (e.g., Grice 1975; Potts 2005, 2007; Horn 2007; McCready 2010; Sawada 2010, 2018; Gutzmann 2012). Furthermore, CIs are speaker-oriented by default (Potts 2005, 2007).

There are several pieces of evidence for the idea that the reactive attitudinal *nani-mo* is a CI-triggering expression. First, the meaning of the reactive attitudinal *nani-mo* cannot be challenged by saying “No, that’s false”:

- (14) A: Nani-mo zenbu suru hituyoo-wa
 What-MO all do necessity-TOP
 nai-desu-yo.
 exist.NEG-PRED.POLITE-Prt
 At-issue: We needn’t do everything.
 CI: “Doing everything” is extreme and unnecessary and I am reacting negatively in a weak manner.
- B: Iya sore-wa tigau-yo.
 No that-TOP false-Prt
 ‘No, that’s false.’

Here, B can only challenge the at-issue part of the A’s utterance (i.e., “we needn’t do everything.”).

Second, the reactive attitudinal *nani-mo* cannot be scoped out by logical operators such as tense and another modal:

- (15) Nani-mo ima suru hituyoo-wa nai-desuyoo.
 What-MO now do necessity-TOP exist.NEG-will
 At-issue: It will not be necessary to do it now.
 CI: “Doing it right now” is extreme and unnecessary and I am reacting negatively in a weak manner.

4 Formal analysis of the reactive attitudinal *nani-mo*

Having clarified the basic semantic (CI) properties of the reactive attitudinal *nani-mo*, let us consider the compositionality of the reactive attitudinal *nani-mo* based on (16):

- (16) Nani-mo zenbu suru hituyoo-wa nai.
 What-MO all do necessity-TOP exist.NEG
 At-issue: You needn’t do everything.
 CI: I am thinking that “to do everything” is too much.

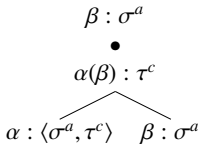
Structurally speaking, unlike the quantifier *nani-mo*, the reactive attitudinal *nani-mo* is not placed in the argument position of a verb (see also Nakao

and Obata 2009; Watanabe 2015). I define the meaning of the reactive attitudinal *nani-mo*, as follows (a superscript *a* stands for a type of at-issue content and superscript *c* stands for a type of CI and *t* is the type of proposition. The underlined part is a precondition for the use of *nani-mo*):

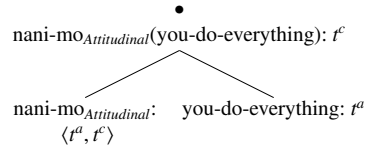
$$(17) \quad [[\text{nani-mo}_{\text{Attitudinal}}]]: \langle t^a, t^c \rangle = \lambda p : \underline{p \text{ is salient in discourse.}} \text{extreme}(p) \wedge \neg \Box p \text{ for } sp \wedge \text{object-to}(sp, p) \wedge \mu_{\text{objection}} < \max_{\text{objection}}$$

The reactive attitudinal *nani-mo* is a function that takes a proposition (that is salient in discourse) and conventionally implies that *p* is extreme (extraordinary) and the speaker *sp* assumes that it is unnecessary and he/she is objecting to *p* in a weak manner (i.e., not totally objecting to *p*). Compositionally, the attitudinal *nani-mo* is combined with a given proposition via Potts’ (2005) CI application:⁶

(18) CI application

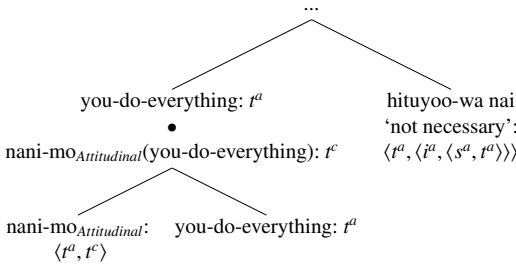


(19) you-do-everything: t^a



The at-issue proposition is then combined with a “negative modal expression” via a standard function application:

(20)

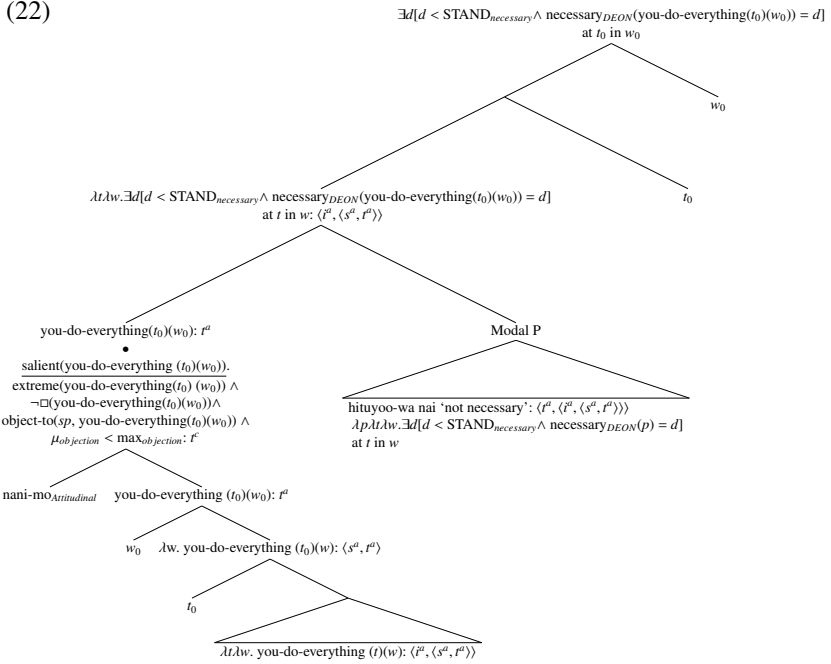


Regarding the negative modal expression, I assume that it forms a constituent as a gradable modal (cf. Lassiter 2017). Whether a proposition is unnecessary or not is determined based on a contextual standard of necessity.

$$(21) \quad [[\text{hituyoo-(wa) nai}]] : \langle t^a, \langle i^a, \langle s^a, t^a \rangle \rangle \rangle \\ = \lambda p \lambda t \lambda w. \exists d [d < \text{STAND}_{\text{necessary}} \wedge \text{necessary}(p) = d] \text{ at } t \text{ in } w$$

⁶ This rule is a resource-insensitive application. An α , which is of $\langle \sigma^a, \tau^c \rangle$ takes a β of type σ^a and returns τ^c . At the same time, a β is passed on to the mother node. Namely, β is used (consumed) twice.

Hituyoo-(wa) nai ‘unnecessary’ takes a proposition p , a time t , and a world w and denotes that the degree of necessity of p is less than a contextual standard. The following figure shows the logical structure of the entire sentence:



Note that the CI meaning is interpreted at the root node via parsetree interpretation (Potts 2005).

5 Explaining the distribution patterns

Let us now investigate the distribution patterns of the reactive attitudinal *nani-mo*. I argue that these distribution patterns can be captured based on its lexical meaning and the pragmatic constraint of attitude matching:

- (23) **Lexical meaning of the reactive attitudinal *nani-mo***
 $[[\text{nani-mo}_{\text{Attitudinal}}]]: \langle \langle t^a, \langle s^a, t^a \rangle \rangle, t^c \rangle$
 $= \lambda p_{\langle i^a, \langle s^a, t^a \rangle \rangle} : \underline{p \text{ is salient in discourse. extreme}(p) \wedge \neg \Box p \text{ for } sp} \wedge$
 $\text{object-to}(sp, p) \wedge \mu_{\text{objection}} < \max_{\text{objection}}$

- (24) **Pragmatic constraint of attitude matching:**
 The speaker's attitude in the CI dimension and the at-issue dimension must match.

In this view, the reactive attitudinal *nani-mo* does not match a simple firm

negation because there will be a mismatch between the CI and at-issue dimensions:

- (25) * at-issue: p

 CI: $\text{extreme}(p) \wedge \neg \square p$ for $sp \wedge \text{object-to}(sp, p) \wedge \mu_{\text{objection}} < \max_{\text{objection}}$

In the following, we will consider the environments in which the reactive attitudinal *nani-mo* can naturally arise.

5.1 Co-occurrence with deontic modals

First, negative deontic modals such as *hituyoo-(wa) nai* ‘not necessary’, *naku-temo yoi* ‘needn’t’, and *koto-wa nai* ‘needn’t’ naturally arise in the reactive attitudinal *nani-mo*:

- (26) (With a deontic modal, $\neg \square_{\text{deontic}}$)
 Nani-mo isoide sore-o {suru hituyoo-wa nai /
 What-MO in a hurry it-ACC do necessity-TOP exist.NEG /
 si-naku-temo yoi / suru-koto-wa nai}.
 do-NEG-even if good / do-thing-TOP exist.NEG

 At-issue: You needn’t do it in a hurry.
 CI: “You do it in a hurry” is too much, and it is not necessary.

Usually, the simple negation conveys a firm attitude of $\neg p$, but this does not match the speaker’s attitude in the CI component (cf. external negation):

- (27) at-issue: { ?? $\neg p$ / $\neg \square p$ }

 CI: $\text{extreme}(p) \wedge \neg \square p$ for $sp \wedge \text{object-to}(sp, p) \wedge \mu_{\text{objection}} < \max_{\text{objection}}$

This analysis predicts that prohibition modals ($\square \neg$) cannot naturally co-occur with the attitudinal *nani-mo*. This prediction is borne out, as shown in example (28) and Figure (29) below:

- (28) (With a deontic (prohibition) modal, $\square_{\text{deontic}} \neg$)
 ?? Nani-mo isoide sore-o {ya-tte-wa ike-nai /
 What-MO in a hurry it-ACC do-*te*-TOP good-NEG /
 yaru-beki-de-wa nai}.
 do-should-PRED-TOP NEG

 At-issue: You {mustn’t/shouldn’t} do it in a hurry.
 CI: “You do it in a hurry” is extraordinary, and it is not necessary.

- (29) ?? at-issue: $\square \neg p$

 CI: $\text{extreme}(p) \wedge \neg \square p$ for $sp \wedge \text{object-to}(sp, p) \wedge \mu_{\text{objection}} < \max_{\text{objection}}$

Here, there is a mismatch between *nani-mo*’s CI meaning ($\neg \square$) and the meaning of the prohibition modal ($\square \neg$) in terms of the speaker’s attitude.

5.2 Examples with an epistemic modal-like negative expression

The attitudinal *nani-mo* can also co-occur with external negative expressions:

- (30) (With external negation/epistemic necessity, $\neg\Box_{epistemic}$)
 Watasi-wa nani-mo hantai-si-te.iru {-wake-dewa-nai /
 I-TOP what-MO opposition-do-PROG -it.is.not.the.case.that /
 -node-wa nai}.
 -noda-TOP NEG

At-issue: I am not necessarily opposing. CI: Your idea that I am opposing is too much, and it is not necessarily the case.

These external negative expressions can convey $\neg\Box_{epistemic}$ (at least pragmatically) and can be used for weak objection. Thus, they match the CI component of *nani-mo*.

- (31) $\frac{\text{at-issue: } \neg\Box p}{\text{CI: extreme}(p) \wedge \neg\Box p \text{ for } sp \wedge \text{object-to}(sp, p) \wedge \mu_{objection} < \max_{objection}}$

6 Further investigation of the use of the reactive attitudinal *nani-mo*

This section discusses the occurrence of the reactive attitudinal *nani-mo* in elliptical answers, rhetorical questions, and embedded environments.

6.1 Elliptical *nani-mo*

The quantifier *nani-mo* can be used as an elliptical answer (Watanabe 2004).

- (32) A: Nani-o mi-ta-no? B: Nani-mo. (Quantifier *nani-mo*)
 What-MO see-PAST-Q What-MO.
 ‘What did you see?’ ‘Nothing.’
 (Watanabe 2004: 567)

In contrast, the reactive attitudinal *nani-mo* cannot be used as an elliptical answer by itself, as shown in (33B). However, if we add additional elements, such as *soko-made* ‘that much’, then it can be used in the context of an elliptical answer, as shown in (33B’):

- (33) A: Syain zenin-ni kore-o yar-ase-masu.
 Employee all-to this-ACC do-make-POLITE
 ‘I will make all the employees to do this.’
 B: # Nani-mo. B’: Nani-mo soko-made...
 What-MO What-MO that-extent
 ‘There is no need to do that much.’

The reactive attitudinal *nani-mo* cannot be used as an elliptical answer by itself because it is not at-issue and cannot answer the question under discussion (QUD). By adding the additional element *soko-made* ‘that much’, we can assume that there is an invisible proposition with a negative modal (“there is no need to do that much”), which serves as an answer to a QUD.

6.2 *Nani-mo* in a rhetorical question

Interestingly, the reactive attitudinal *nani-mo* can be used in a rhetorical question where no explicit negative element appears:

- (34) Nani-mo soko-made iu hituyoo-wa ari-masu-ka?
 What-MO that-degree say necessity-TOP be-PRED.POLITE-Q
 At-issue: Do you need to say that much?
 CI: “Your saying of that much” is extreme and unnecessary, and I am reacting negatively in a weak manner.

The proposed pragmatic-based approach to the distribution of the reactive attitudinal *nani-mo* can naturally explain this fact. The rhetorical question implicates a negative answer, that is, it is not necessary to do that much. Thus, its negative pragmatic implication and the function of the reactive attitudinal *nani-mo* match well.

6.3 *Nani-mo* in an embedded clause

Another important fact is that the reactive attitudinal *nani-mo* can appear inside a relative clause (Satoshi Tomioka, personal communication):

- (35) (Sore-wa) [nani-mo [wazawaza ticketto-o ka]-tte.made
 That-TOP what-MO with the purpose ticket-ACC buy-so.far.as
 mi-tai eiga]-de-wa nai.
 watch-want movie-PRED-TOP NEG
 ‘It is not a movie that I want to watch going so far as buying a ticket for it.’

The salient proposition will be “I (or we) buy a ticket.” Crucially, since the adverb *wazawaza* ‘all the way/take the trouble to’ is a speaker-oriented adverb/CI-expression, it is not part of a salient proposition. An interesting point of this sentence is that although *nani-mo* is clearly embedded, it still requires a negative element in the main clause. If there is no such negative element in the main clause, the sentence becomes unnatural:

- (36) (Sore-wa) (*nani-mo) [wazawaza ticketto-o ka]-tte.made
 That-TOP what-MO with the purpose ticket-ACC buy-so.far.as
 mi-tai eiga-da.
 watch-want movie-PRED

‘It is a movie that I want to watch so far as buying a ticket for it.’

The oddity of (36) can be explained based on the pragmatic constraint of attitude matching. At the CI level, the speaker conveys that the proposition “I buy a ticket” is extreme and unnecessary for the speaker and (s)he is objecting to it in a weak manner. At the same time, at the at-issue level, the speaker asserts that it is a movie that (s)he wants to watch. Thus, there is inconsistency between the speaker’s attitude in the embedded (local) level and the main clause level (global level). There is no flavor of objection in the main clause. (Note that the sentence without *nani-mo* is perfectly natural.) This example suggests that it is difficult to explain the distribution of the reactive attitudinal *nani-mo* only in terms of syntactic structures. We need to consider the level of speech act.

7 Conclusion

In this study, I considered the meaning and use of the Japanese reactive attitudinal *nani-mo* and considered its polarity sensitivity and co-occurrence with a modal expression. I argued that the reactive attitudinal *nani-mo* is an expressive and it conventionally implies that the speaker considers that the given proposition *p*, which is salient in discourse, is extreme and unnecessary, and he/she is objecting to *p* in a weak manner (i.e., not totally objecting to *p*). I then argued that the polarity sensitivity and occurrence with a modal can be explained based on the interaction between the CI meaning of the reactive attitudinal *nani-mo* and the general pragmatic constraint of attitude matching.

It is generally assumed that NPIs are licensed by negation or downward-entailing operators (e.g., Ladusaw 1980)/ non-veridical operators (e.g., Gianakidou 1998) in a logical/syntactic structure. However, the meaning of the reactive attitudinal *nani-mo* is independent of “what is said”, and it can be licensed (scoped over) by negation. This study suggests that there is a new type of NPI, a reactive attitudinal NPI, which requires negation to satisfy its pragmatic function of objection. In a future study, I would like to consider to what extent the reactive attitudinal NPI is pervasive in natural language. In Japanese, there is also an expression *betuni* ‘particularly’, which seems to have a pragmatic function similar to the reactive attitudinal *nani-mo*:

(37) (Q: Should I do it now?)

{Betuni / nani-mo} ima sore-o suru hituyoo-wa nai.
 Particularly / what-MO now it-ACC do necessity-TOP exist.NEG

With *betuni*: You don't particularly need to do it now.

Since the positive counterpart of (37) is ill-formed, it is safe to consider that *betuni* in the above example is an NPI. However, the reactive *nani-mo* and reactive *betuni* are not always interchangeable. In the following example, in the given context, only the sentence with *betuni* becomes natural:

(38) (Context: The speaker suddenly visited an office. No one in the office knows the speaker, the officers have their suspicions.)

{Betuni / *nani-mo} ayasii mono-de-wa
 Particularly / what-MO strange person-PRED-TOP
 arimasen.
 be.NEG.POLITE

'I am not particularly a strange person.'

In (38), the speaker is not directly objecting to someone's utterance. Here, the speaker is objecting to the assumption that "the speaker is a strange person", which is inferable from the utterance situation (i.e., his sudden visit). This suggests that the reactive function of *betuni* is broader than that of *nani-mo*: *Betuni* can not only be used to react to someone's idea/utterance but also to react to an assumption that arises from the utterance situation. More empirical and theoretical investigations need to be conducted to determine the variation in reactive attitudinal NPIs.

Acknowledgments

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Cooperation of Body and Language: Object-Transfer Requests in Japanese Interactions

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1 Introduction

When people communicate with each other in real-life interactions, they not only use language but also their bodies. They point at, reach for some object, or make gestures with their hands (Kita 2003). The direction in which they position their body can also reveal their orientation and engagement in the ongoing activity (Schegloff 1998). In this sense, the body is not merely a device producing sounds but rather an important resource for communication.

Scholars in cognitive science and psychology (Kendon 2004; McNeill 2005), followed by some cognitive linguists (Cienki and Müller 2008; Sweetser 2007), studied bodily behaviors, focusing on the relationship between gestures and thoughts. They classified gestures into different types and identified patterns in the correspondence between notions and gestures. Many studies in this line of research have been conducted in experimental settings to identify general patterns or tendencies in a given language.

In their daily life, people, deliberately or unconsciously, use numerous bodily movements to convey messages. Since the development of affordable video-recording equipment and video analysis software, communication researchers have been studying subtle bodily behaviors in various types of com-

munication and interactions (Streeck et al. 2011). Recently, interactional linguists have begun examining the relationship between bodily behaviors and verbal behaviors. Their research is different from other kinds of linguistic research because they see language as a resource for social action; thus, bodily behavior is analyzed in relation to *action*, rather than *thought*, in social interaction. For example, Kärkkäinen and Thompson (2018) examined how language and bodily movements may form meaningful units in responding turns. Keevallik (2018) attempted to incorporate bodily behavior into the discussion of grammar. For the study of language in real-life, real-time interaction, looking at bodily behaviors in conjunction with language has become an indispensable part of capturing the entire range of resources deployed by participants during interaction.

Among various kinds of actions, the act of asking for an object provides a good scenario for examining the collaboration between the body and language. Just as asking for an object generally requires bodily behaviors for giving the requested object in the responding turn (Rauniomaa and Keisanen 2012), the request turn also involves bodily movements, such as pointing a finger or extending an arm. In fact, nine out of thirteen papers collected in the volume *Requesting in Interaction* (Drew and Couper-Kuhlen 2014) dealt with bodily behavior in some form.

This study focuses on object transfer requests in Japanese, such as the one shown in Example 1. In this example, the speaker requests his mother to pass a red pen to him.

(Example 1)

mama akapen totte

Mom red.pen take

‘Mom, pass me the red pen.’

In the field of conversation analysis and interactional linguistics, Japanese is known for its late projectability (Tanaka 2000, but also see Hayashi 2005 and Iwasaki 2009 for projection in an earlier position in a turn). That is, unlike English, predicates in Japanese come after objects, and functional elements are attached after predicates. This grammatical restriction leads to the assumption that the timing for turn-taking in Japanese might differ from that in languages with early projection, such as English (cf. Levinson 1983: 364–366). In a similar vein, one might expect that social action is not recognizable until the end of the turn. However, if the body of the participants is taken into consideration, it becomes apparent that the late projectability of Japanese does not affect action formation or action ascription.

This study investigates the co-occurrence of bodily behaviors and linguistic behaviors in requests for object transfer in casual Japanese interactions. Adopting the methodology of interactional linguistics (Couper-Kuhlen and Selting 2017) and multimodal conversation analysis (see Goodwin 2018), this study aims to reveal how body and language cooperate during face-to-face interaction.

2 Data and method

The data for this study were taken from the Corpus of Japanese Everyday Conversation (CEJC), which is currently (as of early 2021) being built in the National Institute for Japanese Language and Linguistics (NINJAL). The CEJC is a collection of videotaped natural conversations in various settings, such as business meetings, chat over tea between friends, and conversations at home. The total amount of data that will be published in the final version of the corpus is 200 hours, but the data amount was limited to approximately 50 hours for this study.

To study the object-transfer requests, three verbs – *toru*, *kasu*, and *mottekuru* – were chosen as the target words. *Toru* means ‘take’. *Kasu* means ‘to lend’. *Mottekuru* means ‘to bring (to the direction of the speaker)’. For this study, these verbs in the infinitive form (the so-called *-te* form), which can work as a request form, were extracted from the corpus. The transcript was searched for the three selected verbs, noting their form and usage. As a result, eleven tokens of *totte*, which is a request form of *toru*, were found. Three of the eleven tokens were followed by *kudasai* to form a polite expression *totte kudasai*, which literally means ‘please take (it to me)’ but can be translated as ‘please pass (it to me)’ as that is the intended meaning.¹ Next, ten tokens of *kashite* and six tokens of *mottekite* were found in requests for transferring an object to the speaker.² These examples were then analyzed in terms of turn formulation and bodily movements.

3 Linguistic structure for request utterance

Before analyzing the co-occurrence of the request forms and bodily behaviors, let us briefly look at how the request turns with these verbs are linguistically formulated. First, in some cases, the request turn starts with a vocative that identifies the addressee. For instance, Example 2 has *yuuchan*, a proper noun

¹ *Kudasai* is the imperative form *kudasaru*, which is the honorific form of *kureru* ‘to give (to the speaker)’, but it can also be used to make a polite request.

² No example of imperative form (i.e. *tore*, *kase*, *mottekoi*) was found in the data. Imperative forms are generally quite rare in natural conversation and their usage depends on style/register/social group.

that refers to the addressee, whereas Example 3 does not have such an element.

(Example 2)

yuuchan oshooyu totte.

PN soysauce take

‘Yuu, take the soy sauce (to me)/pass me the soy sauce.’

(Example 3)

shooyu totte kudasai.

soysauce take please.POL

‘Please take the soy sauce (to me).’

Table 1 shows the number of co-occurrences with a vocative.

	<i>totte</i>	<i>kashite</i>	<i>mottekite</i>
With vocative	3	1	1
Without vocative	8	9	5
Total	11	10	6

Table 1 Co-occurrences with vocatives

Second, the requested object may or may not be named, that is, its naming is optional. In Example 3, the requested object, *shooyu* ‘soy sauce’, is mentioned before the verb, but in Example 4, the requested object is not explicitly mentioned.

(Example 4)

ore mo totte.

1sg. too take

‘Take (a can of beer) for me too.’

Table 2 shows the number of co-occurrences with an explicitly mentioned object.

	<i>totte</i>	<i>kashite</i>	<i>mottekite</i>
With explicit object	9	1	2
Without object	2	9	4
Total	11	10	6

Table 2 Co-occurrences with objects

In this section, the linguistic features of the requests for transferring objects were analyzed. As shown in Tables 1 and 2, the vocative (requestee) and the object are optional: They are explicitly named in some cases but not all.

4 Analysis

In this section, we examine how bodily behaviors accompany verbal behaviors in making an object-transfer request. After briefly overviewing the frequency of co-occurrence of verbal requests and arm/hand gestures in 4.1, qualitative analyses of selected examples are presented in Section 4.2.

4.1 Frequency of co-occurrence of verbal requests and arm/hand gestures

Of the various scenes recorded in the CEJC, most conversations that contained the search keywords *totte*, *kashite*, and *mottekite* took place in the participants' homes. When the speakers make requests, they often make gestures. Table 3 shows the number of co-occurrences of verbal requests and arm/or hand gestures.

	<i>totte</i>	<i>kashite</i>	<i>mottekite</i>
Accompanied by gesture	9	8	2
Not accompanied by gesture	2	2	4
Total	11	10	6

Table 3 Co-occurrences with arm/or hand gestures

As Table 3 shows, arm/hand gestures were observed in most object-transfer requests with *totte* and *kashite* (N=17/21), especially when the requested object was within the reach of the addressee. In contrast, most utterances (N=4/6) of *mottekite* were not accompanied by any hand/arm gestures. This is possibly because of the meaning of the verb. *Mottekite* is generally used when the requested object is far from the location of the participants. Since the object is not within sight, the requester has nowhere to point his/her finger or arm. Also, the transfer is neither expected nor performed immediately. In such a situation, a request to transfer an object tends to be achieved only verbally.

4.2 Timing of verbal requests and bodily behavior

Closer examination of the examples revealed two interesting facts about the timing of the arm/hand gesture. First, the gestures often started before the verbs were uttered (N=12/17); the speakers started extending their arms while producing a vocative (e.g. *mama* 'mom' in Example 1) or immediately before

producing a sound. At the latest, arm/hand gestures started before the verbal completion of the request. This means when a request is made using bodily behavior, hand gestures are never initiated after the utterance is complete.

Example 5 below is a longer version of Example 1. In this example, a boy named Takuto, who is doing his homework assignment, asks his mother Yumi to hand him a red pen. Prior to the excerpted conversation, Takuto was holding his tablet upright to check the answer keys and Yumi told him to use it by laying it down on the table, so that the tablet did not block the camera. In the ELAN picture below, “....” indicates the action preparation phrase.

(Example 5)

- 01 TAK: (da)tte soo janaito yarizurai nda mon.
because so NEG.if do.hard SE FP
“Because otherwise it is hard to use.”
- 02 TAK: mama# akapen* totte.
Mom red.pen take
fig #fig.1 *fig.2
“Mom, pass the red pen to me.”
- 03 %((Yumi passes the red pen to Takuto.))
fig %fig.3

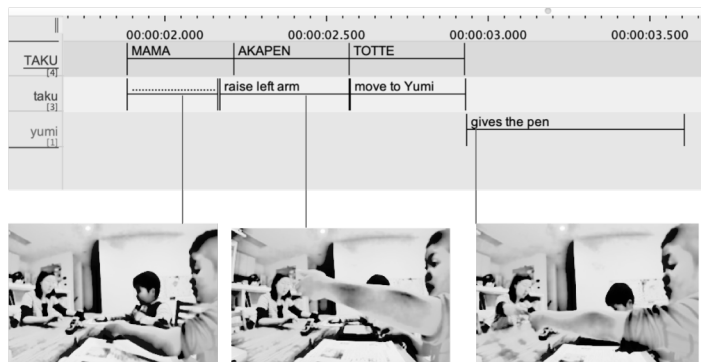


Figure 1

Figure 2

Figure 3

Takuto (the boy on the front right) starts raising his left arm at the end of the vocative *mama* (Figure 1) and extends it while saying *akapen* ‘red pen’ (Figure 2). When he says the verb *totte* ‘take’, the arm is fully extended, and the mother (the woman in the back left) hands him a red pen right after Takuto finishes his turn (Figure 3). In this way, the action of the request is made visible much before the completion of the turn, and the action is recognizable to the requestee in the course of the unfolding turn.

The second finding is about the timing of the gesture reaching its peak. In most cases, the gesture of extending an arm and opening the hand reaches its climax when the verb is uttered, sometimes emphasized by slight movements such as opening or waving of the hand. In addition, it was observed that, in some cases, including Example 5, the speaker kept the arm extended until s/he received the object. In some other cases (N=9/17), however, the arm was withdrawn before the requested item was handed to the speaker.

Example 6 illustrates this point. Misako, who is having dinner while watching track and field championships on TV with her family, asks her mother to pass a soy sauce dispenser.

(Example 6)

- 01 MISA: shoo yonhyaku da yo.
 PN four.hundred COP FP
 “Sho, it’s 400 meter race.”
- 02 (1.2)
- 03 MISA: #shooyu totte*kudasai.%
 soy.sauce take please.POL
 fig #fig.4 *fig.5 %fig.6
 “Please pass the soy sauce to me.”
- 04 (1.1)
- 05 MISA: kotoshi sugoi nda yo.
 this.year great COP FP
 “This year is great.”

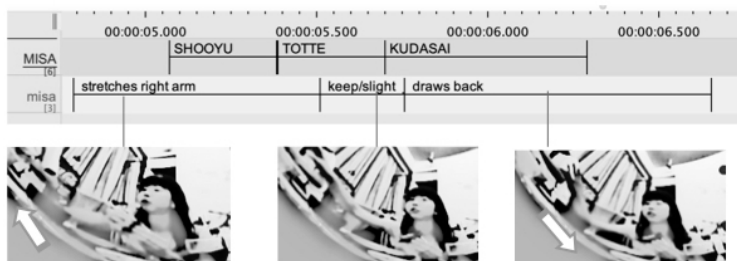


Figure 4

Figure 5

Figure 6

Misako starts stretching her right arm before saying *shoyu* ‘soy sauce’ (Figure 4). When she says *totte* ‘take’, her right arm is fully stretched, and she moves it slightly (Figure 5). She then draws her hand back as she says *kudasai* ‘please’ (Figure 6). From this example, we can see that stretching the

arm is not necessary for receiving the object. Rather, the stretched arm functions to indicate the direction of the requested object and attract the attention of the addressee.

The participant's body, rather than words, can play a more important role in making a request. In Example 7, the object transfer is achieved BEFORE the verbal completion of the request. Prior to the excerpt, Yuzuki had gifted her father, Tsukada, a guidebook which she called *uiiku* 'Week', as it was about the Tokyo Heritage Week. Immediately after Tsukada placed the guidebook on his left side on his seat (outside of the camera frame), Yuzuki asked him to hand the guidebook to her because she wanted to show it to her husband.

(Example 7)

- 01 TSUK: tookyooto kyooiku iinkai ga dashi[te n da.
Tokyo education board NOM issue-TE SE COP
"This is issued by Tokyo Metropolitan Board of Education."
- 02 YUZU: [u::n
- 03 (0.3) ((Tsukada puts the handbook on the left side of his seat.))
- 04 YUZU: chot[to otoosan# s- (.)*
a.little father
fig #fig.7 *fig.8
"Hey, Father"
- 05 TSUK: [koko ni kiitemiyo.
here DAT ask.try.INT
"I'll ask them."
- 06 YUZU: uiiku-% cho- chotto kashite.\$
week a.little lend-TE
fig %fig.9 \$fig.10
"Let me have the WEEK for a while."

As shown in Figure 7, Yuzuki (front left) starts moving her body and hand as she starts her turn with *chotto* 'a little'. While her turn has some features of disfluency when she produces the /s/ sound and then pauses, her stretching of the right arm is done smoothly (Figure 8); when she names the object *uiiku* 'Week', Tsukada (front right) has already started bringing the guidebook back to her (Figure 9). By the time Yuzuki says *kashite* 'lend', the object transfer is already accomplished (Figure 10).

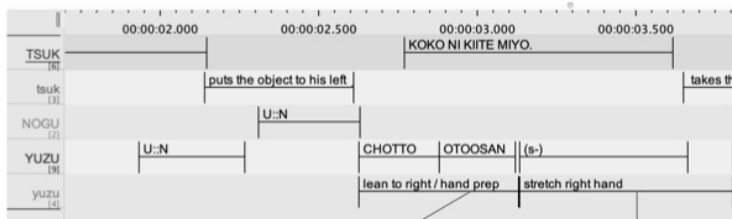


Figure 7



Figure 8

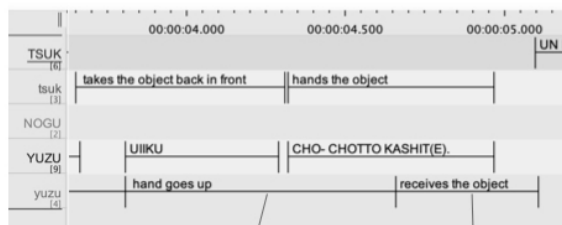


Figure 9



Figure 10

Analyses of the timing of gestures revealed that gestures often start before the verbal realization of requests. Sometimes, the visible body behavior is informative enough for a participant to recognize what the other party wants to convey.

5 Discussion

Based on the above analysis of examples from natural conversations, the cooperation between bodily and linguistic resources in object-transfer requests can be discussed in terms of (i) the division of labor between linguistic and non-linguistic behaviors, and (ii) actions embedded in multiactivity.

5.1 Division of labor between linguistic and non-linguistic behaviors

First, as we saw in the examples, and given that requests can be made without language (cf. Rossi 2014), verbs may not be the crucial element in forming and recognizing the action of request. Verbs merely work as a means for (re)emphasizing that the speaker is making a request and closing a turn, rather than specifying the requested action.

Although Japanese is well known for its delayed projectability in talk-in-interaction (Tanaka 2000), in the case of object-transfer requests, bodily behaviors and linguistic items produced earlier than the predicates already contribute to the formation of the action of request. This early projection facilitates smooth transfer of the requested object. In other words, the addressee does not wait until the end of the turn but can start responding before the requesting turn is completed.

One thing that should be noted here is that, using Japanese grammar and vocabulary, participants can add additional elements to the formulation of the turn. This is especially seen in the selection of verbs and their forms. In Example 6, the request is not formed with *totte* ‘take’ alone but is accompanied by *kudasai*. With this expression, the speaker Misako adds politeness to her request. In Example 7, Yuzuki uses the verb *kashite* ‘lend’ rather than *totte*. Through this verb selection, Yuzuki indicates that the requested object, which was originally brought to the site by her, now belongs to her father. With verbs and markers attached to the verbs, which appear in the final part of a turn, speakers can modify the form of the request so that the communication is executed in a more socially appropriate manner. Fine tuning of meaning is achieved by utilizing linguistic items.

5.2 Actions embedded in multiactivity

Second, extending an arm can work as a resource to attract attention and establish joint attention. That is, extending an arm is an eye-catching movement in the vision field of nearby participants. Sometimes, such a move is produced with a vocative or an interjection. With bodily gestures, the speaker attracts the attention of the addressee and gives a signal that he/she is about to say or do something.

The manipulation of other participants’ attention is essential in naturally occurring communication in daily situations, as people are often engaged in

multiple activities (Haddington et al. 2014). In Example 5, the children are doing their homework assignment supervised by their mother. In Example 6, the family is eating dinner while watching TV. In Example 7, the family is having dinner at a restaurant. Object transfer is embedded in these activities, sometimes as a necessary part of the ongoing activity (Example 5 and 6), and sometimes as a side activity (Examples 7). In these environments, managing the attention of the addressee is crucial for the execution of the action of request, as transferring an object requires both parties' attention and collaboration. The requesting person knows that he or she wants the requested object, but the requestee is usually not aware of such wants until the requesting person initiates the request. Gestures starting earlier than verbal requests may contribute to the establishment of joint attention between participants, thereby preparing the necessary conditions for successful object transfer.

6 Conclusion

This study intended to examine the relation between bodily and linguistic behaviors in object-transfer requests. As this study focused on simple forms of request such as those using the verbs *totte*, *kashite*, and *mottekite*, it has two significant limitations, which could serve as areas for further research. First, there are many other words that speakers can use to make a request. For example, one can request an object with a bare noun phrase (NP) such as *ocha!* 'Tea!' or the [NP + *choodai*] format such as *ocha choodai* 'Tea please' (cf. Kadota et al. 2019). Moreover, requesting can also be done indirectly, such as through a suggestion or question (cf. Ervin-Tripp 1976). These other forms of requests need to be systematically analyzed. Second, the types of requests should also be studied further. It has been argued that request forms differ depending on factors such as entitlement and contingency (Curl and Drew 2008), or whether the request is bilateral or unilateral (Rossi 2012). The cases examined in this study are rather simple, but incorporating the two above-mentioned points into the analysis will enrich the study of object-transfer requests.

Since people use their bodies as well as language when they talk, meaning making and action formation is not achieved by language alone. This study investigated how bodily and linguistic resources work together, showing that gestures often precede verbal requests and that some portions of communication, such as managing attention amidst multiactivity, are achieved by bodily behaviors rather than the meaning coded in words. It is apparent that more research is required to understand the multimodal nature of human communication, and I hope this study can be a substantial contribution.

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Part III

Oral Morphology

Statives *-(a)ri* and *-tari* in Early Heian Japanese *Kundokubun**

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1 Introduction

The older Japanese aspectual auxiliaries *-(a)ri* and *-tari* have been described as perfects (Suzuki 2009), resultatives (Ijima 2011), and statives (Frellesvig 2010; Watase 2013), among other semantically related nuances (see Frellesvig 2010). While Frellesvig (2010) notes the potential for semantic distinctions between these two auxiliaries, citing Takeuchi (1987), most recent scholarship has taken them to be semantically equivalent.

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Takeuchi (1987) finds *-tari* signifying a state temporally “limited” or deictic to some extent, and *-(a)ri* temporally “non-limited,” or lacking in temporal deixis. These findings are confirmed in Ōtsubo’s (1981) survey of Heian period (794–1185 CE) *kundokubun*, the linguistic style used when reading Sinitic texts in Japanese. He finds *-tari* could be governed by *-mu*, *-ki*, and rarely by *-tu*, which, depending on the context, can mark future, past, and recent past tense, respectively. On the other hand, he finds examples of *-(a)ri* governed by negation and modal auxiliaries *-zu*, *-zi*, and *-besi*, in addition to those of tense which may govern *-tari*. However, he does not argue for any semantic distinctions that may explain their differing relations to the discourse. This study investigates the uses of these two stative auxiliaries among Early Heian *kundokubun* texts and finds that Takeuchi’s (1987) analysis regarding temporal deixis best explains the differing ways in which they interact with the discourse, which reflects the subtle differences in their semantics.

This paper proceeds as follows. After touching upon some terminological conventions to which I adhere, in section 2 I give a brief overview of some prominent analyses that find *-(a)ri* and *-tari* to be semantically equivalent, before turning to Takeuchi’s (1987) analysis of the two auxiliaries’ use in Early Middle Japanese *wabun* texts and her argument for making a temporally deictic distinction between the two. Section 3 contains examples of *-(a)ri* and *-tari*’s use in Early Heian *kundokubun* texts from both Ōtsubo’s (1981) survey and my own research, leading to my conclusion in section 4 that, in these texts, while *-(a)ri* and *-tari* are both semantically stative, the latter is more restricted with regard to its relation to negation and modality due to the influence of the semantics of perfective *-tu*, whose participle is found in *-tari*’s periphrastic form *-te ari*, which is also attested in these texts.

Throughout this paper I follow researchers such as Tsukishima (1969), Ōtsubo (1981), and Kinsui¹ in using the term *kundokubun*, a shortening of *kanbun kundokubun*, when discussing the linguistic style of Early Heian Japanese used when reading Sinitic texts aloud as Japanese, generally with the aid of the diacritics called *kunten*. While some researchers use the terms *kundokugo* or *kuntengo* when discussing this variety, these can also refer specifically to lexical items. *Kundokubun* also contrasts well with *wabun*, or the more vernacular style of Japanese.

¹ Kinsui Satoshi, personal communication.

Finally, I will represent the auxiliary often called *-ri* or *-eri* as *-(a)ri*. These two representations are based on *-(a)ri*'s surface structure. For example, when *ipu* 'say' is governed by *-(a)ri*, the underlying structure would be *ipi-ari*, with *-ari* governing *ipu*'s participle, or *ren'yōkei*. Due to a phonological constraint against adjacent vowels within the same word in Old Japanese, crasis, or sandhi, occurred, leading *ipi-ari* to be restructured as *iperi* in early Heian *kundokubun*.² I refer to this auxiliary by its underlying structure because this study focuses on two auxiliaries that govern a verb's participle, *-(a)ri* and *-tari*.

2 Overview of *-(a)ri* and *-tari*

Although there remains a lack of consensus regarding their semantics, the differing morphology of these auxiliaries is well documented. As an auxiliary, *-(a)ri* is limited to governing quadrigrade and s-irregular class verbs. Thus, *atumaru* 'gather' would become *atumareri* (< participle *atumari* + *ari*) and *su* 'do', *seri* (< participle *si* + *ari*). Auxiliary *-tari*, on the other hand, is attested governing participles from all verb classes in the Heian period, including those governed by *-(a)ri*. For example, in the same 883 CE text (Nakada 1958) we find *atumaritari* from the quadrigrade verb *atumaru* 'gather' and *sitari* from the s-irregular verb *su* 'do', in addition to *sugitari* from the upper bigrade verb *sugu* 'exceed' and *etari* from the lower bigrade verb *u* 'receive'. Auxiliary *-(a)ri* is much more prevalent than *-tari* in Early Heian texts, with the latter still in its periphrastic form *-te ari* in some earlier cases. However, although the distinctions between their morphology are well known and widely accepted, most researchers continue to analyze them as semantic equivalents.

For example, the *Jidaibetsu kokugo daijiten jōdai hen*, an authoritative dictionary of Old (and Early Middle Japanese), defines both *-(a)ri* and *-tari* as resultative, or stative, auxiliaries that govern the participle (Omodaka 1967: 449–450, 810). Suzuki (2009) describes both as perfects (*pāfekuto*) that express both the result of a change and evidentially informed epistemic modality at the end of the verb phrase. Ijima (2011) defines them as resultative statives (*kekka sonzai*), with their most common textual function being scene depiction. Watase (2013) also describes them as statives that depict an unmoving scene before our eyes. Most recently, Oda (2015) recapitulates prominent analyses and concludes there is no significant semantic difference between the auxiliaries.

² This compound was restructured as *ipyeri* in Old Japanese.

I follow Frellesvig (2010) in referring to both *-(a)ri* and *-tari* as statives. Here I quote his discussion on their respective semantics in Early Middle Japanese in full.

there is no agreement among scholars about whether the two auxiliaries through the period of coexistence were (free or conditioned) variants or whether they expressed different categories, apart from the fact that whatever distinction they may have expressed was neutralized with vowel base verbs (where only [*-tari*] was used). It is clear that [*-tari*] interacted differently with other aspect auxiliaries than [*-(a)ri*] did, and that [*-tari*] at some point acquired a function of perfect (understood as referring to the ‘continuing present relevance of a past situation’ (Comrie 1976: 52)), i.e. with some temporal reference, whereas [*-(a)ri*] remained a simple, atemporal stative.

(Frellesvig 2010: 239)

He goes on to cite Takeuchi’s (1987) defense of making a categorical distinction between these auxiliaries. The arguments in Takeuchi’s monograph greatly impacted my interpretation of the subtleties between *-(a)ri* and *-tari* in Early Heian *kundokubun* texts, and I will thus give an overview of her categorization and reasoning behind it.

2.1 Takeuchi’s argument for semantic distinction

Takeuchi (1987) surveys both Heian and Kamakura *wabun* texts and finds a semantic difference in *-(a)ri* and *-tari*’s relation to temporal deixis. Here I quote her conclusion in full.

the distinction between [*-(a)ri*] and [*-tari*] hinges primarily on the latter’s specifying that the state in question is true for only a limited interval, while [*-(a)ri*] conveys no such specification. This means that a state of an [*-(a)ri*] predicate *may or may not* be true for, or have relevance for, an interval of time preceding or following that of the aspect locus.³ [A *-tari*] predicate, on the other hand, specifies that the state is true for the aspect locus and for an interval ulterior to it, as well as perhaps another interval preceding it. The precise specification must often be inferred from the context. Thus, [*-tari*] is the more specific, that is the more *limited* of the two.

(Takeuchi 1987: 166–167, emphasis in original)

³ The point of reference when viewing an event.

Takeuchi subsequently labels *-tari* a ‘limited perfect’ and *-(a)ri* a ‘non-limited perfect.’ In other words, *-tari* is temporally deictic, whereas *-(a)ri* is not. This categorical distinction is found in both how these statives interact with other auxiliaries and the overall discourse in Early Heian *kundokubun*.

3 Evidence from Early Heian *Kundokubun*

The sources of data for this investigation are primarily Early Heian, or 9th- to early 10th-century, *kundokubun* Buddhist texts. Thus, we are looking at a particular style or register of Early Middle Japanese, one used to translate sutras and commentaries written in Buddhist Hybrid Chinese.⁴

Takeuchi’s (1987) findings on the temporally deictic distinction between *-(a)ri* and *-tari* are reflected in this style as well. Ōtsubo’s (1981) study of Heian-period *kundokubun* finds *-tari* governed by *-mu*, *-ki*, and rarely by *-tu*, whereas *-(a)ri* is governed by *-mu*, *-ki*, *-zu*, *-zi*, *-besi*, and also rarely by *-tu*. However, although he argues that both represent durative (*sonzoku*) and resultative (*kanryō*) aspect, the only contrasts he draws between the two are that (1) *-tari*, as opposed to *-(a)ri*, can govern perfective *-nu* and (2) their differing diachrony, namely that *-(a)ri* preceded *-tari* in its development and the latter came to be used more in *wabun* (Ōtsubo 1981: 806). While he makes no argument for any semantic distinctions that may explain their differing relations to the discourse, conclusions similar to Takeuchi’s can be drawn from his examples and other studies on Early Heian *kundokubun*.

3.1 The stative auxiliaries governed by tense auxiliaries

We will now consider some examples of *-tari* and *-(a)ri* governed by the so-called ‘tense’ auxiliaries *-mu*, *-ki*, and *-tu*. Although their respective meanings of future, past, and recent past are relevant to this discussion on temporal deixis, it is important to clarify that each of their temporalities is due to semantic extension based on the context rather than a core meaning.⁵

Returning to the present discussion, examples (1) through (3) display *-tari* being governed by future, past, and recent past auxiliaries, respectively. The Japanese orthography in these examples follows the conventions from the cited texts. Generally, *hiragana* in parentheses represent *okurigana* added to improve readability; *hiragana* outside of parentheses

⁴ See Zhu (2017) for an overview of this variety of Middle Chinese.

⁵ The status of tense as a grammatical category in Early Heian *kundokubun* remains inconclusive. Kasuga’s (1942) discussion regarding the semantics of *-ki* illuminates this issue.

are based on *wotokoten*, or morphosyntactic diacritics; and *katakana* are based on phonetic diacritics. See Frellesvig (2010: 261–262) for a more in-depth discussion of this reading method.⁶

- (1) Stative *-tari* governed by future *-mu* (Nakada 1958: 47)

嫉妬の因縁をもて諸の毀謗を起(し)たらムを、如來知り已(り)て

zitto no innen wo mote moro no kibau wo okositaramu wo nyorai siri-woparite

envy GEN cause ACC have-GER all GEN criticism ACC cause-tari-FUTURE ACC, Buddha know-finish-GER

‘the Buddha, having learned that they will have brought about all criticism through the cause of envy’

- (2) Stative *-tari* governed by past *-ki* (Kasuga 1942: 183)

我等先に[. . .]共に魚の身を受(け)たりシトキに

warera saki ni [. . .] tomo ni uo no mi wo uketarisi toki ni

we before LOC [. . .] together LOC fish GEN body ACC receive-TARI-PAST time LOC

‘when we had received the fish flesh together before’

- (3) Stative *-tari* governed by recent past *-tu* (Ōtsubo 1981: 804)

我レ初夜に露地に在(り)て一衣を著たりツ。

ware siyoya ni roji ni arite iti'e wo kitaritu.

I first.watch LOC bare.ground LOC be-GER one.outfit ACC wear-TARI-RECENT.PAST

‘I had worn a single garment while being on the bare ground during the first watch.’

⁶ I use the following abbreviations: ACC (accusative), COM (comitative), COP (copula), GEN (genitive), GER (gerund), LOC (locative), NEG (negative), NMZ (nominalizer), NOM (nominative), PASS (passive), PL (plural), TOP (topic).

Although examples (1) and (2) are both in relative clauses, with future *-tara-mu* and past *-tari-ki* in their adnominal forms, in Early Heian *kundokubun* we find them sentence-finally as well.

Auxiliary *-(a)ri* shows the same potential to be governed by tense auxiliaries, as displayed in examples (4) through (6).

- (4) Stative *-(a)ri* governed by future *-mu* (Ōtsubo 1981: 805)

急流の蟲多 (く) 渾レらむ水

kipuriu no musu opoku nigoreramu midu

fast.flow GEN insect many cloud-(A)RI-FUTURE water

‘fast flowing water that will be clouded with many insects’

- (5) Stative *-(a)ri* governed by past *-ki* (Kabutogi and Nakada 1979: 79)

是 (の) 如き等の菩薩摩訶薩、八万の人と俱に いましたま
へりき。

ko no gotokira no bosatu makasatu, patiman no pito to tomo ni imasitamaperiki.

This GEN type-PL GEN bodhisattva mahasattva, myriad GEN people COM with LOC honorific.come-(A)RI-PAST

‘Bodhisattvas and mahasattvas such as these had come with the myriad people.’

- (6) Stative *-(a)ri* governed by recent past *-tu* (Ōtsubo 1981: 805)

何の家に在 (り) て 宿セリツル。

idure no ipe ni arite siuku-serituru.

what GEN house LOC be-GER stay-(A)RI-RECENT.PAST

‘What house was he staying in?’

Just as with *-tara-mu* (i.e. *-tari* and *-mu*), future stative *-(a)ra-mu* is also found sentence-finally. In example (6), we find *-(a)ri-tu* nominalized in its adnominal form due to an Early Middle Japanese syntactic rule of nominalizing content (‘*wh-*’) interrogative sentences. I have not found any examples of recent past stative *-(a)ri-tu* in a non-nominalized context in my own investigations.

As we can see from these examples, auxiliaries that may signify tense can govern predicates containing *-(a)ri* or *-tari*. On the other hand, auxilia-

ries more rigidly modal in nature are limited to governing *-(a)ri*. We turn to these next.

3.2 The stative auxiliaries governed by negative and modal auxiliaries

We will now take a look at examples of *-(a)ri* governed by the negative auxiliaries *-zu* and *-zi*.

(7) Stative *-(a)ri* governed by negative *-zu* (Ōtsubo 1981: 803)

陀羅驃は求那には作レラ不。求那は陀羅驃には作レラ不。

darapiau pa guna ni pa narerazu. Guna pa darapiau ni pa narerazu.

substances TOP components LOC TOP become-(A)RI-NEG. components TOP substances LOC TOP become-(A)RI-NEG

‘Substances are not made of components. Components are not made of substances.’

(8) Stative *-(a)ri* governed by future negative *-zi* (Ōtsubo 1981: 803)

亦（た）缺け壊れら不。

mata kake-yaburerazi.

also lose-break-(A)RI-FUTURE.NEG

‘Also, they will not have lost or broken it.’

At this point we may ask, why is it that, unlike *-(a)ri*, *-tari* is never governed by the negative auxiliaries *-zu* and *-zi* in Early Heian *kundokubun*? Here a discussion of *-tari*’s diachrony proves useful to our discussion. It derives from a periphrastic stative *-te ari*, which is still found in early Heian-period *kundokubun* texts. Suzuki (1954: 78) conducted a survey of an early 9th-century rendition of the *Proof of Reality Treatise* (成実論 *Jōjitsuron*) and found only *-te ari*, with no instances of *-tari*, throughout the entire text. Ōtsubo gives the following example from the same treatise.

(9) Periphrastic *-te ari* (Ōtsubo 1981: 802)

阿難は頭枕に到さ末、即（ち）解脱を得てあり。

Anan pa kaube makura ni itasanu, sunapati gedatu wo ete ari.

Ānanda TOP head pillow LOC lay-NEG, thus liberation ACC attain-GER ARI

‘Ānanda, who did not lay his head on the pillow, thus has attained liberation.’

Both *-te ari* and *-tari* are found in other 9th-century texts, such as in a commentary on the *Golden Light Sutra* (金光明最勝王經 *Konkōmyō saishōkyō*) rendered at Tōdaiji in the 9th century.

(10) Periphrastic *-te ari* with *-tari* (Tabuchi 1987: 57)

屍林に棄レテ在シトキには朽（ち）たる木（の）如シ。

sirin ni panarete arisi toki ni pa kutitaru ki no gotosi.

death.forest LOC separate-GER ARI-PAST time LOC TOP wither-TARI tree GEN like

‘When he left the forest of death he was like a withered tree.’

This choice of using *-te ari* rather than *-tari* may be due to the orthography of the source text, with the kanji read as *zai* or *aru* today (在) specifically being read as *ari*. Furthermore, in this text *-tari* is used more often than its periphrastic form, although both far less frequently than *-(a)ri*.

In examples (9) and (10) above, I refer to the *-te* in the periphrastic *-tari* construction as a gerund. However, it is generally said that the gerund *-te* derives from the participle of perfective auxiliary *-tu* (Oda 2015: 478). Part of *-tu*’s core meaning is that of a realized change of state. This is why it, along with perfective *-nu*, cannot be negated. As its expansion into *-te* and *ari* indicates, in Early Heian *kundokubun*, perfective *-tu* (in its participial form *-te*) was still a transparent component of stative *-tari*, so the latter was presumably restricted with regard to negation due to the former’s semantics. The underlying *-tu* is also why we do not find any examples of *-tari* governed by modal *-besi*, which we do find, albeit rarely, with *-(a)ri*.

(11) Stative *-(a)ri* governed by modal *-besi* (Ōtsubo 1981: 802)

是 (の) 如 (く) に (あ) らば一の瓶い即 (ち) 無量百千踰膳
那の處に遍滿せるべし。

*ko no gotoku ni araba iti no bin i sunapati muryau piyakusen yuzenna
no tokoro ni penman-serubesi.*

this GEN like if.is one GEN bottle NOM thus infinite 100,000 yojana
GEN place LOC spread-(A)RI-MODAL

‘If it is thus, then a single bottle would necessarily be spread over
places of infinite countless distances.’

Auxiliary *-besi* signifies deontic or epistemic modality depending on the context, and thus is marked simply as MODAL here. Whereas a verb governed by stative *-(a)ri* could be given modality via *-besi*, the data suggest that *-tari* had no such option. This is also likely due to the persistence (see Hopper 1991) of the semantics of *-tu*. While *-tu-besi* can be added to predicates to signify a certainty in realization, *-tari* suggests that realization has already occurred and is evident/apparent, and thus it would be redundant to grammatically mark one’s certainty of the situation. It is worth noting that, in addition to *-besi*, we often find *-mu* in *kundokubun* renditions of conditional sentences, so there are many examples of *-tara-mu* in similar constructions to that found in example (11). We also find periphrastic expressions used to add *-besi*’s semantics to a *-tari* clause.

(12) Periphrastic *-besi* construction on a *-tari* clause (Nakada 1980: 191)

若 (しは) 有る補特伽羅の加行も意樂も俱に壞 (れ) たりトい
ふべし。

*mosi pa aru putogara no kegiyau mo igeu mo tomo ni yaburetari to ipu
besi*

or TOP some person GEN application also intention also together
LOC break-TARI COM say-MODAL

‘Or we must say some people’s intentions and applications will have
broken.’

As epistemic modality is already underlying in *-tari*’s semantics as a stative for which we have evidence ‘before our eyes’ (Watase 2013), marking it explicitly requires periphrasis such as that found in this example.

3.3 The case of *kagapuru* ‘put on / wear’ in the *Ten Wheels Sutra*

Although it is now clear that, in Early Heian *kundokubun*, these stative auxiliaries have different restrictions with regard to the above set of modal and negative auxiliaries, we will now see if there are differences in their use when they are the sole auxiliary of the predicate. As a small case study we will look at every instance of the verb *kagapuru*, meaning ‘put on’ or ‘wear’, governed by *-(a)ri* or *-tari* throughout a late 9th-century *kundokubun* rendition of the *Ten Wheels Sutra* (地蔵十輪經 *Jizōjūrinkyō*). *Kagapuru* is a quadrigrade class verb, so the governing restrictions between the two auxiliaries are controlled. We shall see that whether the act of putting on Buddhist robes is of present relevance to the discourse context rather than simply the fact that they are being worn determines which of these auxiliaries is applied.

The context surrounding examples (13) to (15) is a passage in which a group of hunters are ordered to poach the elephant king’s tusks and have donned Buddhist robes to deceive him.

(13) *kagapuru* governed by *-(a)ri* (Nakada 1958: 67)

殞伽沙等の諸佛の法幢を被 (が) フレル相なり。

kiaukasatau no siyobutu no popudau wo kagapureru sau nari.

innumerable GEN all.Buddhas GEN dharma.banner ACC wear-(A)RI
appearance COP

‘It is the appearance of one wearing the Dharma banner of all the innumerable Buddhas.’

The elephant king, upon seeing the men in Buddhist robes, is speaking to his mother. He uses temporally non-limited *-(a)ri* as he comments on their current state of wearing the robes, rather than the act of donning them. Example (14) is the elephant king’s mother’s response.

(14) *kagapuru* governed by *-(a)ri* (Nakada 1958: 67)

法服（を）被フレリ（と）いふ（ことを）知（り）又と雖ども
、而も弓箭を執持セ（り）。

*popupuku wo kagapureri to ipu koto wo sirinu to ipedomo, sikamo ki-
usen wo situzi-seri.*

Buddhist.clothes ACC wear-(A)RI COM say thing ACC know-PERF
COM say-CONCESSIVE, however bow.arrows ACC hold-(A)RI

‘I understand you saying they are wearing Buddhist clothes, but they
are carrying bows and arrows.’

Again, we find *-(a)ri* governing commentary on the current situation with-
out regard to a previous change of state. In the end, the men shoot the ele-
phant king with poison arrows, leading to the following lament from his
mother.

(15) *kagapuru* governed by *-tari* (Nakada 1958: 68)

此の法衣を被（ふり）たる人は、宜（しく）（應）定（め）て
佛に歸するのなり。

*ko no popue wo kagapuritaru pito pa, yorosiku sadamete potoke ni ki-
suru no nari.*

This GEN Buddhist.clothing ACC wear-TARI person TOP properly
decide-GER Buddha LOC convert GEN COP

‘People who have donned this Buddhist clothing are of those who,
having decided properly, embrace the Buddha.’

Here the mother is referring explicitly to people who ‘have made’ the
choice of donning Buddhist robes. Thus, the prior change (their deliberate
donning of the robes) is referenced as directly relevant to the present mo-
ment in the discourse and *-tari* is employed.

In a subsequent parable, a human-eating demon explains to one wear-
ing Buddhist robes that she would not dare harm him.

(16) *kagapuru* governed by *-(a)ri* (Nakada 1958: 72)

汝は今、法の服を被^レリ。必（ず）涅槃の樂に趣カム。故に我
（れ）汝をば害不。

*nanzi pa ima, popu no puku wo kagapureri. Kanarazu nepan no raku
ni omomukamu. Yuwe ni ware nanzi wo ba gai-sezi.*

You TOP now, dharma GEN clothes ACC wear-(A)RI. Surely nirvana
GEN bliss LOC proceed-FUTURE. Reason LOC I you ACC TOP
harm-FUTURE.NEG

‘You are now wearing Buddhist clothing. You will surely proceed to
Nirvana’s bliss. Thus, I will not harm you.’

Just as in example (16) above, we find *-(a)ri* used when having the Buddhist robes on is what is most relevant to the context, rather than the fact that the wearer put them on at some specific time. Our final series of examples is from an extended passage of the Buddha describing how inappropriate it is to disrespect one who wears Buddhist robes. The Buddha begins by governing *kagapuru* with *-tari* to specifically refer to one’s choice of donning Buddhist robes when they make the decision to become a monk.

(17) *kagapuru* governed by stative auxiliaries (Nakada 1980: 196)

我が法の中に鬚髪を剃し除し、袈裟を被（り）たる者をば、我
、終に刹帝利等の毀辱し譴罰することは聽（さ）不。

*wa ga popu no naka ni siupatu wo tei-si zio-si, kesa wo kagapuritaru
pito wo ba, ware, tupi ni setuteira no kiniku-si tyakubatu-suru koto pa
tiyau-sazu.*

I GEN dharma inside LOC hair ACC shave remove Buddhist.robe
ACC wear-TARI person ACC TOP, I, end LOC kshatriya-PL GEN
criticize punish NMZ TOP listen-NEG.

‘In my dharma I never hear of a person who, having discarded the secular world, has become a monk, shaved their head, and has donned a red Buddhist robe being criticized or punished by rulers.’

This pattern continues with two more instances of *kagapuri-tari* as the Buddha clarifies the initial example.

(18) *kagapuru* governed by stative auxiliaries (Nakada 1980: 196)

又、我が法に依(り)て俗を捨(て)て出家し、鬚髪を剃除し、赤き袈裟を被(り)たるヒトハ[. . .]慈悲守護セラル。是(の)故に鬚髪を剃除し赤き袈裟を被(た)る出家の人を輕毀せむ者は、即(ち)是(レ)一切の過去未來現在の諸佛世尊を輕毀するヒトナリ。

mata, wa ga popu ni yorite zoku wo sutete siutuke, siupatu wo teizio-si, akaki kesa wo kagapuritaru pito pa [. . .] zipi-syugo-seraru. Ko no yuwe ni siupatu wo teizio-si akaki kesa wo kagapuritaru siutuke no pito wo kiyauki-semu pito pa, sunapati kore itisai no kako mirai genzai no siyobutu seson wo kiyauki-suru pito nari.

Also, I GEN dharma LOC accord.GER secular ACC discard-GER become.monk, hair ACC shave, red Buddhist.robe wear-TARI person TOP [. . .] mercy protect-PASS. This GEN reason LOC hair ACC shave red Buddhist.robe wear-TARI become.monk GEN person ACC disrespect-FUT person TOP, thus this all GEN past future present GEN all.buddhas.bhagavats ACC disrespect person COP.

‘Also, according to my dharma a person who, having discarded the secular world, has become a monk, shaved their head, and has donned a red Buddhist robe is mercifully protected. Thus, a person who disrespects a person who has become a monk, shaved their head, and has donned Buddhist robes thus is a person who disrespects all past, future, and present Buddhas and Bhagavats.’

The passage concludes with a universal warning to those who seek to criticize one wearing Buddhist robes.

(19) *kagapuru* governed by stative auxiliaries (Nakada 1980: 196)

是の因縁に由(り)て[. . .](應)俗を捨(て)て出家し鬚髪を剃除し袈裟(を)被(ふ)る者を輕毀すべからず。

ko no innen ni yorite [. . .] zoku wo sutete siutuke-si siupatu wo teizio-si kesa wo kagapureru pito wo kiyauki-subekarazu.

This GEN cause LOC accord-GER [. . .] secular ACC discard-GER become.monk hair ACC shave robes wear-(A)RI person ACC disrespect-MODAL-NEG

‘For this reason, one should not disrespect a person who, having discarded the secular world, has become a monk, shaved their head, and is wearing a Buddhist robe.’

This shift from a specific example of one who had donned the robes to a general warning regarding disrespecting one who is wearing, i.e., has the robes on, is why we find *-(a)ri* governing the final *kagapuru* in the passage.

4 Conclusions

Although by the end of the Heian period *-tari* has become prevalent and governs quadrigrade class verbs to such an extent that any semantic distinctions between it and *-(a)ri* may well have been lost through analogy, its limited use on such verbs in the Early Heian, or 9th- to early 10th-century *kundokubun* Buddhist texts suggests a clear semantic distinction can be drawn between *-(a)ri* and *-tari* when they govern quadrigrade class verbs. As Takeuchi (1987) finds *-(a)ri* non-limited, or lacking in temporal deixis, and *-tari* to be limited, or signifying temporal deixis, in Heian through Kamakura-period *wabun* texts, in their Early Heian *kundokubun* predecessors this distinction is even clearer. The constraint whereby auxiliary *-tari* is limited, tense-wise, to being governed by auxiliaries *-mu*, *-ki*, and *-tu*, as well as its not being governed by auxiliaries of negation and pure modality, contrasts with the lack of such constraints on auxiliary *-(a)ri*, and reveals the temporal deixis underlying the former's semantics. This temporal limitation is due to the influence of the semantics of perfective *-tu*, whose participle is found in *-tari*'s periphrastic form *-te ari*, which is still attested in these texts. While these differences in nuance between these two stative auxiliaries may have levelled by the end of the Heian period, this study has shown that, with regard to the predicates that either could govern in Early Heian *kundokubun*, they contrast semantically.

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On the Degree Semantics of *Hutsuni* and *Zenzen*¹

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1 Introduction

In this paper, we investigate relatively novel uses of two degree modifiers in Japanese – *hutsuni* roughly meaning ‘normally’ and *zenzen* ‘at all’, otherwise better known as a negative polarity item. The relevant uses of the modifiers in question are illustrated in (1) and (2).

¹ We have benefited greatly from valuable comments and suggestions from three anonymous *Sinn and Bedeutung* reviewers, Yoshi Dobashi, Mitcho Erlewine, Kaz Fukushima, Shin Kitada, Jian Gang Ngui, Yoshiki Ogawa, Osamu Sawada, Izumi Suganuma, Makiko Tawa, Satoshi Tomioka, and Dwi Hesti Yuliani. Our very special thanks to the first author’s students in his Fall 2019/Spring 2020 advanced syntax/semantics seminars at Seisen University for many hours of stimulating discussions on the topic presented here as well as many useful data and references. The project reported here is supported by the Grant-in-Aid for Scientific Research (C) from the Japan Society for the Promotion of Science (#19K00560) awarded to Yosuke Sato.

- (1) Omae warauto hutsuni kawaii-zyan!
 you when.smile HUTSUNI cute-PRT
 ‘You are actually cute HUTSUNI when you smile!’
- (2) Kono mise-no raamen mazui-tte kiiteta-kedo, zenzen
 this shop-GEN noodle bad-COMP heard-but ZENZEN
 umai-zyan!
 good-PRT

‘I heard that noodles at this shop are bad, but they are actually good ZENZEN!’

We argue that the central felicity condition that *hutsuni* and *zenzen* as degree modifiers impose on an ongoing discourse is counter-expectation. Thus, the utterance in (1) can be felicitously uttered in a context, set by previous discourses, commonly shared knowledge, the speaker’s prior expectations, and so on, where the degree of the addressee’s cuteness was initially expected by the speaker to be lower than the middle/normal/passing range, but the speaker asserts at the point of their encounter that the actual degree meets the relevant range. Similarly, the felicitous use of positive *zenzen* in (2) requires a point on the scale of tastiness to be pre-set on a lower side than the normal range in the mind of the speaker and subsequently raises the point to a higher range on the same scale, sometimes even greater than the normal range, including the maximal endpoint. Indeed, the utterances in (1) and (2) sound really awkward when pre-postulated contexts, linguistic or otherwise, do not support a counter-expectational interpretation, as shown in (3) and (4), respectively.

- (3) Kawaii-tte minna itteta-kedo, #yappari omae
 cute-COMP everyone said-but sure.enough you
 warauto hutsuni kawaii-zyan!
 when.smile HUTSUNI cute-PRT
 ‘Everyone said that you are cute, and sure enough, you are actually cute HUTSUNI when you smile!’
- (4) Umai-tte uwasa-datta-kedo, #yappari kono mise-no
 good-COMP rumor-COP.PST-but sure.enough this shop-GEN
 raamen zenzen umai-wa!
 noodle ZENZEN good-PRT
 ‘The rumor has it that noodles at this shop are good, and sure enough, they are actually good ZENZEN!’

These novel usages of the two degree modifiers have begun to be found in naturally occurring examples and daily conversations, including the media and journals. Let us look at just two illustrative examples in (5) and (6).

- (5) Interviewer: Kintyoo-wa suru-taipu-desu-ka?
 nervous-TOP get-type-COP.POL-Q
 ‘Are you a nervous type of person?’

Rika Hongo: Kekkoo hutsuni kintyoo-wa si-masu. Sisugiru
 rather HUTSUNI nervous-TOP get-POL get.too.much
 kanji-de-wa-nai-kedo, hutsuni si-masu.²
 feeling-COP-TOP-NEG-but HUTSUNI get-POL

‘I actually get nervous HUTSUNI. I don’t feel like I get too nervous, but I do actually get nervous HUTSUNI.’

(*Figure Skate Life*, Vol. 1: 38)

- (6) Tetsuko Kuroyanagi: 166-de Takarazuka-de-wa chiisai-no?
 166-at Takarazuka.Revue-in-TOP small-Q
 ‘Is someone 166 cm tall short in *Takarazuka Revue*?’

Miki Maya: Iya, moo kanari, zenzen chiisai-desu-ne.
 no already considerably ZENZEN short-COP.POL-PRT

‘No, anyone that high is actually considerably short ZENZEN.’

(adopted from Arimitsu 2002: 64)

Example (5) features the counter-expectational use of *hutsuni* in an interview with Rika Hongo, a professional figure skater. In this interview, what Rika intends to convey by *hutsuni* is to negate the prior expectation held by the interviewer or people in general that Rika, as a professional figure skater, would not feel nervous during her performance, and assert instead that she actually feels nervous contrary to what the audience might think. Example (6) documents the counter-expectational use of positive *zenzen* from a naturally occurring conversation aired on the April 21, 1999 in *Tetsuko-no Heya* ‘Tetsuko’s Room’, one of the longest-running shows in Japan. In this conversation, Tetsuko Kuroyanagi (the host) and Miki Maya (the guest) are talking about Maya’s

² This conversation fragment is cited from the section entitled ‘Interview with Rika Hongo’ (pp. 37–39) of the first volume of the journal *Figure Skate Life* published in 2015 by Fusosha Publishing based in Tokyo.

height while she was a member of the *Takarazuka Revue*. Miki's intention using *zenzen* in her reply to Tetsuko's inquiry about her height is to negate the prior expectation held by Tetsuko or perhaps people in general that someone who is 166 cm tall should be relatively tall in the *Takarazuka Revue*.³

The relationship of positive *zenzen* to discourse expectation has been relatively well documented in the Japanese literature (Noda 2000; Arimitsu 2002, 2011; Kobayashi 2004) and was also studied briefly in Homma (2006) and Sawada (2008, 2019). To the best of our knowledge, however, there is no existing study conducted on discourse expectations triggered by *hutsuni*, with the valuable exception of Imoto (2011). Against this background, the purpose of this paper is to put forth a novel description and preliminary analysis of the counter-expectational readings of the two modifiers as well as their subtle discourse-based differences, taking Imoto's (2011) observations as our point of departure.

³ Satoshi Tomioka (personal communication, September 2020) points out that there is a use of *hutsuni* that does not require any sense of counter-expectation. (i) illustrates a case in point:

- (i) A: Ano kado-ni dekita atarasii resutoran doo-desi-ta?
 that corner-in opened new restaurant how-COP.POL-PST
 'Speaking of the restaurant newly opened in that corner, how was it?'
 B: Uun, maa hutsuni oisikatta-desu-yo.
 Hmm well HUTSUNI delicious-COP.POL-PRT
 'Hmm, well, it was delicious HUTSUNI.'

Here, we agree that B's utterance does not seem to induce any counter-expectation. It means that the restaurant's food was average or had nothing remarkable, just like other average restaurants' foods without implying any sort of the 'contrary-to-what is believed' feel. All that the utterance in (iB) expresses is that the restaurant was average.

Indeed, we can add some sort of matching-expression to A's utterance in (i), e.g., *hyooban yokunaikedo* 'the reputation is not good but...', as shown in (iiA), and still the utterance can be followed by the response with *hutsuni* in (iiB), which expresses speaker B's agreement with speaker A's prior (average) expectation of the restaurant.

- (ii) A: Ano kado-ni dekita atarasii resutoran hyooban waruku-nai-ke-do
 that corner-in opened new restaurant reputation bad-NEG-but
 doo-desi-ta?
 how-COP.POL-PST
 'Speaking of the restaurant newly opened in that corner, the reputation is not bad, but how was it?'
 B: Soodesune hutsuni oisikatta-desu-yo.
 I agree HUTSUNI delicious-COP.POL-PRT
 'I agree, it was delicious HUTSUNI.'

We wish to come back to this non-expectational use of *hutsuni* and how it could be related to the counter-expectational case of *hutsuni* in our future work.

The paper is organized as follows. In section 2, we will put forth the two central proposals in this paper. Firstly, we argue that *hutsuni* can be best characterized as a weaker counterpart of *zenzen* in terms of a speaker's commitment to the relative size of the discrepancy between a prior expected degree and the actual asserted degree. Secondly, we show that both upward and downward adjustments of a given scalar degree are acceptable for both *hutsuni* and *zenzen*, contrary to Imoto's (2011) observation that *hutsuni* has the function of shifting a point pre-set on a lower end of an open degree to the normal/middle/passing range. In section 3, we will briefly explore the fundamental question of whether there is any relationship between the counter-expectational readings of *hutsuni* and *zenzen* and their ordinary degree modifier meanings. We develop a preliminary analysis of the origin of the counter-expectational usages based on the findings reported in corpus-assisted discourse studies (Tognini-Bonelli 1993; Oh 2000) that the English adverb *actually* is a counter-expectational discourse marker. Our analysis informed by the relevant studies hypothesizes that *hutsuni* and *zenzen* came to be endowed with implicit negation. We show how this hypothesis works to yield the counter-expectational condition in tandem with the original meanings of *hutsuni* and *zenzen* as degree modifiers. Section 4 is the conclusion.

2 Counter-expectational uses of *hutsuni* and *zenzen*

Our proposal in this paper is two-fold. Firstly, we propose that *zenzen* differs from *hutsuni* in that the former can revise a pre-postulated degree on a gradable scale not necessarily to the normal/middle/passing range of the scale, in contrast to the latter, but also to an even higher/lower point on the same scale, including its maximal/minimal endpoint. We suggest that *hutsuni* be best understood as a weaker form of *zenzen* in terms of a speaker's commitment to the relative "gap" between a prior expected degree and the actual asserted degree (cf. Sawada 2019). This analysis correctly captures the strengthening/entailment relationship between the two degree modifiers in a counter-expectational context, as illustrated in (7a, b), somewhat akin to the English *good–great* pair in (8a, b).

- (7) a. Kore hutsuni umai. Toiuyori, zenzen umai!
 this HUTSUNI good in.fact ZENZEN good
 ‘This is actually good HUTSUNI. In fact, it is actually good ZENZEN!’
- b.# Kore zenzen umai. Toiuyori, hutsuni umai!
 this ZENZEN good in.fact HUTSUNI good
 ‘This is actually good ZENZEN. In fact, it is actually good HUTSUNI!’
- (8) a. This sushi is good. In fact, it is great!
 b. #This sushi is great. In fact, it is good!

The utterance in (7a) makes sense because *hutsuni* shifts the degree to the middle range from a lower prior expected degree and then the second clause shifts the degree further upward to, say, 75 on the 0–100 scale of deliciousness. This sequence of upward degree adjustment forms a coherent discourse. Let us flip the position of *hutsuni* and *zenzen* in (7a), and we get the incoherent discourse in (7b). Remember that *zenzen* may shift the asserted degree to a quite high point on the relevant scale whereas *hutsuni* raises the degree to the middle range. Therefore, it would be strange and uneconomical to raise the degree quite high and then lower it, accounting for the gibberishness of (7b). This is also observed in the English adjective pair *good–great*, as shown by the contrast between (8a) and (8b) (cf. note 3; see also Singh 2008 and Tomioka 2020).

Our second proposal is concerned with the directionality of the degree adjustment triggered by *hutsuni* and *zenzen*. Imoto (2011) observes that *hutsuni* has the discourse function of shifting a point pre-set on a lower end of an open scale introduced by a scalar adjective to the normal/middle/passing range on the same scale. We propose, *pace* Imoto (2011), however, that upward adjustment of a particular degree, as hinted in (1), is actually not necessarily required for proper usage of *hutsuni* in a counter-expectational context. Our evidence for this departure from Imoto’s observation comes from examples like (9) and (10).

- (9) A: Kinoo-sa kono mise-no raamen tabetemita-nda-yo-ne.
 yesterday-PRT this shop-GEN noodle tried-COP.PST-PRT-PRT
 ‘I tried a noodle at this shop yesterday.’
- B: Soonanda. Mettya oisii-tte kiita-kedo ...
 I.see really delicious-COMP heard-but
 ‘Oh, I see. I heard that it is really good, but...’
- A: Maa, hutsuni oisikatta-yo.
 well HUTSUNI delicious-PRT
 ‘Well, it was actually delicious HUTSUNI.’

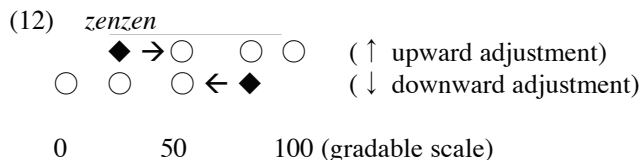
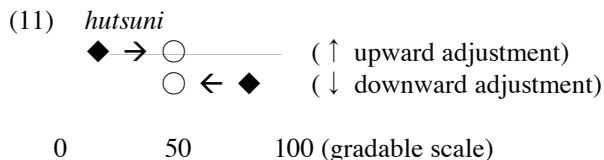
- (10) A: Kinoo-sa kono mise-no raamen tabetemita-nda-yo-ne.
 yesterday-PRT this shop-GEN noodle tried-COP.PST-PRT-PRT
 ‘I tried a noodle at this shop yesterday.’
- B: Soonanda. Mettya oisii-tte kiita-kedo ...
 I.see really delicious-COMP heard-but
 ‘Oh, I see. I heard that it is really good, but...’
- A: Iya, zenzen mazukatta-yo.
 well ZENZEN bad-PRT
 ‘No, it was actually really bad ZENZEN.’

In (9), speaker B has a quite high expectation about the tastiness of the noodle from his or her hearsay. Let’s say that speaker B expects the noodles to hit 75 on the 0–100 scale of deliciousness. Given this context, speaker A’s response to speaker B’s question has the function of lowering the prior held high degree to the normal/middle/passing range. So, the acceptability of the discourse in (9) shows that both upward as well as downward adjustment of the degree is available for *hutsuni*. The same point can be made for the positive use of *zenzen*, as shown in (10). The first interaction between speakers A and B in (10) is identical to that in (9). What speaker A means in his/her answer to speaker B’s question is that the noodle was really bad, contrary to speaker B’s high expectation, i.e., the asserted degree of the deliciousness of the noodle could be 15 or even zero instead of the prior expected 75 on the 0–100 scale. This example once again shows that both upward and downward degree adjustments are available for positive *zenzen*.⁴

Our proposed analysis of counter-expectational readings of *hutsuni* and *zenzen* can be schematically depicted as shown in (11) and (12).

⁴ Regarding the ‘direction of correction’ issue discussed here, Osamu Sawada (personal communication, September 2020) and Satoshi Tomioka (personal communication, September 2020) point out that downward adjustment of the point on an open scale, as illustrated in (9) and (10), works less smoothly compared to upward adjustment, as illustrated in (1) and (2).

It seems plausible to speculate that this preference is related to the contrast illustrated earlier in (7a, b) and (8a, b). What the two cases have in common is that when two contrastive statements involving non-opposing scale mates are in sequence, the stronger statement must follow the weaker statement (Singh 2008; Tomioka 2020). Hurford (1974) proposes a similar observation that disjuncts cannot contain an entailment relationship. Under this generalization, the utterances in (7b) and (8b) sound strange because they violate this sequence-based principle. Similarly, for those speakers who have preferences for upward as opposed to downward adjustment of the degrees on a gradable scale, it may be that examples like (9) and (10) are deemed infelicitous by virtue of the same principle. See Singh (2008) and Tomioka (2020) for further relevant data, discussions and formal analyses of the ordering restriction.



In (11), *hutsuni* has the function of shifting a degree from a prior expected lower range to the middle range (upward adjustment). We have just seen that the modifier may also shift the degree from a higher-than-normal range to the normal range (downward adjustment). *Zenzen* is slightly different. As shown in (12), the modifier has both upward and downward adjustment options. In an upward-adjustment context, *zenzen* shifts the degree from a prior expected degree to a higher range, including the maximal endpoint on the given scale. In a downward-adjustment context, on the other hand, the modifier shifts the prior expected degree to a lower range, including the minimal point on the same scale. The comparison of the visual representations in (11) and (12) shows that *zenzen* properly includes *hutsuni* in its usage profile. More specifically, *hutsuni* is a weaker form of *zenzen*: *zenzen* highlights a stronger commitment of the speaker to the relative discrepancy of the gap between a prior expected degree and the actual asserted degree, compared to *hutsuni*.

In the rest of this section, we will present two further pieces of evidence in favor of our present analysis of the counter-expectational use of *hutsuni* and *zenzen*. Our first piece of evidence comes from examples like (13).

- (13) Kono raamen {zenzen/#hutsuni} oisii-desu-ne.
 this noodle ZENZEN/HUTSUNI delicious-COP.POL-PRT

Imamadetabetanakade itiban oisii-desu!
 among.those.I.have.eaten most delicious- COP.POL

‘This noodle is actually delicious {ZENZEN/#HUTSUNI}. This is the best noodle I have ever eaten!’

This example shows that the first clause with *zenzen*, but not with *hutsuni*, is congruent with the second clause to the effect that this noodle is the best

among those noodles the speaker has ever tried. This contrast falls into place under our current analysis. As per the hypothesis, *hutsuni* normalizes a pre-postulated lower expectation on the scale of deliciousness to the middle/normal/passing range whereas *zenzen* may shift it to the highest point on the same scale. The “middle-range” assertion triggered by *hutsuni* clashes with the speaker’s statement that it is the best noodle, for if this were indeed the best noodle, he or she should not state by using *hutsuni* that its deliciousness falls within the normal range, contrary to his/her real intention. The relevant statement is perfectly compatible with the speaker’s choice to use *zenzen*, on the other hand, because the modifier may commit the speaker to the assertion that it is the best noodle he or she has ever tried.

Our second piece of evidence for our present analysis is based on examples like (14). Suppose a context where speaker A brought a chocolate for speaker B to taste which is well known to be really delicious (e.g., *Godiva*, *Goncharoff*, *Royce’s* or *Théobroma*, or whatever one wants to name it).

(14) A: Kono tyokoreeto ikaga-desu-ka-ne?
 this chocolate how-COP.POL-Q-PRT
 ‘How do you like this chocolate?’

B: (Mogu Mogu) Ara, kore hutsuni oisii-desu-ne!
 munching why this HUTSUNI delicious-COP.POL-PRT
 ‘(Munching the chocolate piece), why, this is actually delicious
 HUTSUNI!’

Given this context, speaker B’s reply to A’s kind offer in (14) is unequivocally taken by A to be one of disappointment. Again, this reaction on the part of speaker A is exactly what our proposed analysis predicts; *hutsuni*, used in this particular context, has the function of normalizing a prior expected degree, a higher end on the open scale given the pre-established knowledge of the chocolate at issue, to the middle/normal/passing range. This downward adjustment from the prior expected high degree to the normal degree, then, inevitably creates disappointment on the part of speaker A.

3 Toward explaining counter-expectational readings

We have presented various data to show that *hutsuni* and *zenzen* can be used to highlight a discrepancy between a prior expected degree and an actual asserted degree and shift the latter either upward or downward. We have further shown that the difference between the two modifiers is the strength of the speaker's commitment to the relative hugeness of the gap between the two degrees; both *hutsuni* and *zenzen* negate the prior expected degree, but the former brings it up or down to the middle/normal/passing range whereas the latter may bring it to a higher/lower degree, including the maximal/minimal endpoint on a gradable scale created by an adjective.

One of the key questions we have not addressed yet is whether there is any relationship between the ordinary meanings of the two degree modifiers, on the one hand, and the counter-expectational readings which we have argued to define the central felicity condition imposed by the two items on an ongoing discourse, on the other. How did *hutsuni*, roughly meaning 'normally', and *zenzen* 'at all', more commonly used as a negative polarity item elsewhere, come to be associated with the counter-expectational condition? Though we must leave any in-depth exploration of this fundamental question for future research, we wish to hint at one possible explanation. We suggest that a possible clue to the question comes from the observation made in corpus-assisted discourse studies that the English adverb *actually* has a discourse function as a counter-expectational marker in a way quite reminiscent of the relevant uses of *hutsuni/zenzen* under our investigation. Tognini-Bonelli (1993) and Oh (2000) write thus:

[*Actually* ... YS/YI/MM] is probably the most common device available to a speaker who wishes to make his/her own perspective stand out with respect to the general, and more common, consensus-based view, or to other preceding textual claims or events. (Tognini-Bonelli 1993: 203)

Actually tends to be associated with a denial of expectation, and thus often produces contrastive meaning. (Oh 2000: 266)

We would like to draw insights from these observations, extrapolate them to our area of inquiry, and hypothesize that both *hutsuni* and *zenzen* came to be endowed with implicit negation. Let us show how this hypothesis accounts for the counter-expectational condition of the two modifiers. To start, consider the example in (15).

- (15) Kono raamen hutsuni oisii-ne. ◆ → ○ ← ◆
 this noodle HUTSUNI delicious-PRT
 ‘This noodle is actually delicious *hutsuni*.’ 0 50
- 100

The expression in question maintains its regular use as a degree adverb picking up the normal/middle range on an open scale introduced by *oisii* ‘delicious’. As stated above, *hutsuni* contains implicit negation. So, the modifier is negating some proposition in (15). Therefore, we suggest that the expression is negating the proposition that this noodle is not normally delicious. In other words, there has to be something not normal about the deliciousness degree of the noodle in question. It follows, then, that the utterance in (15) with *hutsuni* only makes sense when a prior expected degree does not fall within the normal range. This reasoning, we contend, yields the counter-expectational condition imposed by *hutsuni* on an ongoing discourse.

We believe that the same analysis based on implicit negation can be transferred to deriving the counter-expectational reading of positive *zenzen*. As we mentioned at the outset of this paper, *zenzen* is used much more commonly as a negative polarity item in Japanese. Keeping this point in mind, compare the examples in (16) and (17). Example (16) illustrates the use of *zenzen* as a negative polarity expression; (17) illustrates its counter-expectational use.

- (16) Kono raamen zenzen oisiku-nai-ne. (negative polarity item)
 this noodle ZENZEN delicious-NEG-PRT
 ‘This noodle is not delicious at all.’
- (17) Kono raamen zenzen oisii-ne. (counter-expectational use)
 this noodle ZENZEN delicious-PRT
 ‘This noodle is actually delicious ZENZEN.’

Given the original use of *zenzen* as a negative polarity item, as shown in (16), let us assume that positive *zenzen* is also lexically endowed with implicit negation, just like *actually* and *hutsuni*. Thus, in (17), positive *zenzen* is negating some proposition, which we take to be that this noodle is not delicious. So, the modifier essentially negates the prior held expectation that this noodle is not delicious. Furthermore, *zenzen* commits a speaker to a stronger negative attitude than *hutsuni* toward the relevant proposition he or she is attempting to negate (cf. Sawada 2008). Given these two lexical properties, the utterance in (17) is only felicitous if the prior expected degree is deemed by the speaker to be considerably far

from the actual asserted degree, thereby yielding the counter-expectational condition imposed by positive *zenzen*.

4 Conclusion

To the best of our knowledge, this paper presents the first attempt to uncover points of micro-variation regarding felicitous uses of *hutsuni* and *zenzen* in ongoing discourses in contemporary Japanese. We have investigated the counter-expectational reading of *hutsuni* and *zenzen*, a relatively novel use of these modifiers. We have proposed that this reading comes about due to the semantic-pragmatic requirement that the modifiers require a point on an open scale defined by an adjective to be set lower than the standard. We have also presented novel data showing that the two modifiers differ in the nature of standard shifting: *hutsuni* shifts the preset point on a scale to the average range whereas *zenzen* shifts the point to some upward or downward point on the scale, even including the highest or lowest endpoints. Finally, as our preliminary step toward understanding the origin of the counter-expectational condition, we have suggested, drawing on the counter-expectational use of the discourse marker *actually* in English (Tognini-Bonelli 1993; Oh 2000), that both *hutsuni* and *zenzen* came to be lexically associated with implicit negation. We have shown how this analysis correctly derives the counter-expectational condition in tandem with the micro-variation between *hutsuni* and *zenzen* with respect to the speaker's attitude/commitment toward a certain implicit proposition he or she is negating.

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From Subjunctive Alternatives to Imperatives and Unconditionals*

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1 Introduction

Imperative clauses functioning as conditional antecedents have been paid much attention in the literature (e.g. Kaufmann 2012; Condoravdi and Lauer 2012; von Stechow and Iatridou 2017; among others). In this study, I investigate the use of imperative clauses as conditionals known as *unconditionals* (e.g. (1), cf. Rawlins 2013).

- (1) a. Whether Taro comes to the party or not, it would be fun.
b. Whoever comes to the party, it would be fun.

One core intuition about unconditionals is that they express a certain kind of “not mattering” or “indifference.” For example, (1a) expresses that, relative to whether the party is fun, it doesn’t matter whether John is there.

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In Japanese, light verbs with imperative morphemes *seyo/shiro* ‘do.IMP’/are ‘be.IMP’, which I label “SSAs.” can form not only imperatives (e.g. (2)) but also unconditionals (e.g. (3)).

(2) Imperatives with SSAs:

a. Zenshin **shiro/seyo!**

move.up do.IMP

‘Move up!’

b. Daitan-de **are!**

bold-COP be.IMP

‘Be bold!’

(3) Unconditionals with SSAs:

Asu ame-ga { huru-ni **shiro/seyo** / huruno-de **are**
 tomorrow rain-NOM { fall-COP do.IMP / fall.NMLZ-COP be.IMP
 }, shiai-wa toriokonau.
 } game-TOP hold

‘Whether it rains or not tomorrow, the game will be held.’

What is interesting and puzzling about unconditionals with SSAs is that, unlike ordinary unconditional constructions in (1), they do not utilize any *wh*-items or concessive expressions such as *wh-ever*, *no matter wh*, *whether (or not)*. According to Rawlins (2013), the meaning of “indifference” conveyed by unconditionals is attributed to the alternative semantics of adjunct clauses with such items. In light of such an account, specific research questions that I pursue in this paper include: “How are conditional adjuncts with SSAs interpreted as unconditionals, despite having imperative forms?”, “Why do they lack the imperative (i.e., directive) meaning?”, and “What is the semantic contribution of SSAs in the first place?”

In this paper, I will propose an alternative semantics for SSAs that accounts for both the imperative and the unconditional interpretations in a unified fashion. Instead of defining SSAs as denoting by the meaning of imperatives or *wh*-items, this paper claims that SSAs are potentially subjunctive alternative generators that require licensing by elements with subjunctive mood.

2 Deriving imperatives

2.1 Weak and strong readings of imperatives

In this section, before getting into the analysis, I show that imperatives with SSAs actually behaves like ordinary imperatives in terms of the availability of strong and weak readings, which empirically ensures that we can safely treat them as imperatives.

In the recent literature on imperatives (e.g. Kaufmann 2012, Condoravdi and Lauer 2012; von Stechow and Iatridou 2017), it has often been remarked that

the hallmark of imperatives is that they are not only used for strong readings (ORDERS, REQUESTS, or ADVICE), but also for weak readings like PERMISSIONS and ACQUIESCENCES, i.e., for speech acts that widen the range of possible actions.¹

- (4) ‘Move up!’
 ~ You {must/#may} move up! ORDER/REQUEST
- (5) A: May I open the window?
 B: Sure, open the window, if you are hot!
 ~ You {#must/may} open the window. PERMISSION

At the level of semantic interpretation as well as at the level of intuitive paraphrases, the strong example in (4) is associated with necessity like *must*, and the example in (5), namely the weak one, with possibility *can* or *may*. As is clear from the following example, imperatives with SSAs can pattern with weak readings as well.

- (6) A: May I open the window?
 B: Mochiron. Atsui nara mado-o kaihou shiro/seyo.
 sure hot then window-ACC open do.IMP
 ‘Sure, open the window, if you are hot!’

The weak imperative data indicates that what we need here is an analysis that allows us to capture both weak and strong distinction of imperatives with SSAs and at the same time to explain the fact that SSAs can form unconditional adjuncts.

2.2 The alternative semantic account

The analysis employs (i) two-tier alternative semantics (Rooth 1985; Beck 2006; Kotek 2014) and (ii) the possibility modal theory of imperatives (Oikonomou 2016). In the two-tier alternative semantics, all lexical items have ORDINARY- and ALTERNATIVE-SEMANTIC VALUES (O-values and ALT-values). For example, a predicate like *move up* has a standard denotation as a function from individuals to truth values in the O-value while its ALT-value is the singleton set consisting of the O-value.

- (7) a. $\llbracket \text{move up} \rrbracket^o = \lambda x_e . \lambda w_s . \text{move.up}(x, w)$
 b. $\llbracket \text{move up} \rrbracket^{alt} = \{ \lambda x_e . \lambda w_s . \text{move.up}(x, w) \}$

¹ Cross-linguistically, some imperative-like sentences can only be used as strong directives, not allowing the contextual weakening to express weak readings (e.g. Hebrew and German infinitives, Slovenian subjunctive, Japanese basic/dictionary form). Ihara and Noguchi (2019) argue that these imperatives (especially, Japanese basic form ones) should not be given the same analysis as regular imperatives.

I propose that SSAs are operators that introduce a non-singleton set of alternatives with subjunctive features in the ALT-value, as in (8). Crucially, even though SSAs contain imperative morphologies, they are not imperative operators by themselves.

- (8) a. $[[\mathcal{P}_{st} \text{ SSA}]]^o = [[\mathcal{P}]]_{[+subj]}^o$
 b. $[[\mathcal{P}_{st} \text{ SSA}]]^{alt} = \{[[\mathcal{P}]]^o, [\overline{\mathcal{P}}]]^o\}_{[+subj]}$ (to be modified)

Following Villalta (2008) and Oikonomou (2016), the interpretation of the subjunctive feature $[+subj]$ in (8) requires a(n) (imperative) modal operator with a non-null ordering source (Kratzer 1981); an element with $[+subj]$, $\alpha_{[+subj]}$, requires α be licensed (syntactically, c-commanded) by an element with subjunctive mood ($[-subj]$ elsewhere).

Where does the meaning of imperatives come from, then? Here, I adopt Oikonomou's (2016) account that imperatives involve existential/possibility modals \diamond_{imp} which are generated independently of imperative morphologies (here, SSAs). Departing from the "strong" theory of imperatives that assumes the imperative modal as a universal/necessity modal (Kaufmann 2012), her theory assumes that the interpretation of imperatives starts from an existential modal meaning in (9), thereby the weak (i.e. PERMISSION) interpretation is derived for free.

- (9) $[[Imp\ p]]^{o,c} = \lambda w.\exists w' \in W : \text{SPKR}'_c \text{ desire in } w \text{ is satisfied w.r.t. } \text{ADDR}'_c \text{ actions are satisfied in } w' \ \& \ p(w') = 1.$

The imperative sentence in (9) states that there is a world w' compatible with Speaker's desires in w and p is true in world w' . Intuitively, it says that p is consistent with the Speaker's desires.

Under this view, the default imperative reading (i.e., COMMAND) is then explained on the basis of the following two factors: (i) lack of a scalar counterpart, and (ii) strengthening via. an implicature derived in the presence of certain focus alternatives (cf. Kaufmann 2012). This strengthening is the result of an application of a covert exhaustivity operator EXH, which identifies a proposition as the most informative out of a given set (Chierchia et al. 2012; Chierchia 2013).

- (10) $[[\text{EXH}_{\text{ALT}}(S)]]^{o,w,c} = 1$ iff
 $S(w) = 1 \ \& \ \forall q \in \text{ALT}_{S,w} : q(w) = 1 \rightarrow [S \subseteq q]$

For instance, when EXH applies to a sentence $S = \text{'Taro eats a [cake]}_F$, $\text{EXH}(S)$, the alternatives $\{S, \neg S\}$ are evaluated by EXH, and the non-weaker alternative $\neg S$ is negated, deriving the implicature $\neg S = \text{'it's not the case that Taro eats a \{cookie, banana, ... \}}$.

Let us see how the given components derive the imperative interpretation of sentences with SSAs. The simplified LF of the sentence in (4) is (11), and the derivation is given in (12)–(14).

- (11) LF: $[(14) \text{EXH}_{\text{ALT}} [(13) \text{Imp} [\text{move up}(\text{ADDR}) \text{SSA}]_{[+subj]}]]$
- (12) a. $\llbracket \text{move up}(\text{ADDR}) \text{SSA} \rrbracket^o = \lambda w. \text{move.up}(\text{AD}_c, w)_{[+subj]}$
 b. $\llbracket \text{move up}(\text{ADDR}) \text{SSA} \rrbracket^{\text{alt}}$
 $= \{ \lambda w. \text{move.up}(\text{AD}_c, w), \lambda w. \neg \text{move.up}(\text{AD}_c, w) \}_{[+subj]}$
- (13) a. $\llbracket \text{Imp} [\text{move up}(\text{ADDR}) \text{SSA}] \rrbracket^o = \lambda w. \exists w' : \text{SP}'_c s \text{ desire in } w \text{ is satisfied at } w' \text{ \& move.up}(\text{AD}_c, w')$
 b. $\llbracket \text{Imp} [\text{move up}(\text{ADDR}) \text{SSA}] \rrbracket^{\text{alt}}$
 $= \left\{ \begin{array}{l} \lambda w. \exists w' : \text{SP}'_c s \text{ desire in } w \text{ is satisfied at } w' \\ \quad \& \text{move.up}(\text{AD}_c, w'), \\ \lambda w. \exists w' : \text{SP}'_c s \text{ desire in } w \text{ is satisfied at } w' \\ \quad \& \neg \text{move.up}(\text{AD}_c, w') \end{array} \right\}$
- (14) a. $\llbracket \text{EXH}_{\text{ALT}} [\text{Imp} [\text{move up}(\text{ADDR}) \text{SSA}]] \rrbracket^{o,c}$
 $= \lambda w. \exists w' : \text{SP}'_c s \text{ desire in } w \text{ is satisfied at } w' \text{ \& move.up}(\text{AD}_c, w') \text{ \& } \forall q \in \text{ALT}_{(13)} : q(w) = 1 \rightarrow [\llbracket (13) \rrbracket \subseteq q],$
 where $\text{ALT}_{(13)} = (13b)$
 $= \left\{ \begin{array}{l} \lambda w. \exists w' : \text{SP}'_c s \text{ desire in } w \text{ is satisfied at } w' \\ \quad \& \text{move.up}(\text{AD}_c, w'), \\ \lambda w. \exists w' : \text{SP}'_c s \text{ desire in } w \text{ is satisfied at } w' \\ \quad \& \neg \text{move.up}(\text{AD}_c, w') \end{array} \right\}$
- b. Implicature of (14a):
 $\neg \exists w' : \text{SP}'_c s \text{ desire in } w \text{ is satisfied at } w' \text{ \& } \neg \text{move.up}(\text{AD}_c, w')$

In (13), the imperative modal with the sentence with SSAs conveys that ‘there is a world w' compatible with Speaker’s desires in w and p is true in world w' ’, i.e. ‘it is possible that the addressee moves up’. At the same time, the subjunctive feature $[+subj]$ given by the SSA is licensed by the imperative modal (cf. (11)). The existential meaning is then strengthened by the exhaustive operator in (14). From the implicature (14b), we get the interpretation that ‘there is no world that is compatible with the speaker’s desires in which the addressee does not move up’. This is equivalent to saying that “Move up! (\approx the addressee must move up)”, thereby capturing the imperative interpretation.

In contrast to strong readings, no additional implicature is derived in permission readings. This is because in permission examples, assuming that (i) permission imperatives presuppose that the uttered proposition is contextually prohibited, i.e., non-uttered alternatives are permitted before uttering (Portner 2012), and that (ii) a conversational implicature is blocked if it is incompatible

with the context (*cancelability*, Grice 1975), the implicature to be conveyed by the sentence is canceled.

Take the situation in (6), for example. Here, before uttering (6), it is presupposed that ‘the addressee is prohibited to open the window’ and ‘the addressee is permitted not to open the window’ (15).²

- (15) Common ground (CG) before uttering (6):
- \square -**open**(AD_c, w') ‘AD is prohibited to open the window.’
 - \diamond -**open**(AD_c, w') ‘AD is permitted not to open the window.’

After uttering the sentence, the context is updated by adding the uttered content ‘you may open the window’, removing the prohibited content ‘you must not open the window’ (16). Crucially, the exhaustive implicature is not derived in this context, since the presupposed content ‘not open the window is permitted’ is incompatible with the exhaustive meaning ‘you must open the window’.

- (16) CG after uttering (6):
- ★ \diamond **open**(AD_c, w') (added by the utterance)
 - \square -**open**(AD_c, w') (removed by ★)
 - \diamond -**open**(AD_c, w') (incompatible with \square **open**(AD_c, w'))

In the above, the result of the utterance is both ‘the addressee is permitted to open the window’ and ‘the addressee is permitted not to open the window’. That is, the addressee is allowed both to open or not open the window, capturing our intuition about the permission example in (6).

2.3 The difference from regular imperative morpheme

What is the difference between SSAs and the Japanese regular imperative morpheme *-e/ro_{imp}*? One crucial difference is that *-e/ro_{imp}* cannot construct unconditionals, as shown in the example below.³

- (17) *Dare-ga sono sushi-o tabe-**ro**, omae-ga harawa-nakyanaranai.
 who-NOM that sushi-ACC eat-IMP you-NOM pay-must
 ‘[Int.] Regardless of who eat the sushi, you have to pay for it.’

A plausible explanation for this data is to claim that while SSAs are not imperative morphemes by themselves, the Japanese morpheme *-e/ro_{imp}* encodes the imperative modal meaning by itself (Ihara and Noguchi 2019), *-e/ro_{imp}* = IMPMOD, or requires licensing of imperative modals (cf. Oikonomou 2016)

² In (15) and (16), the common ground is used just for convenience, but other imperative-specific components, such as To-do Lists (TDL, Portner 2004, 2007), can alternatively be used as well. It is not important here which discourse component set is used.

³ I thank an anonymous reviewer for pointing this out.

rather than subjunctive modals. That is, the presence of $-e/ro_{imp}$ forces the imperative interpretation on the sentence, thereby the sentence is not allowed to be an unconditional adjunct.

3 Deriving unconditionals

This section attempts to compose the unconditional construction with SSAs by applying our proposal to the existing analysis of unconditionals. I basically implement the analysis based on Rawlins's (2013) account of unconditionals. Rawlins gives an account of unconditionals that explains their relationship to traditional *if*-conditionals. According to Rawlins, unconditionals are conditionals which involve a question-denoting adjunct that supplies domain restrictions to a main-clause operator (such as a modal). The analysis in this section will show that the key difference between his analysis and mine is in the way unconditional adjuncts are made. In Rawlins's analysis, the adjunct denotes a non-singleton set of propositions because of the semantics of *wh*-items and questions, whereas in my analysis, the non-singleton nature of the adjunct arises from the semantics of SSAs that ensures a multiplicity of alternatives.

3.1 The semantics of the adjunct clause

The following is a step-by-step guide to deriving the meaning of the unconditional example in (3), starting with the adjunct clause.

First, an SSA takes the adjunct proposition (18) and returns (19).

- (18) a. $\llbracket \text{it rains tomorrow} \rrbracket^o = \lambda w_s. [\text{it rains tmr}(w)]$
 b. $\llbracket \text{it rains tomorrow} \rrbracket^{alt} = \{ \lambda w. [\text{it rains tmr}(w)] \}$
- (19) a. $\llbracket \text{it rains tmr SSA} \rrbracket^o = \lambda w. [\text{it rains tmr}(w)]_{[+subj]}$
 b. $\llbracket \text{it rains tmr SSA} \rrbracket^{alt} = \{ \lambda w. [\text{it rains tmr}(w)], \lambda w. [\text{it doesn't rain tmr}(w)] \}_{[+subj]}$

The unconditional adjunct further requires the presupposition that the alternatives mentioned are the only options for the sentence to become true.⁴

- (20) Presupposition operator ∂_{uc} for unconditionals:
 $\llbracket \partial_{uc}[\alpha] \rrbracket^{w,c,o} = \llbracket \alpha \rrbracket^{w,c,alt}$
 defined only if:
 (i) $\forall w' \in \bigcap f_c(w) : \exists p \in \llbracket \alpha \rrbracket^{alt} : p(w') = 1$

⁴Alternatively, this role could be done by using a question operator $[Q]$ (Rawlins 2008, 2013). Rawlins assumes that $[Q]$ is the force-encoding species of question operator, and the presence of this operator is determined syntactically by *wh*-items. However, in the case at hand, namely the case of SSAs, it seems empirically odd to assume $[Q]$ as the force of the adjunct, since it can never appear in questions. For this reason, I just define the presupposition operator to ensure the role.

$$(ii) \forall p, p' \in \llbracket \alpha \rrbracket^{alt} : p \neq p' \rightarrow \neg \exists w' \in \bigcap f_c(w) : p(w') \wedge p'(w')$$

where f_c stands for a salient conversational background provided by c , and $\bigcap f_c$ is a the set of worlds representing (roughly) public mutual discourse commitments, i.e. the context set.

The role of the operator is to ‘copy’ the ALT-value of α to the O-value, which simply ensures the O-value of an adjunct is non-singleton. It further ensures that every world in $\bigcap f_c$ involves exactly one alternative in the set provided by α . That is, there are no worlds in the context set that fail to correspond to an alternative, and there are no worlds that correspond to more than one. When this operator applies to (19), it returns the meaning below.

$$(21) \llbracket \partial_{uc}[\mathbf{it rains tmr SSA}] \rrbracket^{c,o} = \llbracket \mathbf{it rains tmr SSA} \rrbracket^{c,alt} \\ = \left\{ \begin{array}{l} \lambda w. [\mathbf{it rains tmr}(w)], \\ \lambda w. [\mathbf{it doesn't rain tmr}(w)] \end{array} \right\}_{[+subj]}$$

defined only if:

- (i) $\forall w' \in \bigcap f_c(w) : \exists p \in \llbracket \mathbf{it rains tmr SSA} \rrbracket^{alt} : p(w') = 1$
- (ii) $\forall p, p' \in \llbracket \mathbf{it rains tmr SSA} \rrbracket^{alt} :$
 $p \neq p' \rightarrow \neg \exists w' \in \bigcap f_c(w) : p(w') \wedge p'(w')$

Thanks to the presupposition operator, the O-value of the adjunct becomes non-singleton, $\{\lambda w. \mathbf{it rains tmr}(w), \lambda w. \mathbf{it doesn't rain tmr}(w)\}_{[+subj]}$. The operator further imposes the requirement that every world in the context set $\bigcap f_c$ involves exactly one alternative in that set; there are no worlds in which both ‘it rains tomorrow’ and ‘it doesn’t rain tomorrow’ are true at the same time.

3.2 The semantics of the main clause

This section starts with the semantics of the main clause of the unconditionals with SSAs, and then attempts to combine the clause with the adjunct.

In the traditional semantics of conditionals (Kratzer 1986; Heim 1982) a conditional provides a single restriction to an operator in the main (i.e. the consequent) clause. The element that provides this restriction is a (covert or overt) modal like *must* or *will*. Roughly, the ordinary hypothetical conditional in (22) is interpreted as follows.

- (22) If it rains, the festival is postponed.
 \rightsquigarrow [If it rains], MUST(the festival is postponed)

Building on this view, Rawlins (2013) suggests that unconditionals provide a set of restrictions, schematized as the following.⁵

⁵ See also Alonso-Ovalle’s treatment of *if*-conditionals with disjunction in the antecedent (Alonso-Ovalle 2009).

- (23) Whether it rains or not, the festival is postponed.
 $\rightsquigarrow \left\{ \begin{array}{l} \text{[If it rains], MUST(the festival is postponed)} \quad \text{or} \\ \text{[If it doesn't rain], MUST(the festival is postponed)} \end{array} \right.$

For the interpretation of conditionals, we use a binding/correlative-type analysis (von Fintel 1994; Schlenker 2004), where a conditional adjunct binds a variable that provides a restriction to a main-clause modal. The LF λ operator defined in (24) mediates this binding.

$$(24) \quad \llbracket \lambda_i[\alpha] \rrbracket^{g,w,c,o} = \{ \lambda p. \llbracket \alpha \rrbracket^{g \mapsto p,w,c} \}$$

The modal operator *must* is defined in terms of Kraterean semantics of modals, (25).⁶ It carries an index *i* and this index is used in the interpretation.⁷

$$(25) \quad \llbracket \text{must}_i / \text{will}_i \rrbracket^{g,c,o} = \lambda p. \lambda w. \forall w' \in ((\bigcap f_c(w)) \cap g(i)) : p(w'),$$

where f_c is a circumstantial conversational background in c .

It simply returns true if p is true at all the worlds in the circumstantial background intersected with the set of worlds provided by the index i .

Utilizing the conditional semantics assumed so far, the main clause of the unconditional in (3) is represented as follows.

- (26) a. $\llbracket \text{[the game is held]} \rrbracket^o = \lambda w. [\text{the game is held in } w]$
 b. $\llbracket \text{must}_i [\text{the game is held}] \rrbracket^{g,c,o}$
 $= \lambda w. \forall w'' \in ((\bigcap f_c(w)) \cap g(i)) : \text{the game is held in } w''$
- (27) $\llbracket \lambda_2 [\text{must}_1 [\text{the game is held}]] \rrbracket^{g,c,o}$
 $= \{ \lambda p. \lambda w. \forall w' \in ((\bigcap f_c(w)) \cap p_1) : \text{the game is held in } w' \}$

In (30a), the main clause proposition ‘the game is held’ is true at all the worlds in the circumstantial background intersected with a proposition will be provided by the adjunct clause.

3.3 Combining the clauses

We are now in a position to combine the main clause with the unconditional adjunct. As the simplified logical tree in (28) shows, since the unconditional adjunct is a set containing propositions while the main clause is a set containing a function taking a proposition, the combination should happen in a point-wise way: here, each clause combines with each argument via Hamblin

⁶ Following Kratzer’s work, I take it for granted that a modal is a quantificational operator over possible worlds sensitive to a modal base and an ordering source. For the sake of space and analysis, in (25), I assume a simple version in which a conversational background f_c takes on the role of the two parameters.

⁷ See von Fintel (1994) for a more elaborate version.

$$(ii) \forall p, p' \in \left\{ \begin{array}{l} \lambda w. [\mathbf{it rains tmr in } w], \\ \lambda w. [\mathbf{it doesn't rain tmr in } w] \end{array} \right\} \\ : p \neq p' \rightarrow \neg \exists w' \in \bigcap f_c(w) : p(w') \wedge p'(w')$$

As represented in (30a), the subjunctive feature [+subj] in the adjunct clause (3) is licensed by the subjunctive conditional meaning, specifically by the necessity operator **must**.

The derivation is not complete yet. In (30b), the ultimate truth-condition of the sentence involves the set of two alternatives, which should be interpreted as a question rather than an assertion. To avoid this problem, Rawlins utilizes a default Hamblin universal operator \forall , whose role is to *collect* alternatives and to produce a singleton set. A toy assertion operator **A** is given in (31).⁸ The relevant Hamblin universal operator is given in (32).

- (31) Assertion operator
 $\llbracket \mathbf{A}[\alpha] \rrbracket^{g,c} = \llbracket \alpha \rrbracket^{g,c}$
 defined only if $|\alpha| = 1$ (Rawlins 2013: 129, slightly modified)
- (32) Hamblin universal operator
 Where $\llbracket \alpha \rrbracket \subseteq D_{\langle st \rangle}$,
 $\llbracket \forall[\alpha] \rrbracket^{g,c} = \{ \lambda w. \forall p \in \llbracket \alpha \rrbracket^{g,c} : p(w) = 1 \}$
 (Kratzer & Shimoyama 2002, §3, slightly modified)

By applying this universal operator to (28), we obtain the following result.

$$(33) \llbracket (28) \rrbracket^{g,c,o} = \llbracket \forall[(30b)] \rrbracket^{g,c,o} = \\ \left\{ \lambda w. \forall p \in \left\{ \begin{array}{l} \lambda w'. \forall w'' \in [(\bigcap f_c(w')) \cap [\lambda w'' \mathbf{it rains tmr in } w'']]: \\ \quad \mathbf{the game is held in } w'', \\ \lambda w'. \forall w'' \in [(\bigcap f_c(w')) \cap [\lambda w'' \mathbf{it doesn't rain tmr in } w'']]: \\ \quad \mathbf{the game is held in } w'' \end{array} \right\} : \\ p(w) = 1 \right\}$$

defined only if:

(i) $\forall w'' \in \bigcap f_c(w') : \exists p \in \llbracket [\mathbf{it rains tmr in } w'] \text{ SSA} \rrbracket^{alt} : p(w'')$
 (ii) $\forall p, p' \in \llbracket [\mathbf{it rains tmr in } w'] \text{ SSA} \rrbracket^{alt} :$
 $p \neq p' \rightarrow \neg \exists w'' \in \bigcap f_c(w') : p(w'') \wedge p'(w'')$

Intuitively, the result of this derivation is as follows. (i) A set of modalized (conditionalized) propositions, namely ‘if it rains, the game is held’ and ‘if it doesn’t rain, the game is held’, is generated by the adjunct and the main clause. (ii) The unconditional presupposition operator poses the presupposition that every world in the domain (i.e., the background f_c) makes true one of the two alternatives, and each alternative is possible in view of the domain.

⁸This obviously does not capture what is involved in the “speech act” of asserting. It just ensures that the number of elements to assert by the sentence is one.

(iii) By the Hamblin universal operator, the sentence asserts that each alternative (which corresponds to a single conditional claim) is true. The result correctly captures our intuition about unconditionals with SSAs.

The fact that the consequent part of (28), namely ‘the game is held’, is entailed is also captured. Since the alternatives introduced by the adjunct are necessarily complements of each other, we end up considering every possible domain restriction. Consequently, we expect the modal claim to be true across the whole domain.

3.4 SSAs in *wh*-clauses

What remains to be explained is how to deal with data with *wh*-items. As shown in (34), SSAs can appear in *wh*-clauses and form unconditional adjuncts.

- (34) Dare-ga sono sushi-o tabeta-ni {seyo/shiro}, omae-ga
 who-NOM that sushi-ACC ate-COP SSA you-NOM
 harawa-nakerebanaranai.
 pay-must
 ‘Regardless of who ate the sushi, you have to pay for it.’

In the case at hand, the ALT-value of the propositional argument of SSAs is already a set of alternatives, as shown in (36b).⁹

- (35) a. $\llbracket \text{dare} \rrbracket^o = \text{undefined}$ b. $\llbracket \text{dare} \rrbracket^{alt} = \{x \mid x \in \text{human}(x)\}$
 (36) a. $\llbracket \text{dare ate sushi} \rrbracket^o = \text{undefined}$
 b. $\llbracket \text{dare ate sushi} \rrbracket^{alt}$
 $= \{\lambda w. \text{ate.shushi}(x, w) \mid x \in \text{human}(x)\}$

I thus give a modification to the semantics of SSAs as follows, while preserving their core role (i.e., generating alternatives with subjunctiveness).

- (37) a. $\llbracket \mathcal{P}_{st} \text{ SSA} \rrbracket^o = \llbracket \mathcal{P} \rrbracket_{[+subj]}^{alt}$ if $\llbracket \mathcal{P} \rrbracket^o$ is not defined (cf. (39)),
 otherwise $\llbracket \mathcal{P} \text{ SSA} \rrbracket^o = \llbracket \mathcal{P} \rrbracket_{[+subj]}^o$
 b. $\llbracket \mathcal{P}_{st} \text{ SSA} \rrbracket^{alt} = \begin{cases} \{\llbracket \mathcal{P} \rrbracket^{alt}\}_{[+subj]} & \text{if } |\llbracket \mathcal{P} \rrbracket^{alt}| > 1 \\ \{\llbracket \mathcal{P} \rrbracket^o, \llbracket \mathcal{P} \rrbracket^o\}_{[+subj]} & \text{if } |\llbracket \mathcal{P} \rrbracket^{alt}| = 1 \end{cases}$

In (37b), if an ALT-value of a proposition of SSAs is a set of multiple alternatives, i.e., is already *wh*-marked, SSAs just return that ALT-value, adding the subjunctive feature to the proposition. The adjunct clause of the *wh*-unconditionals with SSAs (without the presupposition) then looks like (38), capturing the desirable derivation.

⁹ In (36b), assuming that ‘ate sushi’ denotes $\{\lambda x_e. \lambda w. \text{ate.shushi}(x, w)\}$ as its ALT-value, the ALT-value introduced by *dare* combines with ‘ate sushi’ via. HPFA.

- (38) a. $\llbracket \text{dare ate sushi SSA} \rrbracket^o = \llbracket \text{dare ate sushi} \rrbracket_{[+subj]}^{alt}$
 $= \{ \lambda w. \text{ate.shushi}(x, w) \mid x \in \text{human}(x) \}_{[+subj]}$
- b. $\llbracket \text{dare ate sushi SSA} \rrbracket^{alt} = \{ \llbracket \text{dare ate sushi} \rrbracket^{alt} \}_{[+subj]}$
 $= \{ \{ \lambda w. \text{ate.shushi}(x, w) \mid x \in \text{human}(x) \} \}_{[+subj]}$

4 Conclusion

This study has provided a unified analysis of the two interpretations of sentences with SSAs. SSAs can form imperatives, since the subjunctive feature provided by SSAs allows licensing of imperative modals. SSAs can also form unconditionals without utilizing *wh*-items, since they play the role of ensuring the multiplicity of alternatives. The analysis proposed in this paper provides new insights not only about the relationship between imperatives and (un)conditionals, but also about the variation of deriving unconditionals in natural languages.

As future work, it would be interesting to see how SSAs came to acquire their meaning. More specifically, we may be required to investigate the answers to the questions, “Why are light verbs used in SSAs” and “What are their semantic contributions?” If we assume SSAs as expressions arose as a result of grammaticalization (as I have done in this paper), some historical research on SSAs would be needed.

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The Development of Analytic Negatives in Sakhalin Ainu

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1 Introduction

The aim of this work is to give an overview of negative constructions in Sakhalin Ainu (henceforth SA). By the end of the paper, I will argue that SA negative constructions have developed from a synthetic construction into an analytic one. Negative expressions featuring different morphosyntactic layouts appear synchronically in the language corpora consulted for this study. However, the percentage of attestations for each negation strategy changes from corpus to corpus, with a ratio that delineates an essentially diachronic development.

In the SA sources employed for this study (§3) negation is expressed via a number of strategies that differ strikingly with regard to their morphosyntax. Example (1) shows *hannehka*, one of the negative forms that I investigate in the following sections, featured in one of the possible syntactic layouts of SA negative constructions. In (1) the negative precedes the negated verb (here the copula *ne*).

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- (1) *Enrum hannehka ne yahka ...*
 promontory NEG COP though
 ‘Though it was not a promontory ...’

(Murasaki 1976: 23)

Formally the SA negative forms are completely different from *somo*, the form found in Hokkaidō Ainu dialects.

- (2) *Numan somo k-ek.*
 Yesterday NEG 1SS-come.SG
 ‘Yesterday I did not come.’

(Tamura 1984: 12)

That is, SA showcases negative constructions whose development appears to be unique within Ainu.

The paper is organized as follows. After I have given a profile of the Ainu language (§2) and introduced my reference sources (§3), I move on to discussing the SA negative morpheme and forms in §4. Although the main focus of this paper is SA, in §4 I also take into account data from Kuril Ainu (KA) as they clarify the origins of the SA negative morpheme. Given the scarcity of data regarding negation in Kuril Ainu sources, these are only considered as providing background historical information, and in §5 I only look at the negative forms and constructions attested in SA. As a way to conclude the discussion, in §6 I briefly compare SA with Hokkaidō Ainu and other neighboring languages. Here I suggest that analytic negatives are in fact not a prerogative of SA, and that they might represent an areal feature shared by other languages. Section 7 concludes this paper.

2 A profile of the Ainu language

Ainu is a language isolate for which no clear genetic relation with other languages has been established to date. There are three varieties of Ainu which have been documented more or less thoroughly: Hokkaidō Ainu, Sakhalin Ainu, and Kuril Ainu (Asai 1974). The Sakhalin and Kuril varieties are extinct, while Hokkaidō Ainu is critically endangered.

The basic word order of Ainu is SOV. Ainu is a polysynthetic, agglutinating, PRO-drop language. It is strongly head-marking and right-headed with a rich but largely non-productive morphology. There is no gender agreement while number may be non-obligatorily distinguished on nouns and verbs by dedicated morphology or morphosyntactic processes (e.g. stem reduplication). Verb arguments are not case-marked and the S, A, and O functions are distinguished on the basis of word order. Non-arguments are marked by postpositions or locative nouns. Verbal morphology counts a number of applicative,

causative and antipassive morphemes, which, however, are not fully productive. Noun incorporation is recognized as a widespread process in the language (see e.g. Satō 1992). There is no formal marking for tense, but the language displays markers for mood, aspect, and evidentiality (Bugaeva 2012).

3 Sources for this study

Table 1 summarizes the sources consulted for this study. For each source, proceeding from left to right, I give the language variety (Kuril Ainu or Sakhalin Ainu), the name of the collector, the year(s) of data collection, the type of source, and the abbreviation with which I reference to the source in the remainder of the paper.

Data on Kuril Ainu are scant. The three word lists taken into account here, which rarely include short phrases, exhaust almost all of the documentation carried out on this Ainu variety before it went extinct. Therefore, although the origins of negation bring together KA and SA, the development I discuss in §5 is considered unique to this latter variety. Moreover, MU1 and MU2 are the only corpora with available audio recordings, which has important implications for the approach I take in isolating and reconstructing the negative morpheme of KA and SA (§4.3).

Variety	Collector	Year	Type	Abbreviation
Kuril	Krasheninnikov	1738	word list	KR
Kuril	Steller	1743	word list	ST
Kuril	Dybowski	1884	word list/ dictionary	DY
Sakhalin	Dobrotvorskij	1867- 1868	dictionary	DO
Sakhalin	Pilsudski	1903- 1904	collected texts	PI
Sakhalin	Murasaki	1960- 1971	collected texts with audio	MU1
Sakhalin	Murasaki	1983	collected texts with audio	MU2

Table 1 – Reference sources

Where audio recordings are not available for the written data, I carry out a phonological reconstruction of the negative alloforms on the basis of transliteration. In doing so, I consider the different orthographies employed to transliterate Ainu words and the phonetics of the language spoken by the collector of the source as pivotal elements in retrieving the phonological realization of the negative morpheme.

4 Isolating the negative morpheme within SA negative forms

Six different forms are employed to express negation in SA: *ham*, *hankii*, *hanneh(ka)*, *hanne*, *hanka*, and *hannah*. Despite their quite different syntactic properties (§5), morphologically the last five items in this list are brought together by the string [*han*]. This segment, in turn, corresponds overall to the form *ham*, except for the realization of the final nasal consonant. Already from this simple observation it can be assumed that negative polarity in SA is encoded by the morpheme *ham*, which must appear as *han* when not in isolation. This conclusion is supported by a number of minimal pairs of negative and affirmative predicates found, for instance, in PI (e.g. *ham ecinu* ‘you all do not listen’ > *ecinu* ‘you all listen’).

Nonetheless, the form *ham* aside, the internal morphology of the other negative forms mentioned above remains opaque, and the underlying form of the negative morpheme (either *ham* or *han*) needs to be determined. This is discussed in the following subsections.

4.1 Kuril Ainu

There exist no audio documentation for KA written sources. The languages spoken by the collectors of the word lists that make up the total corpus of KA sources are German (ST), Russian (KR), and Polish (DY). In ST the negative morpheme appears seven times in total, in the four realizations illustrated in (3)–(6) – *hāin-*, *hēm*, *hæ-*, and *hēin-*.

- (3) *Hāininepkor.*
Hāin-i-nep-kor.
 NEG-?-something-have
 ‘To not have anything (= be poor).’

(Murayama 1988: 52)

- (4) *Hēm haunu.*
Hēm haw-nu.
 NEG voice-have
 ‘Be without voice.’

(Murayama 1988: 52)

- (5) *Hæhwænu.*
Hæ-hwæ-nu.
 NEG-voice?-have
 ‘Be without voice.’
 (Murayama 1988: 52)

- (6) *Hēīnīnēh.*
Hein-i-neh.
 NEG-?-something
 ‘No-one.’
 (Murayama 1988: 52)

In KR the negative morpheme appears three times transliterated in the Cyrillic alphabet as *ейнъ-* (7). In DY it appears four times transliterated as *em-* (8).

- (7) *Ейнъ-кинкаруа.*
Ein-k-inkar-u (w)a.
 NEG-1SS-3SO/see-0 FP
 ‘I do not see [it].’
 (Krasheninnikov 1755: 187)

- (8) *Етимакну.*
Et-imak-nu.
 NEG-tooth-have
 ‘Be without teeth.’
 (Murayama 1988: 156)

Let us analyze these realizations separately. For the sake of clarity, I discuss the negative morpheme making reference to its syllabic structure. In ST the vowel(s) found as the nucleus in the negative morpheme are not consistent. In this position we find *äi* and *ē* in (3) and (4). These graphemes are easy to interpret and can be recognized as the diphthong [ɛi] and the long vowel [e:]. Less clear, since they do not belong to the standard German spelling, are the graphemes *æ* and *ē* in (5) and (6). On the one hand, for the latter vowel combination we might propose the reading as [e:i:], considering the use of the macron on *ē* in (4), or [a:i:], if we draw a parallel with the reading for the German spelling *ei*. The grapheme *æ* remains doubtful. The initial *h* is reported consistently. Therefore we can assume the presence of [h] in the onset position. The nasal consonant in the coda position may be lacking, as in (5), or realized as either [n] or [m].

In KR the negative morpheme appears without an onset and with the nasal *n* in coda position. Thanks to the use of the grapheme *ɸ*, we can assume *n* to stand for [n], and not for the palatalized version of this consonant (i.e. [nʲ]).

As for the nucleus, we can interpret the combination *eu* (i.e. *ei*) as [ei] or even [jei], based on the pronunciation of *e* word-initially in Russian. Murayama (1988: 122) states that renderings of the KA negative including a segment *i*, such as this one found in KR, are in fact mistransliterations of *hem-*, which he links directly to the cognate form *ham-* attested in SA (§4.2). However, I argue that the presence of a stress on *е́ишь-* in KR clearly suggests the presence of a phonologically distinct sound [j] in this form.

Also in DY the negative morpheme appears without an onset. The vowel *e* can be recognized as [ɛ], following the Polish spelling. Here the nasal in the coda position is [m]. Interestingly, the only two sources where the negative appears without the initial *h* (i.e. KR and DY) were collected and edited by speakers of Russian and Polish, two languages that do not possess the glottal fricative /h/ in their phonemic inventory. This fact is non-trivial and might explain the discrepancies in the realization of the negative morpheme between ST on the one hand and KR and DY on the other.

4.2 Sakhalin Ainu

Audio recordings for SA data are only available for MU1 and MU2, which are therefore the only two sources for which phonological reconstructions can be verified by audio data.

Let us start with attestations in DO.

- (9) *Хамъ ванте.*
Ham wante.
 NEG know
 ‘To not know.’

(Dobrotvorskij 1875: 393)

- (10) *Ханъ кара.*
Han kara.
 NEG make
 ‘To not make.’

(Dobrotvorskij 1875: 394)

In DO the negative morpheme appears with the Russian *x* (standing for the velar fricative [x]) in the onset position and the nasals *m* or *n* in the coda position. Again, thanks to the presence of the grapheme *ъ*, we can assume the pronunciation of the final *n/m* to be [n] and [m] respectively. The vowel in the nucleus appears consistently as *a*, recognized as [a].

It should be noted that DO is the only Russian source where a sound in the onset position is overtly reported. It is uncertain whether this is because Dobrotvorskij had a more perceptive ear than Krasheninnikov and Dybowski or because KA negatives might actually be pronounced also without an onset.

However, transliterations in ST possibly point to the former conclusion (see also §4.3). Furthermore, we notice a discrepancy between the notes on the pronunciation of *x* in Dobrotvorskij, who says that “the letter *x* in many Ainu words is identical to the Russian *x*” (translation mine), and the notes on *h* in Pilsudski (1912: 6), who reports that this grapheme corresponds to /h/. It is still possible that the grapheme *x* is used in DO only due to the lack of a better option in the Russian orthography to represent the phoneme /h/, or that Dobrotvorskij’s innate attention to the sounds of Russian have led him to in fact hear /x/ instead of /h/. Although I tend towards this latter view in light of the realizations of *h* attested in PI, MU1, and MU2, the lack of audio documentation for DO leaves us in doubt.

Example (11) illustrates one realization of the negative morpheme in PI.

(11) *Hamajje*.

Ham an-ye.

NEG 4S-3SO/say.

‘I do not say.’

(Pilsudski 1912: 209)

In PI the negative morpheme appears as *ham* or *han*. Although Pilsudski was Polish, he edited his corpus of Sakhalin Ainu folklore in English. Given his guide to SA phonetics and transliteration employed in the corpus (Pilsudski 1912: 1-6), we can understand the transliteration to represent the realizations [ham] and [han].

Finally, in MU1 and MU2, for which I can base the reconstruction on the available audio recordings, the negative morpheme is attested only in the form *han*, realized as [han].

4.3 About the underlying morpheme /*hɛN/

Once we compare the different phonological realizations of the negative morpheme in KA and SA we notice that the main difference between the two varieties resides in the vowel within the morpheme.

The KA realizations [ein], [hɛin], [he:i:n],¹ [he:m], and [ɛm] point to an underlying form /*hɛiN/. The presence of the onset [h] is determined if we assume that its lack in KR and DY is due to a faulty transliteration (§4.2). Another, though more farfetched, option would be to assume that [h] was found in free distribution on the negative morpheme. The nucleus is the diphthong [ei], which may at times be resolved in a single vowel [e] or [ɛ]. The change in quantity and height of these vowels cannot be investigated further. It is also difficult to determine the underlying realization of the final nasal

¹ I prefer this interpretation for the realization of *hēin* over [ha:i:n] on the basis of analogy with *hēm*.

from the available examples. Therefore, I leave it unspecified and report it as ‘N’.

The SA realizations [ham] and [han] point to an underlying form /ham/. Although the realization [han] is on average the most common in SA sources, the phonological environments where it appears are limited to before [n] and [k]. This makes [han] an alloform of /ham/ that arises due to assimilation.

Once we collate the two underlying forms of KA and SA, we obtain /*hɛN/ as the possible proto-form of the negative morpheme. The vowel [ɛ] in this proto-form, unattested in SA and in general in modern Ainu, would correspond to the proto-Ainu front, open-mid, unrounded vowel ‘E’ postulated by Vovin (1993). In a later stage of the language history this sound would have differentiated into the mid-open vowel [e] in KA and the open vowel [a] in SA.

In this section I have argued that *ham* is the underlying form of the negative morpheme in SA, while also considering KA sources. Other than showing that the origin of the SA and KA negative morpheme is the same, taking into account KA sources provides important insights into the diachrony of the development of negative constructions in SA.

5 Evolution of usage of the negative *ham-*

In this section I move on to considering the three main morphosyntactic layouts of negative constructions in SA, all of which feature the negative morpheme *ham-* discussed in §4. The negative morpheme appears as a phrasal clitic (§5.1), pre-verbally with a host word in an adverbial function (§5.2), and post-verbally in a light verb construction (5.3).² In §5.4 I summarize the proposed diachronic development of negative constructions.

5.1 Clitic pre-verbal use

The negative morpheme can be found in isolation to precede the negated verb. This is on average the most common construction attested in DO and PI and overall it corresponds to how **heiN-* is used in KA.

- (12) *Ham eci nú jájne ...* .
Ham=eci-nu yayne
 NEG=2PS-3SO/hear and.then
 ‘You did not listen and then ...’

(Pilsudski 1912: 121)

² Here and throughout, the terms “pre-” and “post-verbal” refer to the linear position of the negative with respect to the notional verb in the construction.

This pre-verbal use of *ham=* is attested sporadically in MU1 and MU2, with a total of three instances for the former corpus and four for the latter. Of the total seven instances in MU1 and MU2, *ham=* is encountered five times crystallized in the idiomatic phrase in (13).

- (13) *Han=ci-nukah-siri ci-nukah-siri 'uturu-ke-ta.*
 NEG-PSV-see-land PSV-see-land 3/between-PTV-in
 'Between an unseen and a seen land (= in a faraway land).'
 (Murasaki 1976: 42)

The boundness of the morpheme *ham-* is hard to determine and, where audio documentation is unavailable, the conventions used in transliteration (such as spaces and hyphens) cannot be relied on safely. Nevertheless, its syntactic position is insightful in this regard. The negative *ham=* in fact is found to precede personal agreement prefixes (see e.g. *eci-* in (12) above). This contrasts with the Ainu predicate's morphological structure, where personal agreement is the most peripheral category. Furthermore, in PI instances such as (14) are also attested.

- (14) *Urájki ne ámpe ham utara ki kumpene.*
Urayki neampe ham=utara ki kun
 fighting TOP NEG=people 3PS/3SO/do COND
pe ne.
 NMLZ COP
 'As for fighting, the Ainu would not be the ones to do that
 [first].'
 (Pilsudski 1912: 70)

In (14) the negative has scope over the copula *ne* though being syntactically separated from it. Placing *ham=* before the noun *utara* could be a subject-focusing strategy. While the scopal properties and limits of negation remain to be investigated, this syntactic layout together with the position before personal agreement prefixes illustrated in (12), suggests that the negative *ham=*, at this stage of its evolution, functioned as a phrasal clitic (Billings 2002). The glossing in (12)–(14) follows from this conclusion.

I regard this as the initial stage of the development of SA negative constructions. This is because the form *ham=* is not morphemically analyzable, contrary to the other negative forms to be discussed in §5.2 and §5.3, and because this pre-verbal clitic use of negation is the only one attested in the KA sources, which predate SA sources.

5.2 Pre-verbal use with host word

The negative *ham=* is otherwise found attached to a number of host words, with which it forms an adverbial. These adverbials encode negative polarity and precede the scope notional verb. This syntactic layout is the most common one in MU1. The attested forms featuring *ham=*, with the related morphemic analysis, are listed below:

- | | | | |
|----|-------------------|---|---------------------|
| a. | <i>hanneh(ka)</i> | < | <i>ham=neh(-ka)</i> |
| b. | <i>hanka</i> | < | <i>ham=ka</i> |
| c. | <i>hanne</i> | < | <i>ham=ne</i> |
| d. | <i>hannah(ka)</i> | < | <i>ham=nah(-ka)</i> |

The negative appears prefixed to *neh* ‘anything’ to which the nominal restrictive particle *ka* may be added further (a); it can be attached directly to the nominal restrictive particle *ka* (b); to the copula *ne* (c); or to *nah* ‘so’ (d). In PI *hannah* is seldom followed by *ka*.

The phonological change, from /ham/ to [han], that we witness in the negative forms and the fact that *ham=* is never displaced away from the host word suggest that, already at this stage of its development, the negative morpheme had partially lost its status of phrasal clitic. It would be treated as a clitic compatible with a limited number of lexical items, with which it functions as an adverb. The adverbial function of forms in (a)–(d) is evidenced by the fact that they are always used pre-verbally like other manner adverbs of SA (Murasaki 1979: 108).

- (15) *Tanto hanka* ‘*an-monrayki-re*.
 today NEG 4S-3SO/work-CAUS
 ‘Today I did not let her work.’

(Murasaki 1976: 7)

5.3 Post-verbal use

The negative *ham=* is also found on the verb *kii* ‘do’, giving the form *hankii*, that follows the negated verb. This negation strategy is the most common one in MU2.

- (16) [*Hoku-hu ka* ‘*oh-ta yee*]
 3/husband-POSS even 3/place-in SLV_i/3SO/say.NMLZ_j
ka han-kii.
 even NEG-3SS_i/VO_j/do
 ‘She did not even tell her husband.’

(Murasaki 1976: 45)

- (19) *Mokoro* *ka* *han-ki-hci.*
 SLV_i/sleep.NMLZ_j even NEG-VO_j/do-3PS_i
 ‘They did not sleep.’

(Murasaki 1976: 46)

Personal agreement, in terms of its morphosyntactic constraints in the negative construction, suggests that at this stage of development, *hankii* had already undergone partial lexicalization, as separating the negative *ham=* from its host verb is no longer possible (see, in contrast, §5.1). Nonetheless, *hankii* clearly retains its original verbal status, as signalled by its inflectability. In this regard, I propose that the monoclausality of the construction that results from embedding of the nominalized clause into the verb *kii*, together with its specific pragmatics, has favored the emergence of a formally bi-verbal but functionally mono-verbal construction whose boundaries are marked by the place of affixation of personal agreement. Diachronically, this could be a transition stage towards a reanalysis of *hankii* into a full-fledged auxiliary like, for instance, the desiderative *rusuy* (Dal Corso 2020).

5.4 Diachronic development

As I mentioned in §4, the different constructions surveyed up to this point appear synchronically in the language, as they are attested within the same corpus. Nonetheless, their distribution hints at a diachronic development from the pre-verbal construction with *ham=* employed as a phrasal clitic to the post-verbal construction with *ham=* attached on *kii* ‘do’ used in a light verb construction. The pre-verbal construction featuring an adverbial negative where *ham=* is attached to a host word is regarded as a middle stage of this development.

Table 2 shows the distribution of the three types of construction. The reference sources are arranged according to the date of data collection from the oldest (DO) to the most recent (MU2). Boxes in dark gray highlight the most common construction found in the corpus to express negation and boxes in light gray, the least common.

	DO	PI	MU1	MU2
Pre-verbal clitic use	(13) 68.4%	(30) 44.8%	(3) 10.3%	(4) 3.7%
Pre-verbal adverbial use	(3) 15.8%	(11) 16.4%	(14) 48.3%	(45) 41.7%
Post-verbal use in LVC	(0) 0%	(17) 25.4%	(12) 41.4%	(53) 49%
Dubious cases	(3) 15.8%	(9) 13.4%	-	(6) 5.6%

Table 2 – Distribution of negative constructions in the corpora

Overall, the inversion we observe in the distribution of negative constructions is representative of a development from a synthetic to an analytic construction.

6 Parallels with Hokkaidō Ainu and possible feature areality

6.1 The Hokkaidō Ainu negative constructions

As a way to conclude the discussion on SA negative constructions and their development, in this section I briefly comment on some similarities that can be seen with Hokkaidō Ainu and with other neighboring languages of the area.

It should be noticed that, along with the construction featuring *somo* in a pre-verbal position illustrated in (2) above, Hokkaidō Ainu dialects also employ a light verb construction that is equivalent to the SA one (Tamura 2000). This can be seen in (20).

- (20) *Nea katkemat a-tak ka somo*
 that young.woman 4S-3SO/invite even NEG
ki.
 SLV/VO/do
 ‘I did not invite that young woman.’

(Tamura 1985: 40)

As mentioned in §1, the only form found to fulfill the function of negative in Hokkaidō Ainu is *somo*. Besides, negative expressions with *somo* are syntactically far less varied than the SA forms, being restricted to the pre-verbal construction in (2) and the light verb construction in (20). Hokkaidō Ainu’s homogeneity of forms and constructions may be the result of a development of negative forms that got fixed in this variant of Ainu earlier than the SA equivalent forms did. The sharp morphological differences between *somo* and *ham* suggest that the development of negative constructions was

independent in Hokkaidō Ainu and SA and that the canonical syntactic word order of Ainu as a whole is the sole cause of the structural analogy in the two varieties.

6.2 Feature areality

Analytic negatives in SA (and more generally in Ainu) might represent an areal feature shared by the languages of the region. The strategy of nominalizing a notional verb that becomes the argument of a dummy verb, in what is essentially a light verb construction, also appears in Nivkh (isolate, Russia) and Chukchi, Itelmen, Alyutor, and Koryak (Chukotko-Kamchatkan, Russia).

The morphosyntax of the negative construction of course varies depending on the language family. For instance, in Nivkh (Nedjalkov and Otaina 2013) negation is encoded on the dummy verb *q'au* 'not be'. The notional verb is nominalized and functions as an argument of *q'au*, its nominal status being signalled by the dative-additive case suffix that is said to also derive a verb's supine (nominal) form.

- (21) *If p'rə-dox q'au-d.*³
 S/he come-DAT.ADD(SUP) not.be-IND
 'S/he did not come.'

(Nedjalkov and Otaina 2013: 96)

Similarly, in Chukchi (Dunn 1999: 328) and Itelmen (Georg 1999: 199–200) the abessive (privative) case circumfix (*e- -ke* in Chukchi⁴ and *qaʔm- -aq* in Itelmen) appears on the notional verb to express negation and all tense-aspect-mood indications are marked on a dummy verb, that is *it-* 'be' in Chukchi and *ʔkas* 'be' or the copulas *eʔes* and *telkas* in Itelmen. Example (22) provides an example from Chukchi.

- (22) *Remk-ə-n awn-a-qaanmat-ka*
 folk-E-ABS EMPH-NEG-slaughter.reindeer-NEG
it-ə-k=ʔm.
 be-E-INF=EMPH
 'Folk didn't slaughter reindeer.'

(Dunn 1999: 328)

Alyutor (Nagayama 2003: 111–112) and Koryak (Zhukova 1972: 271–272) do not possess the abessive case and make use of the comitative circumfix (that is *a- -ka* in Alyutor and *e- -ke* in Koryak) on the notional verb, to which a particle that encodes negation must be preposed (though in Alyutor

³ In examples (21)–(23) I report the original glossing used by the author.

⁴ This circumfix's realization changes following the rules of vowel harmony.

it may be omitted). Again the dummy verb in the construction translates as ‘be’ or ‘have’ and is regarded as an auxiliary (in the Alyutor example in (23) the dummy verb’s root is *nt-*).

- (23) *Allə a-yita-ka t-ə-nt-ə-yət.*
 not NEG-look-NEG 1SG.A-E-AUX-E-2SG.P
 ‘I didn’t look at you.’

(Nagayama 2003: 112)

It should be noted that only Zhukova (1972) openly discusses the nominal status of the notional verb, which is highlighted by its compatibility with nominal case morphology. All accounts of the other languages I mention are far less clear about the categorial status of the notional verb, which is here deduced mainly through analogy with Koryak. A more in-depth consideration of the Chukchi, Itelmen, and Alyutor constructions is in order to clarify this point.

If all these languages display more or less evident structural analogies, we need to take into consideration their otherwise profound morphosyntactic differences. These differences are ultimately the reason why we should exclude direct borrowing as the cause of the emergence of the SA analytic negative construction. What is more likely is that the presence of this syntactic layout applied specifically to express negation is the result of diffusion among languages that are geographically close to each other. The entity, starting point, and direction of this alleged diffusion remain to be ascertained.

7 Conclusions

In this paper I discussed Sakhalin Ainu negative constructions. I started with the assumption that negative polarity is encoded in SA in the morpheme *ham=* (§4.2), which shares a common origin with the equivalent found in Kuril Ainu (§4.1). I then argued that SA negative constructions have developed from an originally synthetic construction, which featured the phrasal clitic *ham=* (5.1), into an analytic construction, that featured this same clitic hosted on the verb *kii* ‘do’ in a light verb construction (§5.3). These two morphosyntactic strategies represent the oldest and most recent stages of the development. The use of *ham=* attached to a host word to form a negative adverb is in turn regarded as a middle stage of the development (§5.2). As a conclusion, I highlighted some structural similarities of SA with other unrelated neighboring languages, which suggest that the presence of the negative light verb construction in SA might be seen as an areal feature (§6). Although the distribution of different morphosyntactic negation strategies in the consulted corpora suggests a diachronic development, these strategies are attested synchronically at separate times of SA’s history (§5.4). This ultimately

raises the question about the possible applications of negative strategies depending on pragmatics, a field that is still largely overlooked in Ainu studies. In particular, it remains to be investigated whether the light verb construction and the use of adverbs fulfilled distinct pragmatic functions, thus being kept in use until the language went extinct. This is left for future research.

Abbreviations

0 epenthetic vowel; 1SS first person singular subject; 2PS second person plural subject; 3 third person possessor; 3PS third person plural subject; 3SO third person singular object; 3SS third person singular subject; 4S fourth person subject; CAUS causative; COND conditional; COP copula; FP final particle; NEG negative; NMLZ nominalizer; PC paucal; PL plural; POSS possessive; PSV passivizer; PTV partitive; SG singular; SLV subject in light verb construction; TOP topic; VO object in light verb construction

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Getting a Head with Japanese Lexical V-V Compounds*

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1 Introduction

Contra Williams (1981), determining the head of a word is not straightforward (Andreou 2014). One area where this can be witnessed acutely is the domain of lexical V-V compounds in Japanese seen in (1) below (Kageyama 1993; Matsumoto 1996; Nishiyama 1998, 2008; Himeno 1999; Fukushima 2005; Yumoto 2005, to name the major ones).¹ By HEAD, I

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¹ There are also the so-called “syntactic” V-V compounds as well, e.g. *tabe-hazime* ‘begin eating’, displaying control structure where V_1 (projecting an embedded VP) is a complement of V_2 . Kageyama (1993) and Nishiyama (2008) offer several tests to separate the two types. For example, the verbal pro-form, *soo su* ‘do so’, can replace *tabe* in *tabe-hazim* (syntactic): *soo si-hazime* ‘begin doing so’. But *odori* in *odori-tukare* ‘get tired from dancing’ in (1a) cannot be: **soo si-tukare* ‘(Int.) get-tired from doing so’. Syntactic V-V compounds are ignored here.

mean the word(s) which is/are central, among others, for ARGUMENT SYNTHESIS, a process to determine the ARGUMENT STRUCTURE (ARG-ST) of a V-V compound through argument matching and case marker adjustment, which is one of the most prominent areas of V-V compound research. A mere morphological head, which is always final in Japanese, is rather trivial and not relevant here. Though headedness is significant for argument synthesis and other aspects, as shown below, there has been no solid method for determining what counts as a head. This renders virtually all past research merely descriptively adequate. This foundational paper is an attempt to establish a set of independent criteria, the CLUSTER CRITERION, for headedness, which would enhance the explanatory adequacy of theories of V-V compounds.

There are generally three different head types for these V-V compounds: (i) the right-headed type in (1a,b), (ii) the left-headed type in (1c,d), and (iii) the dvandva (dual-headed) type in (1e,f). [N.B.: The head characterization in (1) reflects what has generally been observed descriptively and assumed in the literature of lexical V-V compounds. V_1 ending [i] or [e] below indicates “continuative” verbal morphology. Heads are underlined here.]

(1) Right-headed compounds:

a. Hanako-ga odori-tukare-ta.
Hanako-NOM dance-get.tired-PAST
'Hanako got tired from dancing.' ($V_1 = \text{cause}$)

b. Tama-ga koroge-oti-ta.
ball-NOM roll-fall-PAST
'The ball fell down rolling.' ($V_1 = \text{manner}$)

Left-headed compounds:

c. Taroo-ga gake-o mi-orosi-ta.
Taroo-NOM cliff-ACC look-lower-PAST
'Taroo looked down at the cliff.' ($V_2 = \text{manner}$; 'adverbialized')

d. Taroo-ga Ziroo-o sikari-tuke-ta.
Taroo-NOM Ziroo-ACC scold-attach-PAST
'Taroo scolded Ziroo harshly.' ($V_2 = \text{manner}$; 'adverbialized')

Dvandva (dual-headed) compounds:

e. Ziroo-ga Hanako-o koi-sitat-ta.
Ziroo-NOM Hanako-ACC love-adore-PAST
'Ziroo loved and adored Hanako.' ([kow]→[koi], [sitaw]→[sitat])

f. Umi-ga hikari-kagayai-ta.
ocean-NOM shine-glitter-PAST
'The ocean shined and glittered.'

Argument synthesis has dominated the research regarding lexical V-V compounds, generating a rich array of approaches and proposals even as we speak. Though Fukushima (2008) investigates the productivity of such compounds, the perspective remains heavily argument-structure-centered. He demonstrates that the more complicated the process of argument synthesis, the less productive a given V-V compound becomes.

As demonstrated below in section 2, headedness plays a central role in driving argument synthesis or determining other aspects of V-V compound formation, e.g. the aspectual property of a V-V compound. The lack of an *independent* way to determine headedness of these compounds, therefore, is a serious drawback. Given this situation, it would be desirable to be able to single out a head verb(s) independent of, for example, argument synthesis. In section 3, I demonstrate the descriptive and conceptual/theoretical utility of negation, numeral classifiers, and aspectual adverbials as part of the current cluster criterion for headedness for Japanese lexical V-V compounds.

2 Headedness and V-V Compounds

We examine how headedness contributes to V-V compound formation in this section. Two domains are introduced where headedness is a significant determinant: (i) argument synthesis and (ii) aspectual determination for a compound as a whole.

2.1. Argument Structure Composition

Generally, argument synthesis to construct a new ARG-ST for a compound is straightforward. For example, the subject arguments of V_1 *odori* and V_2 *tukare* are matched in (1a) above. Or, for *koi-sitaw* ‘love-adore’ in (1e), subject-to-subject and object-to-object identification are observed, respectively. Case marking of inherited arguments is also transparent for many instances in that all the original case markers are retained after respective arguments are matched.

However, this apparent simplicity breaks down for more complex cases. One such instance is (2a) where, while the subject argument NP_{ga} (the wearer) of non-head V_1 *ki* is ignored (and existentially implicated), the object argument NP_o (the worn) of V_1 is retained. Further, this NP_o and the subject argument of NP_{ga} (the object getting out of shape) of head V_2 *kuzure* are identified (indicated by ‘†’) and inherited into the ARG-ST of the entire compound *ki-kuzure*. We also note that the original nominative case marking of NP_{ga}^\dagger of V_2 is retained and overrides that of NP_o^\dagger of V_1 . The result is an intransitive verb in (2d), despite the fact that V_1 is transitive. Thus argument synthesis and case-marking determination are head-driven.

- (2) a. Sebiro-ga ki-kuzure-ta.
 suit jacket-NOM wear-get.out.of.shape-PAST
 ‘The suit jacket lost its shape due to (someone’s) wearing it.’
- b. *ki* ‘wear’ (transitive; non-head): ARG-ST <NP_{ga}, NP_o[†]>
- c. *kuzure* ‘get.out.of.shape’ (intransitive; head): ARG-ST <NP_{ga}[†]>
- d. *ki-kuzure* ‘wear-get.out.of.shape’ (intransitive): ARG-ST <NP_{ga}[†]>

Basically the same point is demonstrated by (3) but more drastically. This time the argument NP_{ga} of non-head V₁ *naki* (corresponding to the crier indicated by the optional genitive marked NP or merely existentially implicated) is ignored and is not reflected in the ARG-ST of the compound *naki-nure* in (3d) at all.

- (3) a. (Taroo-no) hoho-ga naki-nure-ta.
 Taroo-GEN cheek-NOM weep-get.wet-PAST
 ‘(Taroo’s) cheeks got wet due to (his) weeping’
- b. *nak* ‘weep’ (intransitive; non-head): ARG-ST <NP_{ga}>
- c. *nure* ‘get.wet’ (intransitive; head): ARG-ST <NP_{ga}[†]>
- d. *naki-nure* ‘weep-get.wet’ (intransitive): ARG-ST <NP_{ga}[†]>

The left-headed cases like (1c,d) above, where V₁ is the head, are also compatible with the observation here. In the compound verb *mi-orosi* ‘look-lower (down)’ in (1c), for example, the NP_o argument of transitive non-head V₂ *orosi* is ignored. Taken literally, V₂ here indeed has a transitive ARG-ST like <NP_{ga}, NP_o>, in which NP_{ga} corresponds to a lowering agent and NP_o to a lowered element (say, the direction of a gaze). Though we may identify the subject argument of V₂ with that of V₁, it is semantically implausible to identify the object arguments of V₁ (an object to be seen) and V₂ (an object to be lowered). Consequently, the ARG-ST of the compound is based on head V₁. A similar story is told about (1d) with *si-kari-tuke* ‘scold-attach (harshly)’. There is no possibility for literally matching the object arguments of V₁ (a person scolded) and V₂ (an element to get attached). Though both verbs are transitive, this matching would yield semantic incongruity. For the dvandva examples (1e,f), it is not difficult to see that their ARG-STs are the result of simply merging the two ARG-STs attributed to both heads.

As far as I know, there seems to be no case where the arguments of a head verb are ignored altogether, while only those of a non-head verb are retained exclusively. Thus the head’s ARG-ST is crucial when argument synthesis takes place. It should be noted that the claim here is not that the

head determines a new ARG-ST *exclusively*. The process is *head-driven* but takes into consideration non-head verbs' properties as well.²

2.2 Aspectual Composition

Possible aspectual combinations of verbs in lexical V-V compounds are demonstrated by Fukushima (2016) and shown to be head-driven as well. As demonstrated by (4)–(5), any combination of aspect (telic/atelic) of the component verbs is possible with one exception. When the head (underlined) is atelic, the non-head also has to be atelic.³

- (4) a. Taroo-ga Hanako-o koi-sitat-ta. (= (1e))
 Taroo -NOM Hanako-ACC love(atelic)-adore(atelic)-PAST
 'Taroo loved and adored Hanako.'
- b. Hanako-ga odori-tukare-ta. (= (1a))
 Hanako-NOM dance(atelic)-get.tired(telic)-PAST
 'Hanako got tired from dancing.'
- c. Ziroo-ga obore-sin-da.
 Ziroo-NOM drown(telic)-die(telic)-PAST
 'Ziroo died from drowning'.

Both verbs are the heads for dvandva compounds in (4a) and share identical telicity. (The left-headed examples (1c,d) are irrelevant here since non-head V_2 s, being “adverbialized” modifiers, are devoid of verbal aspectual properties.)

In contrast, due to semantic transparency, those in (5) are all left-headed and have atelic heads (V_2 s) and telic non-heads (V_1 s), rendering them impossible compounds. These are ill-formed even if we take V_2 to be “adverbialized” (i.e. left-headed) or construed as dvandva.

² This paper does not show how argument synthesis and case-marker determination are actually accomplished. One possibility is found in Fukushima (2005) who suggests that argument synthesis is head-driven and based on compatibility of thematic proto-roles (Dowty 1991) entailed for arguments of verbs. Also consult the sources cited at the start of this paper.

³ Telicity here is simply determined based on compatibility with duration expressions like *iti-zikan-de* ‘in one hour’ (among other tests seen in Vendler (1967) and Dowty (1979)). Though verbal telicity, as is well known, affected by the presence of an incremental theme (e.g. *eat an apple* (telic) vs. *eat apples* (atelic)), for lexical V-V compound formation, such an argument (requiring the presence of VP) is absent. For this reason, we eschew more fine-grained Vendler-type classification (with state, activity, achievement, and accomplishment). The exact mechanism for telicity determination for V-V compounds (based on the classification of verbal aspect by Dowty (1986)) is offered by Fukushima (2016).

- (5) a. *Taroo-ga terebi-o naosi-tukat-ta.
 Taroo-NOM TV-ACC repair(telic)-use(atelic)-PAST
 (Int.) 'Taroo repaired and (then) used a TV.' or
 (Int.) 'Taroo used a TV by repairing it.'
- b. *hiroge-ur 'spread(telic)-sell(atelic)'
 (Int.) 'sell after spreading (merchnadise)' or
 (Int.) 'sell by spreading (merchandise)'
- c. *koware-nokor 'break(telic)-remain(atelic)'
 (Int.) 'remain after going out of order'
- d. *taosi-fum 'knock.down(telic)-step.on(atelic)'
 (Int.) 'step on after knocking (something) down' or
 (Int.) 'step on by knocking (something) down'

In this way, headedness also plays a significant role in telicity determination of V-V compounds. Overall, then, headedness cannot be ignored when characterizing the central properties of V-V compounds.

2.3 The Absence of Independent Criteria

While there are some who are not concerned (at least explicitly) about headedness (Hasegawa 2000; Asao 2007, etc.), so far, many assume right-headedness (with head V_2) for lexical V-V compounds, following Williams' (1981) right-hand head rule (Kageyama 1993; Nishiyama 1998, 2008; Gamerschlag 2002; Yumoto 2005, etc.). Left-headed examples like (1c,d) above, where V_1 single handedly provides an argument to the whole compound, are treated with special mechanisms (which differ from one account to another). Though Nishiyama (2008: 324) states that "[t]here is a general agreement among researchers that V_2 is the head in V-V compounds in Japanese," he does not offer any independent criterion/criteria for headedness other than the fact that transitivity and argument synthesis are determined by the head echoing a similar observation in subsections 2.1–2.2 above. Kageyama (2009), on the other hand, indeed acknowledges and introduces right, left, and dvandva V-V compounds, but again, without indicating how we can determine the head in each case.

A few attempts of head determination do exist, however. Following Di Sciullo and Williams (1987), Matsumoto (1996) relativizes headedness, stating that the right-most element supplying "significant semantic information" (argument structures inclusive) is the head. Or, as is done by Fukushima (2005) following one of the most common head criteria based on hyponymy, headedness is determined by the "kind of" test. For example, Matsumoto would pick V_1 of *mi-oros* 'look-lower' as the head in (1c) since V_2 does not contribute any argument to the compound. V_2 would be the head in *naki-nurer* 'cry-get.wet' in (3) above since it alone provides

the subject argument. Fukushima would identify V_1 as the head in *mi-oros* because the compound indicates a kind of looking not of lowering. V_2 would be the head in *naki-nurer* as well due to the fact that the compound indicates a kind of getting wet not a kind of crying.

The problem with Matsumoto's or Fukushima's approach is that their methods are *post hoc*; we have to know the property of a whole V-V compound to determine which verb is semantically significant or which verb counts as a hypernym for the compound. For example, following Matsumoto, to locate that special verb (the head) which makes a significant contribution to the argument structure of a compound, we need to grasp the argument structure of the entire compound first and decide which argument is attributed to the head. However, before the argument structure of the entire compound can be determined, we need to know which verb counts as the head that contributes significantly to the argument structure of the entire compound – a *vicious circle*. The same point holds, *mutatis mutandis*, regarding Fukushima's hyponymy approach.

In the next section I suggest that the proposed cluster criterion avoids the problems pointed out here, which is independent of information sharing between the head and the whole compound.

3 Establishing Headedness for V-V Compounds

Let us examine how effective the proposed cluster criterion for V-V compound headedness is. For now, there are three components to the criterion: (i) interpretation of negation, (ii) behavior of numeral classifiers for events, and (iii) construal of aspectual modifier.

3.1 Prolegomena

Before the cluster criterion is introduced, some cautionary notes are due regarding how it is applied to the data. First of these is concerned with the nature of the tests involved. As pointed out by Peter Sells (p.c.), test (i) is different from tests (ii) and (iii) in such a way that negation per se does not single out a head verb. My intention is that it establishes three groups of compounds based on *distinct patterns/possibilities* of polarity interpretation. In contrast, the remaining two single out a head verb as an exclusive target of modification.

Second, a small number of semantically opaque V_1 s are found in right-headed compounds such as *but/butt* '(Lit.) hit' in *buti-kowas* 'destroy' or *but-tob* 'fly.away', *hik/hitt* '(Lit.) pull' in *hiki-okos* 'cause' or *hit-tuk* 'adhere', *os/ott* '(Lit.) push' in *osi-semar* 'approach' or *ot-tater* 'erect', *sas* '(Lit.) point' in *sasi-das* 'hand.over' or *sasi-semar* 'press', *tat* '(Lit.) stand' in *tati-itar* 'reach' or *tati-modor* 'return', *tor/tott* '(Lit.) take' in *tori-kakom*

‘surround’ or *top-paraw* ([tott]→[top], [haraw]→[paraw]) ‘remove’, *ut* ‘(Lit.) hit’ in *uti-sute* ‘abandon’ or *uti-toke* ‘befriend’, etc. It is impossible to specify exactly what they mean, let alone their actual verbal status. The meanings of these compounds are basically identical to those of V_2s (heads) alone with V_1s simply adding some sense of intensification.⁴ Due to the small number of these verbs and their semantic opacity, such verbs and compounds employing them are excluded from consideration here.⁵ These verbs, however, are distinct from the more transparent “adverbialized” V_2s mentioned above and included below, whose semantic contributions are easily detectable.

Third, identical verbal appearance alone does not automatically guarantee the same result when the criterion is employed. It is important to check the semantic properties (transparency in particular) of a verb. For example, different occurrences of V_2s like *kom* or *agar* found in the following pairs need to be distinguished: *moti-kom* ‘hold-enter (i.e. enter possessing something)’ and *oti-kom* ‘get.depressed’, and *mai-agar* ‘circle-rise (i.e. fly up in a circular motion)’ and *deki-agar* ‘complete’. In the first compound of each pair, V_2 is used literally (though *kom* is not a free-standing verb), while in the second member of each compound pair V_2 is used non-literally to indicate “aspectual” (resultative/completion) meanings.

The last two aspects above are important not only for the current purposes but also more generally for V-V compound classification. With these remarks in mind, let us move on to the application of the criterion.

3.2 Negation

Negation yields different patterns of interpretation for V-V compounds as shown by the three-way contrast among (6)–(8). (This is a belated response to a question raised by Tibor Kiss (p.c.) years ago and has been addressed briefly by Fukushima (2017).) Regularly, both Vs – or more correctly the propositions they give rise to – can be collectively negated, i.e. $\neg V_1$ and $\neg V_2$ (incorrectly using ‘ \neg ’ as a predicate operator for conven-

⁴ The fact that many of these V_1s show geminate bound-morpheme variants indicates that they are developing into and are more or less equivalent to the emphasis-evoking verbal prefixes found in the following examples: *do-tuk* ‘hit hard’, *do-hazure* ‘miss badly’, *don-dumar* ([tumar]→[dumar]) ‘be.in.deadend completely’, *don-bik* ([hik]→[bik]) ‘draw.back strongly’, *ot-tamager* ‘be.surprised much’, *ot-tin* ([sin]→[tin]) ‘die badly’, etc.

⁵ Also excluded from the coverage of this paper are what might be described as ‘fusion’ V-V compounds such as *ate-hame* ‘(Lit.) hold.in.place-match, i.e. apply’, *iri-kum* ‘(Lit.) enter-compose, i.e. convolute’, *kui-sagar* ‘(Lit.) bite-dangle, i.e. persevere’, *oti-tuk* ‘(Lit.) fall-reach, i.e. settle.down’, etc. In each of these, the component verbs drifted away from their original meanings and blended into a new single verb that has an unpredictable meaning.

ience). For example, (6a) can mean that Hanako neither danced nor got tired. We will not be further concerned with this obvious and unsurprising possibility. In addition, one of the verbs can be or cannot be negated in isolation or not at all. These different patterns are shown with affirmative continuations following each negative sentence below. Each continuation affirms/attempts to affirm a proposition attributed to only one of the verbs in a compound.

For right-headed compounds, isolated negation is possible: i.e. $\neg V_1$ or $\neg V_2$, as in (6). For example, under the circumstance described in (6a), it might have been that on one hand, Hanako danced but did not get tired at all (6a') or, on the other hand, she was tired but not from dancing in (6a''), and likewise for (6b-b'').

(6) Negated right-headed compounds

- a. Hanako-ga odori-tukare-nakat-ta. (cf. (1a))
 Hanako-NOM dance-get.tired-NEG-PAST
 'Hanako did not get tired from dancing.'
 a'. ... odot-ta-dake. '... (she) only danced (w/o getting tired).' [$\neg V_2$ alone]
 a''. ... tukare-ta-dake. '... (she) only got tired (w/o dancing).' [$\neg V_1$ alone]
- b. Tama-ga koroge-oti-nakat-ta. (cf. (1b))
 ball-NOM roll-fall-NEG-PAST
 'The ball did not fall down rolling.'
 b'. ... koroge-ta-dake. '... (it) only rolled (w/o falling).' [$\neg V_2$ alone]
 b''. ... oti-ta-dake. '... (it) only fell down (w/o rolling).' [$\neg V_1$ alone]

With right-headed compounds, the pattern is different such that it is only V_2 alone that can be negated in isolation. As (7a'') shows, the content associated with V_2 alone cannot be affirmed either in its verbal or "adverbial" meaning. (7b-b'') demonstrate the same point.

(7) Negated left-headed compounds

a. Taroo-ga gake-o mi-orosa-nakat-ta. (cf. (1c))

Taroo-NOM cliff-ACC look-lower-NEG-PAST

‘Taroo did not look down at the cliff.’

a'. ... mi-ta-dake. ‘... (he) only looked (up, perhaps).’ [¬V₂ alone]

a". ... #orosi-ta-dake. ‘... (he) only lowered’ or ‘it was only downwards.’

[¬V₁ alone impossible]

b. Taroo-ga Ziroo-o sikari-tuke-nakat-ta. (cf. (1d))

Taroo-NOM Ziroo-ACC scold-attach-NEG-PAST

‘Taroo did not scold Ziroo harshly.’

b'. ... sikat-ta-dake. ‘... (he) only scolded (mildly, perhaps).’ [¬V₂ alone]

b". ... #tuke-ta-dake. ‘... (he) only attached.’ or ‘(it) was only harsh.’

[¬V₁ alone impossible]

Yet a different result is obtained, perhaps not so surprisingly, with dvandva compounds. This time none of the component verbs can be negated independent of the other. Polarity-wise, propositions attributed to V₁ and V₂ have to be negated (or affirmed for that matter) collectively as in (8a-a").

(8) Negated dvandva compounds

a. Ziroo-ga Hanako-o koi-sitawa-nakat-ta.

Ziroo-NOM Hanako-ACC love-adore-NEG-PAST

‘Ziroo did not love and adore Hanako.’

a'. ... #kou-ta-dake. ‘... (he) only loved.’ [¬V₂ alone impossible]

a". ... #sitat-ta-dake. ‘... (he) only adored.’ [¬V₁ alone impossible]

b. Umi-ga hikari-kagayaka-nakat-ta. (cf. (1f))

ocean-NOM shine-glitter-NEG-PAST

‘The ocean did not shine and glitter.’

b'. ... #hikat-ta-dake. ‘... (it) only shined.’ [¬V₂ alone impossible]

b". ... #kagayai-ta-dake. ‘... (it) only glittered.’ [¬V₁ alone impossible]

As noted above, negation is not employed to single out a head verb in a V-V compound. Rather it helps to divide compounds into three different groups regarding headedness.

3.3 Numeral Classifiers

There are numeral classifiers (NCIs) consisting of a numeral and classifier like *ni-kai* or *ni-do*, both meaning ‘two-classifier (happenings)’, used to count the number of events. These target a head verb in a V-V compound.

For example, the NCl *ni-kai* targets V_2 *tukare* in (9a), indicating that a tiring event took place twice, while there is no specific information with respect to how many times dancing (V_1 *odori*) per se took place. Ditto, *mutatis mutandis*, for (9b), specifically, the number of rollings does not have to be two.

(9) NClS with right-headed compounds:

- a. Hanako-ga ni-kai odori-tukare-ta.
 Hanako-NOM two-Cl dance-get.tired-PAST
 'Hanako got tired from dancing two times.'
- b. Tama-ga ni-do koroge-oti-ta.
 ball-NOM two-Cl roll-fall-PAST
 'The ball fell down rolling two times.'

With left-headed compound verbs NClS act differently. The number of times of looking (*mi*) and scolding (*sikar*) attributed to V_{1S} is four in (10a,b), while it is nonsense to count the number of events or "adverbial" modification associated with V_{2S} .

(10) NClS with left-headed compounds:

- a. Taroo-ga gake-o yon-kai mi-orosi-ta.
 Taroo-NOM cliff-ACC four-Cl look-lower-NEG-PAST
 'Four times Taroo looked down at the cliff.'
- b. Taroo-ga Ziroo-o yon-do sikari-tuke-ta.
 Taroo-NOM Ziroo-ACC four-Cl scold-attach-PAST
 'Four times Taroo scolded Ziroo harshly.'

NClS accompanying dvandva (dual-headed) compounds behave quite distinctively in (11). This time the number of events arising from both V_{1S} and V_{2S} is exactly the same as indicated by NClS. We see, for example in (11a), that the occasion where both loving (V_1 *koi*) and adoring (V_2 *sitaw*) happened exactly once, and similarly for (11b).

(11) NClS with dvandva compounds:

- a. Ziroo-ga Hanako-o iti-do koi-sitaw-ta.
 Ziroo-NOM Hanako-ACC one-Cl love-adore-PAST
 'Ziroo loved and adored Hanako once.'
- b. Umi-ga ik-kai hikari-kagayai-ta.
 ocean-NOM one-Cl shine-glitter-PAST
 'The ocean shined and glittered once.'

3.4 Aspectual Adverbials

Given that V_1 and V_2 are aspectually *distinct* (more on this aspect below), an aspectual adverbial like *san-pun-de* ‘in three minutes’ or *san-pun-kan* ‘for three minutes’ is compatible with a head verb exclusively. Thus in (12)–(14), an aspectual adverbial is compatible with the telicity of the head verb exclusively. For example, telic-oriented *san-pun-de* ‘in three minutes’ can target telic V_2 *tukare*, not atelic V_1 *odor* in (12a), picking the former as the head, matching intuitions of native speakers, and likewise for the rest.

(12) Aspectual adverbials with right-headed compounds:

- a. Hanako-ga san-pun-de/*san-pun-kan
 Hanako-NOM three-minute-in/three-minute-duration
 odori(atelic)-tukare(telic)-ta.
 dance-get.tired-PAST
 ‘Hanako got tired from dancing in/*for three minutes.’
- b. Tama-ga san-byoo-de/*san-byoo-kan
 ball-NOM three-second-in/three-second-duration
 koroge(atelic)-oti(telic)-ta.
 roll-fall-PAST
 ‘The ball fell down rolling in/*for three seconds.’

(13) Aspectual adverbials with left-headed compounds:

- a. Taroo-ga gake-o go-fun-kan/*go-fun-de
 Taroo-NOM cliff-ACC five-minute-duration/five-minute-in
 mi(atelic)-orosi(telic)-ta.
 look-lower-PAST
 ‘Taroo looked down at the cliff for/*in five minutes.’
- b. Taroo-ga Ziroo-o go-fun-kan/*go-fun-de
 Taroo-NOM Ziroo-ACC five-minute-duration/five-minute-in
 sikari(atelic)-tuke(telic)-ta.
 scold-attach-PAST
 ‘Taroo scolded Ziroo harshly for/*in five minutes.’

It is perhaps no surprise that the dvandva examples in (14) show a uniform telicity combination of verbs due to the fact that the whole event attributed to the verbs has to be a single event, thus making both targets for modification. I am unaware of cases of dvandva V-V compounds where a contradicting telicity combination is found.

(14) Aspectual adverbials with dvandva compounds:

- a. Ziroo-ga Hanako-o ni-nen-kan/*ni-nen-de
 Ziroo-NOM Hanako-ACC two-year-duration/two-year-in
 koi(atelic)-sitat(atelic)-ta.
 love-adore-PAST
 ‘Ziroo loved and adored Hanako for/*in two years.’
- b. Umi-ga ni-zikan-kan/*ni-zikan-de
 ocean-NOM two-hour-duration/two-hour-in
 hikari(atelic)-kagayai(atelic)-ta.
 shine-glitter-PAST
 ‘The ocean shined and glittered for/*in two hours.’
- c. Taroo-ga mokutekiti-ni nana-fun-de/*nana-fun-kan
 Taroo-ga destination-at seven-minute-in/seven-minute-duration
 itari(telic)-tui(telic)-ta.
 reach-arrive-PAST
 ‘Taroo reached and arrived at the destination in/*for seven minutes’

In conjunction with the remark above, here is a caveat: Outside of dvandva compounds, it is possible for V_1 and V_2 to share the same aspectual property as in right-headed *obore*(telic)-*sin*(telic) ‘drown-die’ in (4c), rendering both V_1 and V_2 targets for adverbial modification. The aspectual adverbial test here erroneously classifies this right-headed compound dvandva, though the negation and NCI tests give the right result. Thus we have to treat this third test as a defeasible and limited-range indicator of headedness.

4 Conclusion

The following points have been demonstrated in this paper. (i) Though headedness is an important factor for descriptive or explanatory purposes concerning lexical V-V compounds, there have been no adequate independent criteria for it. This is probably because a once-and-for-all unique criterion is untenable. Alternatively, (ii) the three factors – negation, numeral classifiers, aspectual adverbials – above (for now, but possibly more) *collectively* constitute the current cluster-criterion for headedness of lexical V-V compounds. (iii) The criterion is independent of headedness or argument/telicity composition per se. Therefore, (iv) it can be applied to novel V-V compounds as well.

Given that, if its general validity is confirmed, the criterion enables sound hypothesis construction and testing. It could also offer a general orientation to deal with V-V compounds or serial verbs in other languages where headedness is a significant factor.

There are loose ends to be tied up to get ahead in V-V compound research, however. For one thing, Peter Sells (p.c.) points out that there is a possibility where the three tests constituting the current criterion may contradict one another. In fact, we have seen that such a situation can arise, though controllable and non-problematic for now, when two verbs of a non-dvandva compound share an identical telicity. To this end, as undertaken concurrently but not ready to be reported on, the validity of the cluster criterion needs to be verified against a wide range of data, such as NINJAL's (2013–2015) Compound Verb Lexicon, which is highly comprehensive with about 2,700 entries. Please stay tuned for a (*hopefully*) positive outcome.

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The Past Form of Stative Verbs in South-Central Okinawan¹

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1 Introduction

A previously described fact of the South-Central Okinawan (SCO) TAM (tense, aspect, mood) system is the fact that action verbs have two past tense forms (Kudō et al. 2007), which we shall refer to as P1 and P2. The existential verbs *wUN* ‘exist’ (animate), and *aN* ‘exist’ (inanimate) have only one past tense form, as displayed in Table 1.

	Non-past	P1	P2
‘go’	<i>itʃUN</i>	<i>ʔNdʒaN</i>	<i>itʃutaN</i>
‘come’	<i>tʃu:N</i>	<i>tʃaN</i>	<i>tʃu:taN</i>
‘exist’ AN	<i>wUN</i>	<i>wutaN</i>	
‘exist’ INAN	<i>aN</i>	<i>ataN</i>	

Table 1. Past tense forms of verbs in SCO.

¹ I would like to thank my consultants, without whose help this research would not have been possible. Also, thanks to Christopher Davis for his valuable comments on earlier drafts of this paper. Responsibility for the final product is, of course, mine.

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This research will show that the past tense of verbs of existence should be regarded as P2 from a synchronic point of view, even though the past form in Table 1 is diachronically P1. We shall show that, by extension, all verbs that denote a state (= verbs that display high time stability) have only one past tense form, and that this form should be regarded as P2 from a synchronic point of view.

2 Background

South-Central Okinawan is a Northern Ryukyuan language. It is part of the Okinawan dialect cluster, spanning Okinawa proper and the surrounding islands. The data used in this research was obtained through fieldwork with native speakers born between 1931 and 1937, from Janadō on Kumejima, Tomari in Naha, and Gibo in Shuri. The TAM systems of Shuri and Naha proved to be identical, whereas the TAM system of the SCO variety spoken on Kumejima only differs in that it has an additional form that is the result of grammaticalization of the verb ‘to walk’, primarily used to express a continuative action (Van der Lubbe 2018). The data is presented in the Tomari dialect unless indicated otherwise.

3 Diachrony and meaning of P1 and P2 in non-stative verbs

Table 2 displays the diachrony of P1 and P2, based on and modified from Karimata (2010: 101), and Uemura (2003: 82–83).

		P1	P2
		<i>i</i> -stem + <i>tari</i>	<i>i</i> -stem + <i>wor</i> + <i>tari</i>
<i>katfun</i> (<i>kaku</i>) ‘write’	historically reconstructed form	<i>kaki tari</i>	<i>kaki wori tari</i>
	contemporary form	<i>katfan</i>	<i>katfutan</i>
<i>wun</i> (<i>wori</i>) ‘exist’ AN	historically reconstructed form	<i>wori tari</i>	×
	contemporary form	<i>wutan</i>	×
an (<i>aru</i>) ‘exist’ INAN	historically reconstructed form	<i>ari tari</i>	×
	contemporary form	<i>atan</i>	×

Table 2. Diachrony of P1 and P2 in SCO

We see that the non-stative verb (or “action verb” 運動動詞 using the terminology of Kudo et al. 2007: 152) *katfun* ‘to write’ has both P1 and P2

forms. P1 is derived from an infinitival stem ending in *-i* (referred to as *ren'yōkei* in traditional Japanese school grammars) and the past tense suffix *-tari*, and P2 is derived from the infinitival stem on *-i*, the verb of existence *wori*, and the past tense suffix *-tari*. The following reconstruction is based on and modified from Karimata (2010: 101). We choose to remain agnostic about the provenance of the verb ending *-N*.

P1 **kaki + tari* > *kakitfa-* > *kaitfa-* > *katfa-* + *N*

P2 **kaki + wori + tari* > *kakiwotta-* > *kakiutta-* > *katfiutta-* > *katfuta-* + *N*

The reconstruction above allows us to observe that P1 is simpler than P2, for the latter has an additional ingredient, *wori*.

The existential verbs *wun* (animate) and *an* (inanimate) have only P1, the past form that has derived from the infinitival stem on *-i* and the past tense suffix *-tari*. The following reconstructions is based on and modified from Karimata (2010: 95).

P1 **wori + tari* > *wotta-* > *wutta-* > *wuta-* + *N*

If the verbs of existence *wun* and *an* had a P2 form in SCO, it is likely that it would have developed in the following way. The reconstruction is based on Karimata's (2010: 99) reconstruction of the verb *tuin* 'to take'.

P2 **wori + wori + tari* > *woriwotta-* > *wuiutta-* > *wujuta-* > *wuita-* + *N*

The P2 forms #*wuitan* and #*aitan* do not exist in the contemporary SCO varieties that were researched for this paper.³

Other stative predicates only allow for P2, whereas non-stative predicates allow for both P1 and P2.

4 The uses of P1 and P2 with non-stative verbs

For verbs that allow both P1 and P2, there is difference in meaning and in the kinds of situations in which each form is used. In this section, we will look at the difference between, as well as the constraints in the uses of P1 and P2 by examining examples in verbs that allow both P1 and P2.

Table 3 is based on and modified from Kudō et al. (2007), and displays the distinction in meaning between the P1 and P2 forms with non-stative verbs, or "action verbs" 運動動詞 in the terminology used by Kudō et al.

³ For certain Northern Okinawan varieties, *wuitan* and *aitan* have been reported to exist. See for instance Nakasone (1983: 28, 79) for Yonamine in Nakijin Village.

	Non-past	P1	P2
		<perfective past> <present perfect> <repetitive/habitual past>	<direct evidential past> <repetitive/habitual past> <counterfactual>
‘go’	<i>itʃuN</i>	<i>ʔndʒAN</i>	<i>itʃutan</i>
‘come’	<i>tʃu:N</i>	<i>tʃAN</i>	<i>tʃu:tan</i>

Table 3. Meaning of the past forms of verbs of action based on and modified from Kudō et al. (2007)

In the terminology used by Kudō and other members of her school of linguistics, a “perfective past” refers to an event described in its totality that happened in the past (2014: 644), and a “present perfect” refers to an event that took place in the past and still has relevance in the present (2014: 646–647). As for the meaning of P2, a “direct evidential past” has been argued to be more precisely a non-egophoric direct evidential past, an event that the speaker did witness but did not do themselves (Davis 2017).

The following examples illustrate the difference in meaning between P1 and P2 in action verbs. P1 and P2 can both be used in sentences that describe single past events with perfective aspect, as in example (1).⁴

(1) “He came here by car”

- a. are: kuruma=sa:ni kuma=nkai tʃAN
 3S:TOP car=INS here=ALL come:P1
- b. are: kuruma=sa:ni kuma=nkai tʃu:tan
 3S:TOP car=INS here=ALL come:P2

However, P2 is restricted in that it cannot occur with first-person subjects. For example, the sentence in example (2a) is used to describe a single past event, and the subject refers to the speaker. The use of P2, as is shown in (2b), is not felicitous. According to Shinzato (1991), P2 cannot be used in sentences describing a single past event with a first-person subject, because it does not satisfy the evidential requirement of P2 with single past events.⁵ Being a single event, it is not a habitual, neither is it a counterfactual.

⁴ Davis citing Shinzato, reports sentences like (1a) as infelicitous. In my own fieldwork, informants accept such sentences as felicitous.

⁵ Davis describes this as *ego evidence*, a term used in the description of Tibetan (Davis 2017).

(2) “I came here by car”

- a. wanne: kuruma=sa:ni kuma=nkai tʃaŋ
 1S:TOP car=INS here=ALL come:P1
- b. # wanne: kuruma=sa:ni kuma=nkai tʃu:taŋ
 1S:TOP car=INS here=ALL come:P2

The second contrast is in past habitual sentences. When there is a habitual past interpretation as opposed to a single past event interpretation, P2 becomes preferred over P1, even with first-person subjects. As for habitual contexts, as displayed in example (3), our consultants showed a strong preference towards the use of P2, but did not reject the use of P1.

(3) “I used to drink often when I was young”

- a. wakasaini me:natʃi numutaŋ
 young.age every.day drink:P2
- b. ?? wakasaini me:natʃi nudaŋ
 young.age every.day drink:P1

The third contrast is in counterfactual sentences. In counterfactual conditionals, only P2 is used in the consequent of the conditional. Consultants reject the use of P1 in case of a counterfactual, as in example (4).

(4) “If it weren’t raining, I’d have gone to do groceries”

- a. # ami ʃurande: ko:imUN ʃi:ga ʔndʒaŋ
 rain rain:NEG.COND groceries do:PUR go:P1
- b. ami ʃurande: ko:imUN ʃi:ga itʃutaŋ
 rain rain:NEG.COND groceries do:PUR go:P2

The verbs of existence do not possess a distinction between P1 and P2, as was shown in Table 1. A single form can be used to describe all past events, including habitual events (example (5)) and counterfactuals (example (6)), for which (mostly) P2 is used in non-stative verbs.

(5) “In the past, there always used to be rubbish here.”

- nkase: kuma=nkaje: tʃa: gumi=nu a-taŋ
 past:TOP here=LOC:TOP always rubbish=NOM exist-P1

(6) “If it were weekend, our younger sibling would have been here.”

- <ʃu:matsu>=ruŋ ja-re: wa-tta: uttu=nu
 Weekend=FOC COP-COND 1P-PL younger.sibling=NOM
 kuma=nkai wu-taŋ
 here=LOC exist-P1

Table 2 showed that the past form of verbs of existence is to be regarded as P1 from a diachronic point of view; however, from a synchronic point of view, we shall see that the past form of existential verbs is to be regarded as belonging to P2. Tables 4 and 5 display how the past of existential verbs should be regarded from a diachronic and synchronic view, respectively. Synchronically, the paradigm has been reanalyzed, putting *wutan* and *atan* in the P2 slot, the P1 becoming defective for these verbs.

	Non-past	P1	P2
‘go’	<i>itʃuN</i>	<i>ʔndʒaN</i>	<i>itʃutaN</i>
‘come’	<i>tʃu:N</i>	<i>tʃaN</i>	<i>tʃu:taN</i>
‘exist’ AN	<i>wuN</i>	<i>wutaN</i>	×
‘exist’ INAN	<i>aN</i>	<i>ataN</i>	×

Table 4. Past tense forms of SCO verbs diachronically classified

	Non-past	P1	P2
‘go’	<i>itʃuN</i>	<i>ʔndʒaN</i>	<i>itʃutaN</i>
‘come’	<i>tʃu:N</i>	<i>tʃaN</i>	<i>tʃu:taN</i>
‘exist’ AN	<i>wuN</i>	×	<i>wutaN</i>
‘exist’ INAN	<i>aN</i>	×	<i>ataN</i>

Table 5. Past tense forms of SCO verbs synchronically classified

5 Reasons to regard the past form of existential verbs as P2 synchronically

I shall show constructions where tense morphology is disassociated from the verbal root and is hosted by morphology other than the simple verbal root. These constructions make it clear that the existential verbs are actually selecting the P2 tense marker, and even disallow the P1 tense marker. With existential verbs, the P1 form actually expresses P2 tense, despite its diachronic heritage. The complex constructions where the tense morphology is hosted by something other than the simple existential verb itself are the following.

1. the listener-oriented honorific suffix *-bi:N*
2. the light verb construction
3. the subject-oriented honorific suppletive verb (and suffix).

These three constructions show that once morphological material that allows for a P1–P2 distinction is added to a verb, existential verbs always take P2.

6 The listener-oriented honorific *-bi:N*

The verbal suffix *-bi:N* is added to verbs, adjectives, and the copula to construct a listener-oriented honorific form. Note that *-bi:N* can take P1 *-bitan*, as well as P2 *-bi:tan*. Table 6 shows that the P1–P2 distinction is maintained in verbs denoting an action, whereas the verbs of existence exclusively take P2. Compare Table 6 to the diachronic classification of the past form of verbs of existence as P1 in Table 4.

	Non-past	P1	P2
‘go’	<i>itfabi:N</i>	<i>itfabitan</i>	<i>itfabi:tan</i>
‘come’	<i>tʃa:bi:N</i>	<i>tʃa:bitan</i>	<i>tʃa:bi:tan</i>
‘exist’ AN	<i>wuibi:N</i>	×	<i>wuibi:tan</i>
‘exist’ INAN	<i>aibi:N</i>	×	<i>aibi:tan</i>

Table 6. Past tense forms of verbs in the listener-honorific form

7 The light verb construction

SCO has a light verb construction similar to Japanese *しはする* *ʃi=wa suru*, and Korean *하기는 한다* *hagi=nun han-ta*, where an infinitival form of a verb is modified by a topic marker, and the light verb carries the TAM morphology. Example (7) is an instance of the light verb construction in SCO. Note that the topic marker *ja* (equivalent to Japanese *wa*), fuses with the infinitival stem on *-i* resulting in *-e*:

(7) se:	SUN
ʃi=ja	SU-N
do.INF=TOP	do-IND

The verb *SUN* ‘to do’ is used as the light verb in SCO. *SUN* as a verb can take both P1 and P2, as is displayed in Table 7.

	non-past	P1	P2
‘do’	<i>SUN</i>	<i>SAN</i>	<i>sutan</i>

Table 7. The past tense forms of *SUN* ‘to do’

Table 8 shows that action verbs can take both P1 and P2 in the light verb construction, whereas existential verbs can take only P2.

	non-past	P1	P2
‘go’	<i>itʃe: sUN</i>	<i>itʃe: saN</i>	<i>itʃe: sutan</i>
‘come’	<i>tʃe: sUN</i>	<i>tʃe: saN</i>	<i>tʃe: sutan</i>
‘exist’ AN	<i>wuʃe: sUN</i>	×	<i>wuʃe: sutan</i>
‘exist’ INAN	<i>aʃe: sUN</i>	×	<i>aʃe: sutan</i>

Table 8. The past tense forms for the light verb construction

8 The subject honorific form

Subject honorifics in SCO can be sorted into honorifics derived by means of the honorific suffix *-mise:N/-Nse:N*, and suppletive honorifics. The honorific verb *mense:N* is used as the suppletive honorific form of the motion verbs (移動動詞) *itʃuN* ‘to go’, and *tʃu:N* ‘to come’, as well as the existential verb for animate things *wuN* ‘exist’. Diachronically, both the suffix *-mise:N/-Nse:N* and the suppletive verb *mense:N* contain the element *owaru*, which itself was an honorific verb meaning ‘to go’, ‘to come’, and ‘to exist’ in classical Okinawan (Nakasone 1987: 224). The diachronic relation between *-mise:N/-Nse:N* and *mense:N* is also visible in the fact that their P1 and their P2 are formed in similar ways. Observe Table 9.

	non-past	P1	P2
suppletive honorific verb	<i>mense:N</i>	<i>menso:tʃaN</i>	<i>mense:taN</i>
honorific suffix	<i>-mise:N</i>	<i>-miso:tʃaN</i>	<i>-mise:taN</i>

Table 9. The past tense forms of subject honorific forms *mense:N* and *-mise:N*

Table 10 shows that the suppletive honorific form *mense:N* can take both P1 as well as P2 when used in the meaning of ‘to come’ and ‘to go’, whereas it can take only P2 when it is used to mean ‘to exist’. Note that the verb of existence for inanimate things *aN* takes the suffix *-mise:N*, and takes only P2 as such.

	non-past	P1	P2
‘go’	<i>mense:N</i>	<i>menso:tʃaN</i>	<i>mense:taN</i>
‘come’	<i>mense:N</i>	<i>menso:tʃaN</i>	<i>mense:taN</i>
‘exist’ AN	<i>mense:N</i>	×	<i>mense:taN</i>
‘exist’ INAN	<i>a-mise:N</i> ⁶	×	<i>a-mise:taN</i>

Table 10. The past tense forms of verbs in the subject honorific form

⁶ *a-mise:N* is exclusively used to express possession, rather than existence, and is similar in use to Japanese おありになる *o-ari=ni naru*, and Korean 있으시다 *iss-u-si-ta*, which are both derived honorific forms of verbs of existence that are used to exalt the possessor.

9 Conclusions

We have seen that existential verbs take only one past form, and that this form can be identified as P2 from a diachronic point of view in the following situations: (1) when using the listener-oriented honorific *-bi:N*, (2) when using a light verb construction, and (3) when using the subject honorific form. It is clear that as soon as morphological material is added that allows for a P1–P2 distinction, existential verbs are only allowed to take P2, suggesting that P1 tense may be synchronically incompatible with existential verbs in SCO.

Adjectives and the copula show a pattern similar to the existential verbs: once morphological material is added, only P2 is compatible. Observe and compare Tables 11 and 12.

	Non-past	P1	P2
‘exist’ AN	<i>wuN</i>	<i>wutaN</i>	×
‘exist’ INAN	<i>aN</i>	<i>ataN</i>	×
‘be busy’ (adjective)	<i>itfunasan</i>	<i>itfunasatan</i>	×
COPULA	<i>jan</i>	<i>jatan</i>	×

Table 11. Past tense forms of verbs, adjectives, and the copula

	Non-past	P1	P2
‘exist’ AN	<i>wuibi:N</i>	×	<i>wuibi:tan</i>
‘exist’ INAN	<i>aibi:N</i>	×	<i>aibi:tan</i>
‘be busy’ (adjective)	<i>itfunasaibi:N</i>	×	<i>itfunasaibi:tan</i>
COPULA	<i>jaibi:N</i>	×	<i>jaibi:tan</i>

Table 12. Past tense forms of verbs, adjectives, and the copula in the listener-oriented honorific form

Other verbs that denote a state, or an event with high time stability do not have a P1–P2 distinction either, and always take P2. This is the case with verbs like *jamun* ‘hurt/be ill’, and *hirakumun* ‘be numb’, as well as in some expressions that consist of a noun and the verb *sun* ‘to do’ that denote a state, like *kadza sun* ‘to smell/to emit an odour’ (lit. ‘to do an odour’), and <*sen-jen*> *sun* ‘to cost 1000 Yen’. These verbs exclusively take P2, as is displayed in Table 13.

		Non-past	P1	P2
non-stative verbs	‘go’	<i>itʃuN</i>	<i>ʔndʒaN</i>	<i>itʃutaN</i>
	‘come’	<i>tʃu:N</i>	<i>tʃaN</i>	<i>tʃu:taN</i>
stative verbs	‘exist’ AN	<i>wuN</i>	<i>wutaN</i>	×
	‘exist’ INAN	<i>aN</i>	<i>ataN</i>	×
	‘hurt’	<i>jamuN</i>	×	<i>jamutaN</i>
	‘be numb’	<i>hirakumuN</i>	×	<i>hirakumutaN</i>
	‘smell’	<i>kadʒa suN</i>	×	<i>kadʒa sutan</i>

Table 13. The past tense forms of action verbs and stative verbs

As for the form, *kadʒa sutan* ‘smelled’, we have seen in Table 7 that the P2 form of *SUN* is indeed *sutan*. As for *jamutaN* and *hirakumutaN*, we know that these forms are P2 rather than P1, because of their medial forms. Medial forms and P1 forms are analogous in SCO morphology, just as is the case with the Japanese *-te* form and the past tense form *-ta*. The fact that the medial forms of *jamuN* and *hirakumuN* are respectively *jadi* and *hirakudi* tells us that if these stative verbs were to have a P1 form, it would have been *#jadan* and *#hirakudan*.

When the listener-oriented honorific *-bi:N* is added to the verbs displayed in Table 13, we see that all the stative verbs only take P2, as is displayed in Table 14.

		Non-past	P1	P2
non-stative verbs	‘go’	<i>itʃabi:N</i>	<i>itʃabitaN</i>	<i>itʃabi:taN</i>
	‘come’	<i>tʃa:bi:N</i>	<i>tʃa:bitaN</i>	<i>tʃa:bi:taN</i>
stative verbs	‘exist’ AN	<i>wuibi:N</i>	×	<i>wuibi:taN</i>
	‘exist’ INAN	<i>aibi:N</i>	×	<i>aibi:taN</i>
	‘hurt’	<i>jamabi:N</i>	×	<i>jamabi:taN</i>
	‘be numb’	<i>hirakumabi:N</i>	×	<i>hirakumabi:taN</i>
	‘smell’	<i>kadʒa sabi:N</i>	×	<i>kadʒa sabi:taN</i>

Table 14. The past tense forms of action verbs and stative verbs in the listener-oriented honorific form

We have observed that there is a group of predicates that do not maintain a distinction between P1 and P2, spanning the grammatical categories of

verbs, adjectives, and the copula,⁷ and that this group takes P2 rather than P1 once morphological material is added that allows for a P1–P2 distinction. What binds this group together seems to be the stativity, or “high temporal stability,” of the predicates, suggesting that P1 may be incompatible with stative predicates. This does not explain why existential verbs, adjectives, and the copula take P1 when no morphological material is added.

10 An explanation for the occurrence of P1 in stative predicates

		non-past1	non-past2	P1	P2
			i-stem + <i>wori</i>	i-stem + <i>tari</i>	i-stem + <i>wori+tari</i>
‘write’	historically reconstructed	<i>kaku</i>	<i>kaki wori</i>	<i>kaki tari</i>	<i>kaki wori tari</i>
	contemporary form	×	<i>katfun</i>	<i>katfan</i>	<i>katfutan</i>
‘hurt’	historically reconstructed	<i>jamu</i>	<i>jami wori</i>	×	<i>jami wori tari</i>
	contemporary form	×	<i>jamun</i>	×	<i>jamutan</i>
‘exist’ AN	historically reconstructed	<i>wori</i>	×	<i>wori tari</i>	×
	contemporary form	<i>wun</i>	×	<i>wutan</i>	×
‘exist’ INAN	historically reconstructed	<i>ari</i>	×	<i>ari tari</i>	×
	contemporary form	<i>an</i>	×	<i>atan</i>	×

Table 15. The diachrony of non-past and past forms in SCO

The diachronic make-up of verbs as displayed in Table 15 does offer an explanation for the occurrence of P1 in existential verbs. The reconstruction is based on and modified from Hagers (2000: 15) and Uemura (2003: 82–83).

Table 15 shows that, from a diachronic point of view, there are two non-past forms in SCO verbs. The two non-past forms are diachronically parallel to P1 and P2, so we have labelled them tentatively as non-past1 and non-

⁷ The copula *jan* is used to carry morphological material indicating tense and mood in sentences with a nominal predicate, and as such is not a predicate; however it can appear as a predicate, when it appears on its own, meaning ‘to be so’.

past2. Non-past1 is cognate with the Japanese non-past form that is used as the citation form of verbs, and non-past2 is derived from the infinitival *i*-stem with the existential verb for animate things (historically *wori*) attached to it as an auxiliary. Non-past1 used to have a perfective meaning in classical Okinawan, whereas non-past2 was a continuative (Karimata 2018: 8). Non-past1 and non-past2 have collapsed in contemporary SCO, and only the verbs of existence *wUN* and *aN* have non-past1 as their non-past forms.⁸ All the other verbs have only non-past2.

Table 15 shows that the non-past form of *katfun* ‘to write’, and *jamun* ‘to hurt’ is non-past2, and the non-past form of the existential verbs *wUN* and *aN* is non-past1 and does not contain the auxiliary. The reason why existential verbs take P1 when no morphological material is added may be found in the fact that their non-past form is non-past1 from a diachronic point of view. The existential verbs lack the “ingredient” *wori* that is used to construct P2. Because the morphological material that is added in the listener-oriented form, the light verb construction, and the subject honorific form does diachronically contain *wori*, construction of P2 becomes possible and even obligatory.

Adjectives⁹ and the copula¹⁰ diachronically do not contain *wori* either, leading them to also lack P2 when no morphological material is added.

11 Conclusions and further questions

We proved that stative predicates take P2 when morphological material that allows for a P1–P2 distinction is available, and that the occurrence of P1 in existential verbs is an exception brought about by the diachronic absence of the auxiliary *wori* in the non-past form. The presence of *wori* in the non-past form may thus be regarded as the morphological sine qua non for the construction of P2 forms.

The question remains why the use of P1 is synchronically blocked in stative predicates. We have seen that P2 can occur in any kind of predicate, even though it is diachronically more complex (*i*-stem+*wori*+*tari*). We hope to conduct further fieldwork on the uses of P1 (*i*-stem + *tari*), and explore the extent of its compatibility with non-stative predicates.

⁸ Based on our own fieldwork in Yakema in Uruma City, we can confirm that there are contemporary SCO dialects where the existential verb for inanimate things has non-past2 *aIN* rather than non-past1 *aN*. It is unclear whether *aIN* is a direct descendant of **ari wori* or came about by analogy with other verbs.

⁹ Adjectives are derived from an adjectival stem, the nominalizing element *-sa*, and the existential verb *aN* (Uemura 2003: 93).

¹⁰ The copula *jan* seems to have derived from *ari*. In addition to *jan*, the Janadō variety has the copula *jen*, which does seem to have derived from *ari wori*.

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Person Sensitivity and Egophoricity in Jejuan: The *-no/-ko* Suffixes

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1 Introduction¹

The past years have seen a growing interest in grammatical phenomena which encode “personal knowledge” (Floyd et al. 2018: 2) and similar epistemic categories, now more widely referred to under the term *egophoricity* (Floyd et al. 2018). Authors have observed that languages with egophoric marking often use the same marker for first-person declarative and second-person interrogative contexts, linking this to principles of epistemic access: I can only know things within my own experience and ask the addressee about theirs. As a result, egophoric morphology may be misinterpreted as some sort of person-marking even if it occurs in languages which otherwise have no grammaticalized person agreement. This paper, alongside Jeong’s (2020) very recent publication, aims at showing that, in fact, this is the case in Koreanic languages. Consider the examples from Jejuan below:

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- (1) *na ni=ne t̃eip-i o-k^va-la*
 1SG 2SG=ASSOC house-LOC come-EGO.PF-DECL
 ‘I’ve got to your place now.’
 (Kim 2018a: jeju0184-02, 16:53)
- (2) [...] *oa-s^h-i-nti ni=n əti ka-nti?*
 come-PST-EP-CVB 2SG=TOP where go-PST.Q.CNT
 ‘I’m here now, but where did you go?’
 (Kim 2018a, jeju0184-02, 16:07)
- (3) *na ankʲəŋ il:ə mək-i-n kə*
 1SG glasses loseeat-EP-ADN thing
*t̃e^hvt-i-no-la/*t̃e^hvt-i-kv-la/t̃e^hvt-a-ms^h-t̃eə.*
 search-EP-EGO.IPF-DECL/search-EP-EGO.PF-DECL/search-EP-PROG-DECL
 ‘I am looking for my glasses.’
 (Kim 2018a: jeju0191, 47:40)

Jejuan *-no* (IMPERFECTIVE) and *-k^va* (PERFECTIVE, with idiolectal variants *-kv*, *-ko*) above are suffixes occurring in informal, declarative utterances with speaker reference. The *-nti* suffix has past tense meaning, with additional progressive and irrealis forms *-mti/-lt^{hi}* occurring only with addressee reference in interrogative utterances. The suffixes are well known in the Korean dialectological literature (e.g. Lee 1978; Kang 1981; Kim 2014), as well as in recent research on Jejuan as a Koreanic language (Kim 2018b, cf. Yang et al. 2020). The Jejuan suffixes very likely stem from Middle Korean, which has long been recognized as exhibiting “person-marking” (Ko 2013), and recently been identified as exhibiting egophoric morphology alongside Standard Korean (Jeong 2020), which shows a different set.

The canonical ‘1DEC-2INT’ contexts that *-no/-ko* and *-nti* suffixes cover may suggest that we have one egophoric construction that is expressed through formally different exponents. However, since the morphological distribution and semantics of these suffixes are not identical and more data is needed, I limit myself to the *-no/-ko* suffixes. Non-egophoric alternatives such as *-ms^h*, PROG (ex. (3)) are always permissible, and in fact often the preferred variant. There are a few other seemingly egophoric phenomena in Jejuan, yet here I focus solely on *-no/-ko* suffixes.

For more on Jejuan grammar, sociolinguistics and language shift, I refer to Yang et al. (2020), Yang (2018), Kim (2018b), Saltzman (2016), Kang (2015) or Mun (2014). Data was collected during two one-month field stays (November 2018, 2019) in the Northeast of Jeju Island, South Korea, as part of a larger documentation (Kim 2018a). Almost all of the examples stem from elicitation employing a monolingual fieldwork meth-

od (see Kim 2018b). Examples are presented with their recording number and approximate timestamp, in the format ‘jeju0000, mm:ss’. I employ an IPA-based transliteration for Jejuaan data, Revised Romanization for proper names, and Yale transliteration for Korean references. I first delve into a brief overview of egophoricity in Section 2. Then I describe the properties of Jejuaan *-no/-ko* suffixes in Section 3. Section 4 summarizes and discusses the findings, and Section 5 concludes the paper.

2 Egophoricity

Egophoricity as a concept was first coined for Standard Lhasa Tibetan by Tournadre (1992). It has been defined as the “general phenomenon of linguistically flagging the personal knowledge, experience, or involvement of a conscious self” (Floyd et al. 2018: 2). As such, egophoricity is regarded as “the grammaticalised encoding of the personal or privileged knowledge or involvement of a potential speaker (the primary knower) in a represented event or situation” (Floyd et al. 2018: 2). Thus the study of egophoricity highlights factors such as “epistemic authority,” “access to someone’s experience” (Floyd et al. 2018), as well as speaker perspectives in interaction and empathy (Knuchel 2015), and what has been termed the “potential for self-ascription” of a certain property by Wechsler (2010).

Egophoric phenomena exhibit a seemingly unusual distribution of morphosyntactic markers. Consider the much-discussed examples from Newar (Floyd et al. 2018: 4, after Hale and Watters 1973: 208, bolding mine), with the so-called CONJUNCT (=egophoric) vs. DISJUNCT (=non-egophoric) marking:

- (4) *Jij saphuu khan-ā*
 1SG book see-PAST.CJ
 ‘I saw the book.’
- (5) *Chqq saphuu khan-ā lā*
 2SG book see-PAST.CJ INTER
 ‘Did you see the book?’
- (6) *Chqq/Wqq saphuu khan-a*
 2SG/3SG book see-PAST.DJ
 ‘You/he saw the book.’
- (7) *Jij/Wqq saphuu khan-a lā*
 1SG/3SG book see-PAST.DJ INTER
 ‘Did I/he see the book?’

These examples from Newar illustrate the canonical distribution of egophoric markers which I refer to as the ‘1DEC-2INT’ (pronounced ‘first dec sec-int’) pattern. In this pattern, we find the same marker in 1DECLARATIVE and 2INTERROGATIVE (ex. (4) and (5)), with a different one in all others, 2/3.DECLARATIVE (ex. (6)) and 1/3.INTERROGATIVE (ex. (7)). Authors have suggested that such a pattern can be explained by means of general principles of epistemic access in linguistic interaction: by default, I can only experience my own experience. Since I cannot access yours directly, I have to ask about it. What distinguishes egophoric marking from morphosyntactic person agreement is not only the 1DEC-2INT marking pattern that is the result of epistemic conditions, but also the fact that, as is the case of Jejuan, they may be found in a language without morphosyntactic person agreement.

As observed in many other languages, the egophoric markers from the Newar examples also encode intentional semantics, with unintentional actions triggering a non-egophoric marker (Floyd et al. 2018: 29). Egophoric markers often occur outside the canonical 1DEC-2INT contexts in some of the following contexts: (1) certainty over the truth of a proposition, (2) epistemic authority over someone else, (3) heavy involvement of speaker in a situation, (4) rhetorical questions, (5) perspective shift in narratives or in quotes, and (6) verbs with ‘endopathic’ meaning (Gawne 2013: 234–245).

Egophoric phenomena have been identified in languages from the Himalayas, Papua New Guinea, North and South America, Ethiopia, the Caucasus, as well as Indo-Aryan languages (see Floyd et al. 2018) and in East Asian languages such as Mangghuer (Mongolic, see Slater 2003), and Koreanic languages (Jeong 2020, Kim 2018b, and this paper).

3 The Jejuan *-no/-ko* suffixes

Jejuan *-no/-ko* suffixes occur only in declarative sentences (ex. (1) and (3)) and refer to the speaker of an utterance (henceforth “first person”):

- (8) *uli olepi it̃e uli t̃eip=t̃ale oa-ms^h-t̃eə/*-no-la*
 1PL brother now 1PL house=DIR come-PROG-DECL/*-EGO.PF-DECL
 ‘My younger brother is now coming home.’

(Kim 2018a, jeju0184-02, 48:07)

If the subject of a verb (in non-quotative contexts, see Section 0) suffixed with *-no* is not the speaker, a non-egophoric form must be used.

3.1 Intentionality

Some consultants note an “intentional nuance” in expressions using *-no/-ko* suffixes. This follows a cross-linguistic pattern (see Section 2).

- (9) *kʲetan kələ ka-tan al=təle tuŋkilə na-n/#tuŋkil-kv-la*
 stairs walk go-CVB down=DIR roll AUX-PST/roll-EGO.PF-DECL
 ‘I/he was walking down the stairs, and fell/#let myself fall.’
 (Kim 2018a, jeju0191, 85:24)

- (10) *ʂolok hə-ke t̃eijnəŋilu t̃evm tilə piə-n/*til-kv-la*
 easy do-CVB by_itself sleep enter AUX-PST/enter-EGO.PF-DECL
 ‘Without realizing, I had slipped into sleep.’
 (Kim 2018a, jeju0191, 94:36)

In examples such as the above, the employment of *-no/-ko* suffixes is impossible (10) or considered awkward at best (9), since the event described by the verb (typically) lies outside the control of the speaker.

3.2 Certainty and epistemic authority

Non-egophoric expressions in Jejuan generally allow for second-person or third-person reference; however, this is only possible if it is epistemically justifiable. Thus, statements about a second-person subject are generally deemed unacceptable if no prior context is provided:

- (11) *#ni sʰəŋan ka-sʰ-t̃eə*
 2SG Jeju_City go-PST-DECL
 ‘You went to Jeju City.’
 (Kim 2018a: jeju0184-02, 32:55)

Consultants dismissed the above example as nonsensical. In fact, one consultant commented that such a statement could only make sense in a fictitious setting where a person has soothsaying abilities. In other words, ex. (11) is deemed unacceptable since the missing context provides insufficient (and ontologically implausible) grounds to assume that the epistemic authority lies with the speaker. This holds true below, where a consultant imagines waking up in a hospital bed, and their guardian is there to tell them what happened while they were unconscious:

- (12) *nole-t̃ei mal-la, ni p'əŋwən wa-s^h-t̃eə=ke*
 be_shocked-COMP NEG.do-IMP 2SG hospital come-PST-DECL=DSC
 'Don't be scared, you got to the hospital, you know?'
 (Kim 2018a: jeju0184-02, 37:32)

As shown, a speaker can only make a pragmatically marked, second-person statement (instead of asking the addressee) if the epistemic authority lies with them instead of the second-person subject, and the speaker is convinced about a statement's veracity. It has been reported that in some languages with egophoric constructions, such contexts allow for the "pragmatic override" of the canonical, egophoric 1DEC-2INT pattern, for example, in Mangghuer in situations of absolute certainty (Slater 2003; Floyd et al. 2018). This, however, is not possible with Jejuan *-no/-ko* suffixes:

- (13) **ni it̃ee p'əŋwən o-k^va-la*
 2SG now hospital come-EGO.PF-DECL
 'You've come to the hospital now.'
 (Kim 2018a: jeju0184-02, 00:38:28)

While non-egophoric constructions are subject to general principles of epistemic-ontological authority and plausibility, Jejuan *-no/-ko* suffixes strictly adhere to the canonical pattern, even if their actual distribution is non-canonical with respect to person sensitivity.

3.3 Affectedness, involvement and internal states

In Section 0, I stated that *-no/-ko* suffixes are sometimes explicitly recognized as carrying intentional meaning. Accordingly, examples such as in (10) were judged as ungrammatical. Given that, examples such as the ones below may seem puzzling, since they were deemed all right by the same consultant:

- (14) *pal həs^h-titiə-kine naŋ=es^hə t^həlat̃ei-kv-la=ke!*
 foot wrong-step-CVB tree=LOC fall-EGO.PF-DECL=DSC
 'Can you imagine, I fell from the tree when I put my foot down on the wrong spot?'
 (Kim 2018a, jeju0191, 92:08)

- (15) *na kopul kəl-li-kv-la*
 1SG cold hang-PASS-EGO.PF-DECL
 'I caught a cold.'
 (Kim 2018a, jeju0191, 94:00)

Following the egophoricity literature, however, many authors report that in languages with egophoric expressions, situations where the speaker is considered highly affected by an event or is heavily involved in it, require or allow the use of egophoric marking.

- (16) *hontē^ha is^h-i-nane* *tēalto inkilip-kv-la*
 alone EXIST.COP-EP-CVB very be_lonely-EGO.PF-DECL
 ‘I’ve been very lonely since I am alone all day.’
 (modified from Kim 2018a: jeju0195-01-04, 40:53)

Similarly, inherently embodied or internal states and processes (whether cognitive or emotional) also allow the use of *-no/-ko* suffixes, even though again, which predicate in particular is considered admissible may depend on the individual speaker. This requires further research.

3.4 Non-speaker perspective-taking in quotative environments

While speakers can recognize and reproduce *-no/-ko* examples in non-quotative, declarative statements, the general availability of non-egophoric markers in these contexts has led to the fact that these suffixes rarely occur in non-quotative utterances. In quotative environments, these suffixes are still commonly used, observed since the 1980s (Kang 1981).

- (17) [*ki nal oa-s^h-taj* *mək-i-k^{wa}-l-en*]
 that day come-PST-AND eat-EP-EGO.PF-DECL-QUOT
ilimp^ho tola-s^h-ə-nia?
 name:tag hang-PST-EV-Q.PLR
 ‘Did [the mosquito] leave a name tag saying “I came and ate your blood today”?’
 (Kim 2018a: jeju0157-01, 00:20)

- (18) *ki nal oa-s^h-taj* *mək-i-k^{wa}-la*
 that day come-PST-AND eat-EP-EGO.PF-DECL
 ‘I came and ate your blood today.’
 (constructed by author)

Ex. (17) is a fictitious representation of an anthropomorphized mosquito, whose imagined speech is “quoted” for humoristic purposes. Here, HGS1 is amused by HYJ1’s claim that HYJ1’s three mosquito bites on the morning of the elicitation session all came from the same culprit.

The quotative clause is indicated by the suffix *-en*, which usually fuses with the sentence type suffix, which in turn would be the final suffix of a verb in a non-quotative utterance. Such a hypothetical, non-quotative ex-

ample is shown in (18). Quotative environments allow for seeming violations of the canonical 1DEC-2INT pattern, since the logophoric center shifts to the (possibly fictitious) quoted speaker and is no longer congruent with the actual speaker of an utterance. That is, *-no/-ko* suffixes can refer to participants seemingly outside of the 1DEC-2INT pattern, since in quotative environments, the perspective taken is that of the quoted speaker.

- (19) EGOPHORIC, after (17)
 [ki nal oa-s^h-taŋ mək-i-k^va-l-en]
 that day come-PST-AND eat-EP-EGO.PF-DECL-QUOT
 ‘She_x said that she_x came around and ate that day.’

- (20) NON-EGOPHORIC, after (17)
 [ki nal oa-s^h-taŋ məkə-s^h-tē-en]
 that day come-PST-AND eat-PST-DECL-QUOT
 ‘She_x said that she_x/someone else_y came around and ate that day.’

However, in quotative environments, *-no/-ko* suffixes require that the quoted speaker be the same as the subject of the quotative verb (ex. (19)), whereas this constraint does not hold when non-egophoric suffixes occur in that context (ex. (20)). From a functional perspective, then, it becomes clear why *-no/-ko* suffixes are still used in quotative environments, whereas they have largely been replaced by non-egophoric marking in non-quotative environments: In quotative environments, a non-egophoric suffix does not specify whether the quoted speaker is actually congruent with the subject of the quotative verb, or whether the quoted speaker is talking about the action of someone else. This leaves room for ambiguity, especially given the fact that Jejuan is a PRO-drop language and that often there are no accompanying nominal phrases that can help distinguish between different speech participants. Using *-no/-ko* suffixes removes such a possible ambiguity, rendering it functionally advantageous as opposed to non-egophoric alternatives.

Perhaps unsurprisingly, it is in such quotative environments where one spontaneous utterance was witnessed by the author where the quoted speaker is not the subject of the quotative verb *per se*, but where the quoted speaker is affected by an event by extension.

- (21) ki s^hamte^hun otopai p^han na-kə-l-en?
 that Samchun motorbike break arise-EGO-DECL-QUOT
 [speaker HYJ1 on the telephone to the author:] ‘Did that Samchun
 [that is, speaker HGS1] say her motorbike broke down (on her)?’
 (Kim 2018a, jeju0191: 101:40)

The Jejuan light-verb construction *pʰan na-*, ‘break down’ usually takes an inanimate subject (*otopai*, ‘motorbike’ above). Here, however, the quoted participant appears as a juxtaposed POSSESSOR of the syntactic subject of the light-verb construction. This constellation was unexpected, since the Jejuan *-no/-ko* suffixes were previously identified as adhering rather strictly to their 1DECL subject reference pattern. While I relegated the detailed study of quotative structures and egophoric marking to dedicated future studies, in Section 4 I connect this puzzling phenomenon with the prominent role that affectedness and involvement seem to play with respect to Jejuan egophoricity. Due to the extreme rarity of such uses in naturalistic speech and processes of language shift and linguistic obsolescence, speakers tended to dismiss such examples as unacceptable.

4 Discussion

The previous sections have described the egophoricity properties of Jejuan *-no/-ko* suffixes, with a particular emphasis on person sensitivity properties. Below I provide a summary of the egophoricity dimensions discussed, comparing canonically expected properties with those attested in the Jejuan data. As shown above, Jejuan *-no/-ko* suffixes behave only partially in tune with canonical cases of egophoricity. While they do in fact have speaker reference in declaratives, they do not permit usage in interrogatives with addressee reference or any other participant reference in non-quotative environments. Furthermore, some speakers do identify an intentional meaning component in the use of these suffixes, even though this is not very consistent. Affectedness has been identified as a major factor in determining the use of *-no/-ko* suffixes in contexts which do not permit any intentionality. Much more than in non-quotative declarative environments, these suffixes are employed fairly often in quotative environments, which typically are quoted statements where the quoting speaker takes the perspective of the quoted speaker, thus enabling the use of *-no/-ko* suffixes, and facilitating the correct identification of the quoted speaker as the subject of the quotative verb, and logophoric center of the event described. In these contexts as well, affectedness can pragmatically override morphosyntactic constraints governing the 1DECL reference pattern: in ex. (21), the quoted speaker is considered highly affected by the situation and triggers the *-ko* suffixation, even though the quoted speaker occurs as the possessor of the syntactic subject.

Dimension	Canonical	-no/-ko
1DECL	yes	yes
1INT	no	no
2INT	yes	no
2DECL	no	no
3 rd -person reference	no	no
intentionality	yes	yes
certainty override	yes	no
affectedness	yes	yes
perspective shift in quotatives	yes	yes

Table 1. Egophoricity properties of Jejuan -no/-ko suffixes

We thus see the interplay of independent factors here, which all contribute to the behavior of Jejuan *-no/-ko* suffixes:

- (22) Factors contributing to the behavior of Jejuan *-no/-ko* suffixes
1. Morphosyntactic–pragmatic default connection between the speaker and illocutionary force: 1DECL reference as the default case
 2. Intentionality of action
 3. Subjective judgment of the affectedness of the most salient speech participant (usually the subject of a verb, yet potentially the possessor of the subject in a few cases)
 4. Shifts of the logophoric center in quotative environments as a result of perspective taking.

Given the focus on the involvement of a conscious self in a given situation typical for egophoric morphosyntax, it would be relatively unsurprising to note that the default case of 1DECL intersection between speech participant reference and illocutionary force is pragmatically determined and not purely syntactically governed. However, the behavior of Jejuan *-no/-ko* suffixes is unlikely to be an effect of pragmatic processes alone, since otherwise the person reference properties would not be so strictly limited to the 1DECL intersection: as I have shown, the Jejuan *-no/-ko* suffixes are not “pliable” to epistemic authority shifts and do not allow for participant references outside the 1DECL pattern. Contrastingly, non-egophoric suffixes usually are subject to general epistemic-ontological plausibility governing the default link between the speaker and subjecthood in a declarative utterance; however, this can be overridden in case the epistemic authority no longer lies with the subject of a verb, and hence reference patterns such as 2DECL are allowed.

Given that the epistemic principles potentially giving rise to the egophoric 1DECL-2INT pattern are increasingly acknowledged as universal, and given that epistemic shifts enable the use of egophoric constructions outside the canonical pattern in many languages (Floyd et al. 2018: 66 on English, or Lidz 2018 on Yongning Na, Jeong 2020: 353, Gawne 2013), one would not expect such a rigidity of Jejuan *-no/-ko* suffixes with respect to epistemic authority. In other words, the use of *-no/-ko* suffixes is not solely pragmatically conditioned, but is subject to an interaction of morphosyntactic and pragmatic factors.

As shown, the only context with apparent shifts away from the usual 1DECL reference pattern are those with *-no/-ko* suffixed verbs in quotative structures. Here, through perspective shift from the “quoting speaker” to the “quoted speaker,” the logophoric center shifts in such a way that from the perspective of the quoted speaker, the verb refers to the quoted speaker themselves. Hence, in this sense, such a case is not really a “violation” of the 1DECL reference pattern. However, such a shift of the logophoric center can only happen in the morphosyntactic environment created by a quotative verb form, since perspective taking outside a quotative context does not give way to non-1DECL uses of *-no/-ko* suffixes.

What seems more decisive in triggering exceptions to the 1DECL pattern is whether a pragmatically salient participant such as the animate subject by default, or the possessor of an inanimate subject in some rare cases, is considered highly affected or not. This in itself is not surprising since the connection between personal knowledge, personal involvement in an event and affectedness is commonly observed in the egophoricity literature. However, affectedness as a dimension cannot be given absolute “pragmatic primacy” over other egophoricity factors, as Jejuan *-no/-ko* suffixes are used in cases where the speaker is not necessarily heavily affected. In other words, subjective judgments on a high degree of affectedness of a speech participant may serve as an explanation for determining why a particular instance of a Jejuan *-no/-ko* expression does not follow the 1DECL pattern, yet it cannot be determined as the sole major factor for explaining why Jejuan *-no/-ko* suffixes are used at all.

Lastly, what this paper has shown is an additional aspect that is not to be underestimated: both language-internal changes (the replacement of egophoric patterns by non-egophoric ones) and language shift and linguistic obsolescence (due to language contact and sociolinguistic domination by Standard Korean) have probably contributed to this somewhat “sketchy” behavior of Jejuan *-no/-ko* suffixes: not only do we sometimes find inconsistent patterns of grammaticality judgments varying from speaker to speaker, but also, the use of these suffixes and the metalinguistic awareness thereof is increasingly limited. At the same time, however,

functional motivations such as the use of *-no/-ko* suffixes in aiding the determination of speech participants in quotative environments have contributed to the preservation of their use in such environments even if they are no longer frequently used by speakers in non-quotative environments.

5 Conclusion

Jejuan has a set of constructions that indicate the relationship between the speakerhood of a participant and other pragmatic factors such as epistemic access to a participant's knowledge, or the intentionality or affectedness of a participant. Focusing on Jejuan *-no/-ko* suffixes, I have identified this phenomenon to be a (albeit non-canonical) case of egophoricity in a Koreanic language (see Table 1, cf. Jeong 2020).

Jejuan *-no/-ko* suffixes can only be used in first-person, declarative contexts. They are sometimes interpreted as conveying nuances of intentionality. However, a speaker's subjective judgment of the affectedness of the speech participants has been identified as being more central. Shifts in epistemic authority enable the use of non-egophoric verb forms in pragmatically marked contexts such as second-person statements, yet Jejuan *-no/-ko* suffixes do not exhibit such flexibility. Seeming shifts in person reference are observed in quotative structures, where the logophoric center shifts from the quoting speaker to the quoted speaker.

More generally, a look at the increasingly rich literature on egophoricity (Floyd et al. 2018, among others) has greatly helped in guiding this first approach to Jejuan egophoricity. In fact, Jejuan shows a number of candidates with some kind of egophoric behavior. Hence, more research on these fascinating constructions is needed, even though due to the effects of language shift, the extent to which we may be able to answer our questions may become more and more limited in the future.

Abbreviations

1=first person, 2=second person, 3=third person, ADN=adnominal, AUX=auxiliary predicate, CJ=conjunct, COMP=complement, COP=copula, CVB=converb, DEC(L)=declarative, DIR=directional, DJ=disjunct, DSC=discourse marker, EGOPHORIC=egophoric, EP=epenthetic, EV=evidential, EXIST.COP=existential copula, IMP=imperative, (I)PF=(im)perfective, INT(ER)=interrogative, LOC=locative, NEG=negative, NMLZ=nominaliser, PASS=passive, PL=plural, PROG=progressive, P(A)ST=past, Q.CNT=content question, Q.PLR=polar question, QUOT=quotative, SG=singular, TOP=topic

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Part IV

Psycholinguistics and Language Acquisition

Compounds in Japanese Sign Language: Associate Professor teaches twice

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1 Introduction

Sign languages have a rich lexicon that has identical rhythmic repetitions in the phonology. To illustrate, the signs SOUTH and TEACH in Japanese Sign Language (JSL) have two short, repetitive movements, as shown in (1).

(1) a. SOUTH



b. TEACH



Previous studies of sign language have shown that compounds composed of such signs exhibit a phonological weakening or reduction of repetitive movements. Klima & Bellugi (1979: 215) illustrated this phonological property of compounds in American Sign Language (ASL) using musical notation, as in (2) (see also Liddell & Johnson 1989 and others)

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(2) MONEY[^]BEHIND ‘emergency money’

- a.  b. 
- MONEY BEHIND MONEY[^]BEHIND

The separate signs (MONEY and BEHIND) in (2a) have equal durations, although MONEY has two rhythmic beats (representing repetition of movement) and BEHIND has one. In the compound MONEY[^]BEHIND in (2b), the duration of each sign is reduced so that the entire compound is equivalent to the duration of one of the separate signs (repetition is eliminated).

These previous works did not, however, clarify whether the phonological changes occur in any type of compound or whether the patterns of change are the same for all types of compounds.

JSL has a rich lexicon of signs that have repetitive movements. Our research based on the corpus data from seven JSL textbooks shows that 24% of the total lexical entries (N=4200) have repetition.^{1,2,3} Channon (2002: 60) also presented similar data for compounds in JSL. The author compared phonological repetition phenomena in several spoken and sign languages and reported that compound signs that have repetitive movements in JSL account for 47%, compared with, for example, 19% in ASL. Thus, investigating the phonology of compounds in JSL may provide a deeper understanding of compounds in sign (and spoken) languages in general.

Another motivation for a more comprehensive study of the phonology of compounds in JSL is based on language education. Studies of second language (L2) learning have pointed out that in the L2 learning of a sign language that is produced in the visual-gestural modality, hearing learners whose native languages are spoken frequently make phonological errors (Rosen 2004: 31). In fact, in our teaching practices in a university-level JSL program, we have seen that early learners have difficulties understanding phonological rules and changes and that they tend to use only dictionary forms for compounds that show phonological reduction. Although these phonological complexities of compound signs present substantial challenges for L2 learners, the only available strategy that they can rely on is implicit learning, in which they grasp regularities and patterns on their own.

¹Japan National Center of Sign Language Education (ed.) 2004. *Sin-syuwa kyoositu-nyuumon*. [New basics of sign language]. Tokyo: Federation of the Deaf.

²Japan National Center of Sign Language Education (ed.) 2016. *DVD de manabu syuwa-no hon Zenkoku syuwa kentei siken taiou*. 5, 4, 3, 2, 1/*zyun-1-kyuu*. [Learn Sign Language on DVD – Grades 5, 4, 3, 2, 1/Pre-1]. Tokyo: Chuohoki Publishing.

³Kimura & Ichida (2014).

Based on this background, our study first describes the phonological patterns of compounds in JSL. Intriguingly, the observed distribution corresponds to Scalise & Bisetto's (2009) three-way classification, which is well known in the research on compounds in spoken languages. We then propose a syntactic analysis of the three types of compounds within the Distributed Morphology (DM) framework (Halle & Marantz 1993; Harley 2009). Finally, by approaching this phenomenon from a cross-linguistic perspective, we show that compounds in JSL exhibit phonological patterns that are similar to those of compounds in Japanese with respect to the patterns of *rendaku* voicing assimilation, as discussed in Sugioka (2002).

This paper is organized as follows. Section 2 introduces the phonological patterns observed with compounds in JSL. Section 3 shows the results of our experiment conducted with native signers and confirms that the observed patterns correspond to Scalise & Bisetto's typology of compounds. Section 4 proposes a syntactic analysis within DM. Section 5 discusses the similarity between compounds in JSL and those in Japanese. Finally, Section 6 is the conclusion.

2 Phonological reduction

Based on her study of several sign languages, including JSL, Channon (2002: 83) proposed the generalization that in sign languages, the number of repetitions in simple words and compounds is not semantically contrastive. On close inspection, however, JSL does not follow this generalization. For example, signs (3a) and (3b) have the same hand movement, but only example (3a) has two repetitions, showing patterns such as *aa* for (3a) and *a* for (3b) (the repetition of hand movements is shown by lower case letters such as *ab*).

(3) a. TOKYO

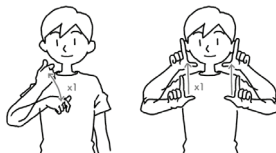


b. EAST



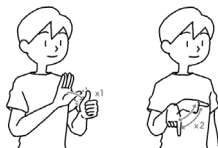
Thus, when the sign EAST is combined with the sign SOUTH (1a) to form the compound 'southeast' (4), EAST has one movement, and crucially, SOUTH also needs to be performed as one movement to create SOUTH(*b*)^EAST(*a*), even though SOUTH has two iterative movements *bb* in its dictionary form (see (1a)).

(4) SOUTH^EAST
'southeast'



There are other instances of JSL compounds in which the deletion of repetitive movements is not optional. The compound in (5), ‘associate professor,’ for example, is composed of the signs HELP and TEACH, both of which have two repetitive movements when they are used separately. However, in the compound form, only the first sign HELP loses its repetition, and the second sign TEACH retains two movements, thereby showing the pattern *abb* instead of the pattern *aabb*.

- (5) HELP^TEACH
‘associate professor’



In previous works that refer to phonological reduction in compounds in sign language, the most cited pattern is *abb*, as shown in example (2) above in ASL (Klima & Bellugi 1979; Liddell & Johnson 1989; Tkachman & Meir 2018). A similar observation was made for JSL by Norimatsu *et al.* (1998). The authors examined the patterns of phonological changes in JSL compounds and presented the generalization that in compounding in JSL, the first element tends to be weakened more than the second.

However, these studies left unanswered the question of why compounding in sign language exhibits the *abb* pattern and, more importantly, in regard to JSL, the question of why this pattern does not occur in all types of compounds. At the earlier stage of our research, we identified the following three phonological patterns with a two-sign compound [A(aa)+B(bb)], each of which has two repetitive movements in its dictionary form.

- | | | |
|----------------|-------------------|----------------|
| (6) a. DOG^CAT | b. STRAWBERRY^JAM | c. FRUIT^TRADE |
| ‘dog and cat’ | ‘strawberry jam’ | ‘fruit shop’ |
| A+B = [ab] | A+B = [abb] | A+B = [aabb] |

The first type, DOG^CAT in (6a), shows the pattern *ab*, where both signs exhibit phonological reduction. Next, (6b) STRAWBERRY^JAM has the pattern *abb*, where only the first sign exhibits reduction. Finally, (6c) FRUIT^TRADE ‘fruit shop’ does not show any phonological changes; both elements of the compound retain their repetition (*aabb*).

Thus, the observed patterns in JSL compounds are more complex than previously reported. How then can we account for these patterns, and how does the phonology of JSL compounds differ from that of compounds in languages such as Japanese? In what follows, we will answer these questions based on the results of our experiments conducted with native signers.

3 Typology and our experiment

Interestingly, the distribution of the three phonological patterns of JSL compounds corresponds well to the three types of compounds under the classification proposed by Scalise & Bisetto: coordinate, attributive, and subordinate (see Vercellotti & Mortensen 2012 for discussion of compounds in ASL). Scalise & Bisetto proposed the three macrolevels of classification of compounds as exemplified in Table 1.⁴

	coordinate	attributive	subordinate
data	mother-child	redskin	pickpocket
	bittersweet	high school	bookseller

Table 1 Scalise & Bisetto's (2009) taxonomy

Our three types of JSL compounds with different phonological patterns in (6) correspond nicely to Scalise & Bisetto's three semantic types, as shown in Table 2. Let us refer to these three types of JSL compounds as Types 1, 2, and 3.

	Type 1 coordinate	Type 2 attributive	Type 3 subordinate
data	DOG^CAT 'dog and cat'	STRAWBERRY^JAM 'strawberry jam'	FRUIT^TRADE 'fruit shop'
phonology	A+B = [ab]	A+B = [abb]	A+B = [aabb]

Table 2 Three types of JSL compounds

Type 1 compounds show a symmetrical reduction in repetitive movements, and they are formed by two coordinated elements. Type 2 compounds, which show an asymmetrical reduction, have an attributive head-modifier relation. Type 3 compounds, with no reduction in repetition, involve a head-complement relation in the subordinate type under the Scalise & Bisetto's taxonomy.

To investigate this phenomenon more closely, we conducted a judgment test with four native signers, including one author of this paper, on thirty-five compounds composed of two signs of type [A(aa)+B(bb)], each of which has two repetitions in its dictionary form.

The methodology was as follows. First, from the corpus data in seven JSL textbooks (Footnote 1), we listed single words that have two repetitive

⁴ In this paper, we do not discuss the binary "exocentric/exocentric" distinction for each of the three types proposed in Scalise & Bisetto's classification (see Vercellotti & Mortensen 2012 for discussion).

movements in their dictionary entry (N=874). Second, based on this list, we created thirty-five two-sign compounds, i.e., 10 for coordinates, 12 for attributives, and 13 for subordinates. Third, we conducted one-on-one interviews. In the interviews, the participants were presented with a picture on a PowerPoint slide that illustrated a compound in a random order, and they were asked to describe the item on the slide in JSL. We videotaped the sessions for our records, and for each item, we double-checked the number of repetitions of the two signs in a compound with the informant.

Table 3 provides some examples that were tested in this experiment.⁵

	Type 1 coordinate	Type 2 attributive		Type 3 subordinate
		modifier + noun	modifier + verb	argument + verb
data	SWEET [^] BITTER 'sweet and bitter'	TEACH [^] SCHOOL 'educational school'	SCHOOL [^] TEACH 'school education'	FRUIT [^] TRADE 'fruit shop'
	DOG [^] CAT 'dog and cat'	STRAWBERRY [^] JAM 'strawberry jam'	EVERY [^] COMMUTE 'full-time work'	FLU [^] CHECK 'flu check- ing'
phono- logy	symmetric change A+B=[ab]	asymmetric change A+B=[abb]		no change A+B=[aabb]

Table 3 Repetition patterns of two-sign compounds A[aa]+B[bb]

The results confirmed that in JSL, the number of repetitions is not randomly distributed but instead shows consistent patterns depending on the type

⁵ We also tested the following compounds:

Type 1 (coordinate)

DRINK[^]EAT/READ[^]WRITE/PAINT[^]CRAFT/POLITICS[^]ECONOMY/SPRING[^]SUMMER/
FALL[^]WINTER/TOKYO[^]YOKOHAMA/AICHI[^]GIFU

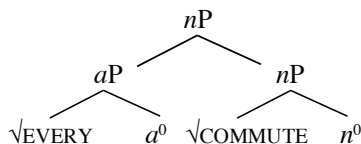
Type 2 (attributive)

CHILD[^]CLOTH/SIGN[^]NEWS/COLD[^]COFFEE/HELP[^]TEACH 'associate professor'/
PROVISORY[^]WORK 'part-time job'/COLD[^]PRACTICE 'winter training'/
KYOTO[^]COOK 'Kyoto-style cooking'/GUNMA[^]TRANSPORT

Type 3 (subordinate)

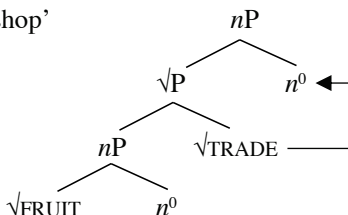
BUTTER[^]MAKE 'butter making'/PEACH[^]TRADE 'peach shop'/CHILD[^]RECRUIT/
INTERPRETER[^]RECRUIT/BLOOD.PRESSURE[^]CHECK/TEACH[^]PLAN/
STRAWBERRY[^]WASH/LANGUAGE[^]RESEARCH/PASTA[^]TRADE/KYOTO[^]SIGHT.SEE/
OSAKA[^]GUIDE

- (8) EVERY[^]COMMUTE
‘full-time work’



Finally, Type 3 (subordinate), such as FRUIT[^]TRADE ‘fruit shop,’ has a more complex “incorporation”-type structure (Harley 2009), where an argument *nP* is incorporated into a root. Following Harley, in this derivation, the argument selected by the root is first created as an *nP* and is then merged with the root as its complement, forming a *RootP*(√*P*). Then, this √*P* is merged with an *n*⁰ head, and finally, the root (i.e., the head of the √*P*) undergoes head-movement into the *n*⁰ head, as shown below.

- (9) FRUIT[^]TRADE
‘fruit shop’



Now, to explain the phonological patterns of compounds, we assume (10).

- (10) *Phonological rule (JSL)*

The lexicon phonologically specified with two repetitive movements has a single, non-repetitive movement in its root form, and it surfaces with two repetitive movements only when it occurs as a sister to a categorizing head *n*⁰.

This assumption captures the phonology of lexically derived root compounds as in (11a) ‘assistant professor,’ *jokyo* in Japanese, composed of HELP[^]TEACH (cf. example (5)), and in (11b) ‘canteen,’ composed of EAT[^]PLACE.

- (11) a. HELP(*a*)[^]TEACH(*b*) b. EAT(*a*)[^]PLACE
 ‘assistant professor’ ‘canteen’

These root compounds show only one single movement for each sign. Under our assumption (10), we can account for this pattern because neither of the

- (15) a. [
- _{NP}
- [
- _{POSSP}
- TAROO POSS
- ⁰
-] BOOK] b. [
- _{NP}
- [
- _{LocP}
- OSAKA Loc
- ⁰
-] CITY]

The second crucial observation is that the non-head of a Type 2 compound such as TEACH(a)^SCHOOL(bb) ‘educational school’ in (16a) may occur with two repetitions (i.e., TEACH(aa)); however, in this case, to be grammatical, it requires the head-nodding (notated as hn) optionally with raised eyebrows that functions as the linker ‘of,’ as shown in (16b). The example is thus no longer a compound but rather a phrase with a modifier that means ‘school of education.’

- (16) a. TEACH(a)^SCHOOL(bb)
‘educational school’
- b. $\overline{\text{hn}}$ TEACH(aa) SCHOOL(bb)
‘school of education’

The contrast between (17a) and (17b) also illustrates this point. The Type 2 compound in (17a) ‘strawberry jam’ has the pattern *abb*, and when the sign STRAWBERRY retains its two repetitive movements as in (17b), we obtain the expression with a modifier phrase, which means ‘jam made of strawberries.’

- (17) a. STRAWBERRY(a)^JAM(bb)
‘strawberry jam’
- b. $\overline{\text{hn}}$ STRAWBERRY(aa) JAM(bb)
‘jam made of strawberries’

Note that the example in (17b), ‘jam made of strawberries,’ is not allowed without being accompanied by the head-nodding. These data show that in JSL, the two *nPs* cannot be merged without being mediated by a head.

5 Compounds in Japanese

The distribution of the three compound types in JSL discussed above is reminiscent of the three types of compounds in Japanese with respect to the patterns of *rendaku* assimilation, as discussed in Sugioka (2002), Nishiyama (2017), and others. It is known that *rendaku* voicing is observed with many compounds of the attributive type but much less with those of the coordinate and subordinate types. Table 4 shows examples that illustrate this pattern.

	coordinate	attributive		subordinate
		modifier + noun	modifier + verb	argument + verb
data	oya-ko 'parent and child'	sato-go 'foster child'	usu-giri 'thin-sliced'	tume-kiri 'nail cutter'
	saru-kani 'monkey-crab'	ke-gani 'hair crab'	kara-buki 'dry-wipe'	mado-huki 'window-wipe'
phono-logy	without <i>rendaku</i>	with <i>rendaku</i>		without <i>rendaku</i>

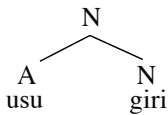
Table 4. *Rendaku* patterns of compounds in Japanese

To capture this contrast, Sugioka (2002: 500) proposed a syntactic analysis for the two types of deverbal compounds—modification and incorporation—as shown in (18a) and (18b). On the one hand, the deverbal compound with a modifier in (18a) ‘usu-giri,’ which shows *rendaku* voicing, has the adjunct structure shown in (19a). On the other hand, the deverbal compound with an argument in (18b), ‘tume-kiri,’ which does not show *rendaku* voicing, has an incorporation-type structure where a direct argument is incorporated into a verb, as shown in (19b).

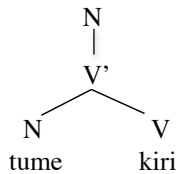
(18) a. *modifier + verb*
usu-giri
'thin-cutting'

b. *argument + verb*
tume-kiri
'nail cutter'

(19) a. *Structure of (18a)*



b. *Structure of (18b)*



Now, if we follow the author's analysis, it is not surprising to find a similar dichotomy between the two types of deverbal compounds in another language. Our study provides one such case from JSL: as shown in Table 3, the phonological changes do not occur in deverbal compounds formed with an argument, such as FLU^ACHECK, which is a Type 3 compound in our taxonomy, just as *rendaku* voicing does not occur in deverbal compounds formed with an argument like 'tume-kiri.' There is another similarity between compounds in JSL and those in Japanese. As Sugioka observes, in Japanese, while

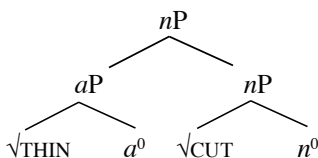
deverbal compounds formed with arguments are very productive, those with adjuncts are not fully productive. The examples in (20) cited from Sugioka (2005) illustrate compounds that are semantically possible but not found in Japanese, and we can find analogous examples in JSL, as shown in (21).

- (20) *Japanese* a. *haya-nomi ‘fast-drinking’
 b. *sigoto-nayami ‘work-troubled’

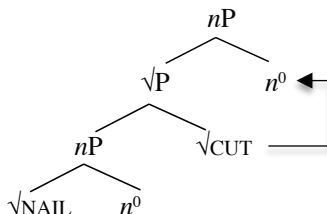
- (21) *JSL* a. *BUSY^WORK b. *³SOFT^COOK

These facts suggest that we could extend our current analysis to the two types of deverbal compounds in Japanese. In our DM framework, Sugioka’s structures in (19a-b) correspond to (22a-b), confirming her insight that *rendaku* is a phonological marker of adjunct compounding.

- (22) a. usu-giri ‘thin-cutting’



- b. tume-kiri ‘nail cutter’



An in-depth discussion of *rendaku* on this matter goes beyond the scope of this paper, but the parallelism between JSL and Japanese compounds presented here can be taken as supporting evidence for our proposal.

Before concluding, let us return to the question regarding language teaching addressed in section 2. While in this section we discussed the affinity between Japanese and JSL in terms of phonological patterns of the three types of compounds, there is a crucial cross-linguistic difference with respect to the availability of *nP-nP* compounds. As shown in section 4, *nP-nP* strings such as (14a-b) are unacceptable in JSL, but the compounds that correspond to these examples in Japanese have no problems (compare also (13), (16), and (17) in JSL with the Japanese counterparts).

- (23) a. Osaka haiyuu ‘Osaka actor’
 b. Shibuya zyosi/gaaru ‘Shibuya girl’

Thus, if the current analysis is on the right track, this suggests that the pedagogical challenges for early L2 learners of JSL may arise in the area of

nP-nP compounds that are available in Japanese but not in JSL. We will pursue this topic in a future study.

6 Conclusion

In this paper, we first reported the phonological patterns of compounds in JSL. We next proposed an analysis within the DM framework, and finally, we discussed the similarity between compounds in JSL and those in Japanese as evidence that supports our proposal.

The present work is an adaptation of Harley's (2009) work on compounds to those in JSL, and the scope of this paper is limited to the investigation of two-sign compounds. The obvious next step is to examine compounds composed of three (or more) signs. Three-element compounds give rise to the well-known structural ambiguity (Ito & Mester 1986).⁹ Our proposal makes several predictions regarding this type of compound. The question of whether we observe similar effects is left for our future work.

Another important point that is not directly addressed in the current study is the question of what explains the unavailability of *nP-nP* structures in JSL (our assumption (12)). Is this property specific to sign language, or is it related to its case morphology? Future work including research on other sign languages should help answer these questions.

In the area of language teaching, our proposal may have implications not only for hearing L2 learners of JSL, as mentioned in the previous section, but also for the language development of deaf children and their L2 learning of Japanese. As Norie Oka (p.c.) pointed out, learning the complex patterns of *rendaku* voicing in Japanese is a difficult task for deaf children. In this respect, the three-way classification of compounds in JSL analogous to that of compounds in Japanese presented in this paper may contribute to research on the language development of deaf children. For example, as an indicator of maturity, the extent to which children learn phonological patterns of compounds may shed light on the stages of their L1 development in general.¹⁰ Additionally, for L2 learning of Japanese, we could develop methods of teaching Japanese phonology effective for deaf children by considering the phonological patterns of sign language revealed in this paper. Based on the outcome of the present work, we will explore these viewpoints in our future research.

⁹ We thank Sotaro Kita and Keiko Yoshioka for bringing this within the scope of our study.

¹⁰ We owe this insight to Kazumi Matsuoka (p.c.).

Acknowledgments

First, we would like to thank the native signers of JSL who participated in this study. We would also like to express our sincere gratitude to the reviewers of our abstract, the editors of this volume, and the participants at the 28th conference on Japanese/Korean Linguistics for their helpful comments. We are also very grateful to Daisuke Hara and Yoko Sugioka for their valuable and constructive comments regarding the earlier version of this paper. All remaining errors are our own. This work was supported by JSPS Grant Numbers 19K00559 (PI: Yuko Asada) and 20K14047 (PI: Yukiko Nomi).

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Acquisition of Interjection in Child Japanese: A Syntactic Account*

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1 Introduction

This study is a preliminary report about acquisition of interjection in child Japanese. In Japanese, modal expressions usually appear in the right-peripheral position, as in (1), where epistemic modal and utterance modal are realized as auxiliary *-daroo* (will) and sentence-final particle (SFP) *-ne* meaning confirmation, respectively (Inoue 1976; Ueda 2009).¹

- (1) Taroo-ga zyobun-o honyakusi-tei-ru **daroo ne**
 T.-NOM introduction-ACC translate-ASP-PRES **will SFP**
 ‘Taro will be translating the introduction, won’t he?’

* I would like to express my gratitude to the audiences at JK28 for their helpful suggestions. This work was supported by JSPS KAKENHI Grant-in-Aid for Scientific Research (C) (20K00548). Of course, any errors in this paper are my own responsibility.

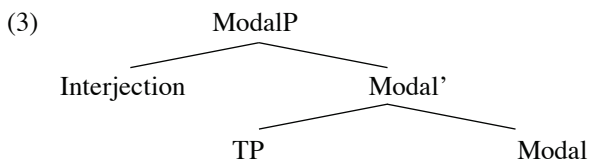
¹ In this paper, abbreviations are used as follows: ACC (accusative), ASP (aspect), DAT (dative), INT (interjection), NOM (nominative), PRES (present), SFP (sentence-final particle), TOP (topic).

Epistemic modals express the speaker's recognition of the content of the proposition and presuppose neither the existence of addressees nor the involvement of addressees. In (1), *-daroo* indicates the speaker's surmise that the translation of the introduction made by Taro is in progress. Utterance modals refer to the speaker's attitude toward the utterance and presuppose the existence and involvement of addressees.

On the other hand, interjections, which also contain modal meanings, can emerge in the left-peripheral position of the sentence and are divided into two types: epistemic interjection and utterance interjection. For example, while the epistemic interjection *a* (ah) containing surprise or discovery in (2a) can be used without addressees, utterance interjection *nee* (hey) which directs the hearer's attention to the speaker in (2b) must presuppose the existence of addressees.

- (2) a. **A**, basu-ga ki-ta (epistemic)
 INT bus-NOM come-PAST
 'Ah, the bus is coming!'
- b. **Nee**, basu-ga ki-ta (utterance)
 INT bus-NOM come-PAST
 'Hey, the bus is coming!'

As these sentences show, two types of Japanese modals can appear at both sides of sentence-peripheral positions. Traditional Japanese grammarians have always regarded interjection as an element corresponding to a sentence which consists of one word. However, there is a possibility that, because of shared meanings of the modal between left and right peripheral positions, interjection occurs in the Spec position of functional projections such as ModalP whose head consists of right-peripheral modals, as schematized in (3).



If this conjecture is the case, interjections used in the sentence with predicates are expected not to be acquired earlier than (that is, at the same period or later than) sentence-final modal expressions. The goal of this paper is to verify the ModalP hypothesis based on acquisition data. It is organized as follows. Section 2 shows some characteristics of interjection and SFP. Section 3 deals with acquisition data. Section 4 discusses devel-

opment of modal domains. Section 5 concludes the paper and describes some remaining problems.

2 Some characteristics of interjection and sentence-final particles

This section deals with some important characteristics of interjection and sentence-final particles, which are a theoretical motivation for our syntactic analysis. The first property is main clause phenomena. In (4a), SFP *-yo* is used in the main clause, but, as shown in (4b), it cannot appear in the embedded relative clause.

- (4) a. Hanako-ga ringo-o kat-ta **yo**
 H.-NOM apple-ACC buy-PAST **SFP**
 'Hanako bought an apple.'
- b.*Boku-wa [Hanako-ga kat-ta **yo**] ringo-o tabe-ta
 I-TOP H.-NOM buy-PAST **SFP** apple-ACC eat-PAST
 'I ate an apple that Hanako bought.'

This clause-bound restriction also applies to interjection. While in (5a), the interjection *-hora* can be used in the main clause, it is not allowed in the embedded clause as in (5b).²

- (5) a. **Hora**, asoko-ni hon-ga at-ta!
 INT there-DAT book-Nom be-PAST
 'Hey, there is a book there.'
- b.*Boku-wa [**hora**, asoko-ni hon-ga at-ta]
 I-TOP INT there-DAT book-NOM exist-PAST
 koto-o sit-tei-ru
 thing-ACC know-ASP-PRES
 'I know that, hey, there is a book there.'

The next characteristic is multiple occurrence. (6) shows that both SFP and interjections are multiply used.

² On the other hand, as exemplified in (i), auxiliaries can appear in both the main and embedded relative clause.

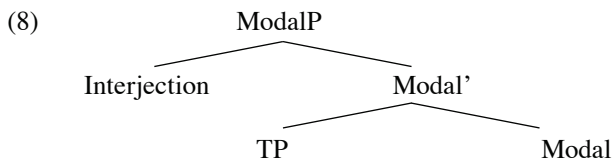
- (i) a. Hanako-ga ringo-o kat-ta **daroo**
 H.-NOM apple-ACC buy-PAST **will**
 'Hanako would have bought an apple.'
- b. Boku-wa [Hanako-ga kat-ta **daroo**] ringo-o tabe-ta
 I-TOP H.-NOM buy-PAST **will** apple-ACC eat-PAST
 'I ate an apple that Hanako would have bought.'

- (6) a. Asita hare-ru yo ne?
 Tomorrow clear-PRES SFP SFP
 'It will be fine tomorrow, won't it?'
- b. **Anoo**, **eeto**, ii-nikui-n-desu-ga ...
 INT INT say-difficult-COMP-be-but
 'It's hard to say, but ...'

In addition to these similarities, SFP and interjections differ in the following respects. The first difference is where they can occur. SFP is in the right, and INT is in the left-peripheral position. The second difference is connectivity with the TP. SFP follows tensed forms, but interjection does not. The third difference is in their dependence relation. As in (7a), SFP cannot be used independently, but (7b) shows interjection can be used with no other lexical items. This suggests that SFP has an affixal property, but interjection does not.

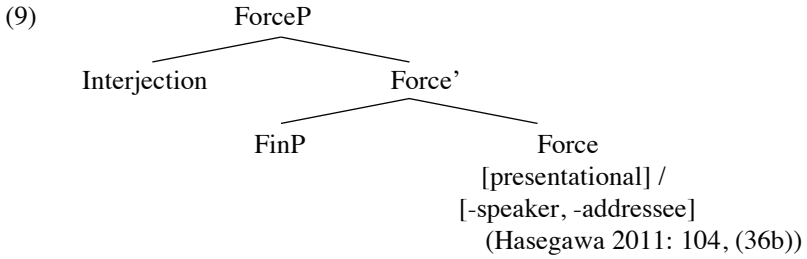
- (7) (without preceding context)
- a. * Ne.
 SFP
- b. A!
 Int
 (surprise/discovery/remembrance)

These syntactic and semantic characteristics can be captured by assuming the following functional structure, as described in (3), repeated here as (8).



In this structure, Modal head consists of right-peripheral modals and selects TP as a complement. This explains the affixal properties of SFP and the connectivity with tensed forms. In addition, interjection occurs in the Spec position of ModalP. Given that interjection can be used independently, it can exhibit maximal projection, leading to its occurrence in Spec position. This structure reflects the left-peripheral interjection and modal meaning shared with SFP. Some people think it is strange to assume that interjection resides in the syntactic structure. However, it is NOT unusual.

For example, in Hasegawa (2011), interjection occurs in the Spec position of ForceP, as in (9).



If our proposal is the case, the prediction from the ModalP Hypothesis can be made as follows in (10).

- (10) Prediction from the ModalP Hypothesis
 Interjections used in the sentence with predicates are expected not to be acquired earlier than (that is, at the same period or later than) sentence-final modal expressions.

The next section describes the method of our study.

3 Data

3.1 Method

I conducted a longitudinal corpus analysis of a Japanese-speaking child Aki using CHILDES (MacWhinney 2000; Miyata 1995). Our period of survey in the AKI corpus is about 11 months (1;05,07–2;03,26). The CLAN program was used to collect the relevant data; of course, imitations, repetitions, and unclear sentences are excluded from the analysis by manually checking each sentence. The total number of utterances is 5,504. Within the total utterances, 1,126 interjections are found.

3.2 Results

We found four stages as to how interjections are used in the sentence (11).

- (11) a. Stage 1
No combination with other elements
- b. Stage 2
Some combinations with other elements except for verbs or adjectives
- c. Stage 3
Combinations with verbs or adjectives
- d. Stage 4
Co-occurrence with SFP

The first stage is from 1;5,07 to 1;8,23. There is no combination with other elements, as illustrated in (12).

- (12) A. (Aki, 1;08,23)
INT
(Aki discovers something.)

The second stage is from 1;9 to 2;1. Aki's sentences include some combinations with other elements except for verbs or adjectives. In the utterance in (13) the interjection precedes onomatopoeic *byuun*, which is neither verb nor adjective.

- (13) A, byuun. (Aki, 1;09,20)
INT onomatopoeia
'Ah, the wind is blowing.'

The third stage is from 2;1 to 2;3. In this stage, combinations with verbs or adjectives are found. In (14), a verb plus a past-tense morpheme follows the interjection.

- (14) A, at-ta. (Aki, 2;01,17)
INT exist-PAST
'Ah, I found it.'

In the fourth stage, interjections co-occur with SFP. As is shown in (15), both interjection and SFP come to be used in a sentence.

- (15) a. **A**, at-ta **yo**. (Aki, 2;03,04)
 INT exist-PAST SFP
 'Ah, I found it.'
- b. **Ne**, kore ku-ru **yo**. (Aki, 2;03,26)
 INT this come-PRES SFP
 'Hey, here comes this.'

Importantly, Aki's first use of interjection preceding the sentence is at 2;01,17, as in (12), while the sentence-final particle appears at 2;00,12 in (16), which is the first use of SFP.

- (16) Okkii **yo**. (Aki, 2;00,12)
 big SFP
 'It is big.'

Figure 1 shows the number of utterances with sentence-final particles and interjection with predicates by Aki (age 2;00 to 2;3). SFPs are used six times from 2;00,12 to 2;01,17, during which period interjections with predicates are not attested. After that, interjections with predicates are used 21 times and SFPs are uttered 17 times until 2;03,00.

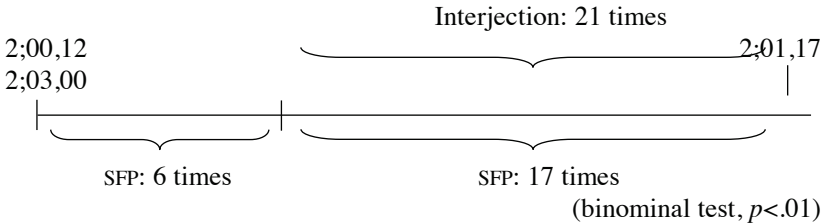


Figure 1. Number of utterances with sentence-final particles and interjection with predicates by a Japanese-speaking child Aki (2;00,12–2;03,00)

According to our statistical analysis by binominal test, sentence-final particles are acquired significantly earlier than interjections, as predicted ($p < .01$). As expected above, interjections in the sentence are used later than right-peripheral modals.

Another finding is that, as (14) shows, from stage 1 to stage 3, phonetically realized epistemic modals appear as interjections exclusively in sentence-initial position, while utterance modals are realized as sentence-final particles. Table 1 shows the number of utterances with epistemic and utterance modals with predicates according to the position they occurred in Aki's sentences (age 1;5 to 2;3).

Table 1. Number of utterances containing epistemic and utterance modal with predicates according to the position they occurred in sentences produced by a Japanese-speaking child Aki (1;05,07–2;03,00)

	Sentence-initial	Sentence-final
Epistemic modal	21 (interjection)	0
Utterance modal	0	23 (SFP)

(FET, two-tailed $p < .01$)

There is an interesting stage when the occurrence of each type of modal is restricted to a distinct position, as if in complementary distribution.

4 Discussion

Two important findings are reported in this study. The first one is that acquisition of interjection follows that of SFP. This suggests Modal head licenses interjection. The second finding is that both interjections and sentence-final particles are realized in the initial stage (that is, stages 1 to 3 in this study). This complementary distribution may result from an underdeveloped T and overextension of modal rules. The epistemic modal is phonetically realized as interjection. This is in the Spec position of ModalP. This leads to the question why epistemic modals cannot appear in the head position of ModalP. As (17) shows, some epistemic modals follow tensed forms or have tensed forms.

- (17) a. Hare-ru/ta daroo.
 fine-PRES/PAST modal
 ‘It will be/would have been fine.’
- b. Hare-ru kamosirena-i/katta.
 fine-PRES modal-PRES/PAST
 ‘It may/might be fine.’

This suggests that development of T is necessary for the use of right-peripheral epistemic modals. Some language acquisition researchers (for example, Sawada and Murasugi 2011) analyzed children’s sentence structure and reported underdeveloped T at around 2 years old. The Japanese right-peripheral epistemic modal corresponds to an auxiliary which usually contains T showing inflectional contrast, such as *kamoshirena-i* (may-PRES) – *kamoshirena-katta* (may-PAST). If T is not fully developed at this stage, such auxiliaries could not be acquired. In fact, these auxiliaries are

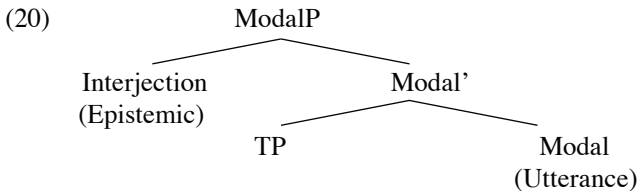
not attested in our study. As already shown in (15), repeated here as (18), both interjection and sentence-final particle appear in one sentence.

- (18) a. **A**, at-ta yo. (Aki, 2;03,04)
 INT exist-PAST SFP
 ‘Ah, I found it.’
- b. **Ne**, kore ku-ru yo. (Aki, 2;03,26)
 INT this come-PRES SFP
 ‘Hey, here comes this.’

In the same period, the nominative case particle comes to be used, as in (19). Nominative-case particle *-ga* begins to be used in the same period as (18).

- (19) Ki-ga de-ta. (Aki, 2;03,26)
 Tree-NOM appear-PAST
 ‘The tree appeared.’

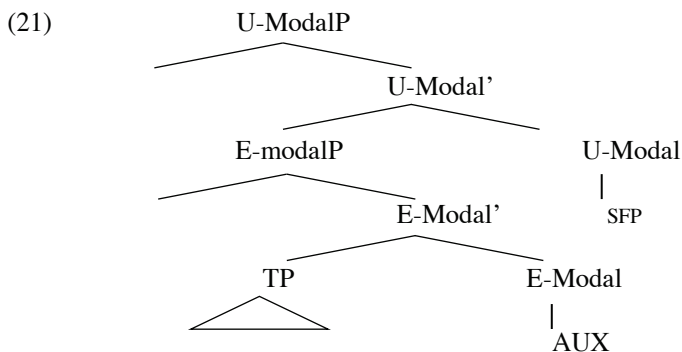
Given that nominative case is assigned under agreement with T (cf. Takezawa 1987), both use of interjection and sentence-final particle suggest that development of modality proceeds in tandem with the development of children’s functional category T. The next thing to be explained is that utterance modal is restricted to the SFP. As already discussed, epistemic modal is in the Spec of ModalP. So, utterance modals must be positioned in the Modal head, that is in sentence-final position.



5 Conclusion

In summary, the first finding is that acquisition of interjection follows that of sentence-final particles. This suggests that Modal head licenses interjection. The second finding is that either interjection or sentence-final particles are realized in the initial stages. This complementary distribution may result from an underdeveloped T.

There are at least five remaining issues. The first one is the ordering of multiple interjections in adult Japanese. In adult syntax, epistemic modal and utterance modal are separately projected, as suggested in Ueda (2009).

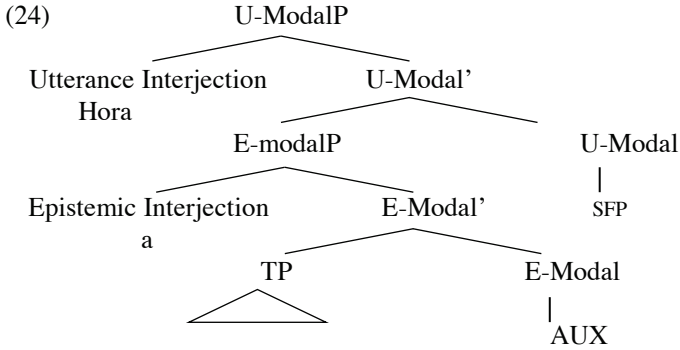


Thus, two types of interjection are expected to be in the Spec position of the respective modal head. This hierarchical structure implies that the order of interjections is rigidly determined (cf. Greenberg 1984). That is, utterance interjection is expected to precede epistemic interjection. As is shown in (1), repeated here as (22), right-peripheral modals reflect the syntactic structure. However, as (23) shows, epistemic interjection must precede utterance interjection in adult usage.

- (22) Taroo-ga zyobun-o honyakusi-tei-ru **daroo ne**
 T.-NOM introduction-ACC translate-ASP-PRES **will SFP**
 ‘Taro will be translating the introduction, won’t he?’

- (23) a. **A, hora,** asoko-ni hon-ga at-ta.
 INT INT there-DAT book-NOM exist-PAST
 ‘Ah, Hey, there is a book there.’
- b.* **Hora, a,** asoko-ni hon-ga at-ta.
 INT INT there-DAT book-NOM exist-PAST
 ‘Hey, ah, there is a book there.’

The split-modal structure in (24) cannot explain the order of multiple interjections. In contrast to right peripheries, there may be unusual realizations of left peripheries.



The next issue concerns input differences between SFP and interjections (cf. Stange 2009). This has not yet been clarified. The third issue is the development of other modal expressions such as *toritate* particles. This study is a preliminary one and the acquisition process of only one child is reviewed. So, it is necessary to validate whether this observation applies to other Japanese children. Japanese is a head-final languages, so our analysis could be extended to other head-final languages, such as Korean and Mongolian.

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A Role of Orthography in Morpho-Orthographic Decomposition in Japanese

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1 Introduction

It has been assumed that morphologically complex words are decomposed into a root and affixes – morpho-orthographic decomposition – in the early stage of visual processing (Rastle et al. 2000; Marslen-Wilson 2007). Researchers have been investigating the informational factors that trigger the decomposition for over a decade.

A priming effect found in the masked priming paradigm has been reported as evidence of decomposition. In this paradigm, after a forward mask (####), a prime word (*walker*) is presented for about 30 to 80 milliseconds, and at its offset a target word (WALK) is presented, on which a participant makes a lexical decision. Since prime words are presented for a very short period of time and both the forward mask and the target word mask the prime word, most participants do not notice the presence of prime words (Forster et al. 2003). Still, priming effects have been reported. In a typical experimental design, critical items constitute pairs of a prime word that is morphologically complex (*walker*) and a target word (WALK) that is morphologically related to the prime word – the test condition. In the control condition, prime words (*reader*) are unrelated to the target word (WALK). Let's say, when the morphologically complex word *walker* is decomposed into a root *walk* and an

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affix *er* in the test condition, and *reader* into *read* and *er* in the control condition, the target word WALK is presented. Since *walk* and WALK are basically identical but *read* and WALK are not, the lexical decision time for WALK will be shorter in the critical condition than in the control condition, resulting in the masked priming effect.

One type of key information that triggers morpho-orthographic decomposition is morphemes. Masked priming effects have been reported as the indication of morphological decomposition in several languages (English: Rastle et al. 2000; French: Longtin and Meunier 2005; Arabic: Boudelaa and Marslen-Wilson 2005; Russian: Kazanina et al. 2008; German: Clahsen and Neubauer 2010; Japanese: Clahsen and Ikemoto 2012 and Fiorentino et al. 2015). Even pseudo-morphemes exhibited masked priming effects (Rastle, Davis, and New 2004). For example, they found a masked priming effect when prime words ended with a string identical to an existing affix (*brother-BROTH*), but no priming effect was found when prime words had the seemingly affix-like but non-existing ending *el* in *brothel-BROTH*. The results indicate that the prime words were automatically decomposed on the basis of morpho-orthographic information.

Most previous studies have investigated alphabetical languages such as English. According to Berg and Aronoff (2017), English words that have homophonous endings (e.g., [is]) are distinguished by their corresponding spellings, e.g., *nervous* and *princess*, where *ous* is a derivational suffix that makes nouns into adjectives, and *ess* indicates that the gender of the noun that hosts it is female. In the course of history, spellings have been regularized to differentiate homophonous word endings from each other; hence, English spelling is morphological as well as lexical. It is conceivable that due to these orthographic properties, readers of English could have developed a strategy of morpho-orthographic decomposition.

A different type of information may trigger a masked priming effect. Nakano et al. (2016) observed a masked priming effect when critical prime words (はこび/hakobi/ 'process') were orthographically, phonologically, semantically, or morphologically unrelated to target words (ウン/um/ 'luck') unless they were presented in kanji (運). They argue that the priming effect was observed because the kanji that corresponded to word roots was activated. Since the word roots of experimental items used in the previous Japanese experiments are usually written in kanji, the priming effects could be triggered by the activation of kanji. Therefore, the masked priming effects reported in previous Japanese studies are ambiguous with respect to whether they were due to morpho-orthographic decomposition or to the activation of kanji at word roots.

Although the aforementioned Japanese studies had two types of prime-target pairs, some previous masked priming studies had a third type of prime-

target pair – the identity condition. In this condition, prime words are identical to the target words, but the scripts of the prime and target words are different, e.g., lower and upper cases (Forster 1998), in order to avoid the prime and target words from looking as if only one word were presented (Forster et al. 2003). In Japanese, even if prime and target words have been presented in different types of script, such as kanji and kana (Nakamura et al. 2005) or hiragana and katakana (Pylkkänen and Okano 2010), priming effects have been reported. These studies argue for the presence of an abstract representation, which is activated by experimental words, regardless of whether the words are presented in their typical or atypical script. With the identity condition, we will be able to know more of the visual processing of morphologically complex words.

Previous studies that had the three conditions – the test, control, and identity conditions – have reported two types of priming effects: the full-priming effect and the partial priming effect (Sonnenstuhl, Eisenbeiss, and Clahsen 1999). When the test condition yields longer lexical decision latencies than the control condition but there is no difference between the test and identity conditions, the priming effect is referred to as a full-priming effect. When the test condition yields shorter lexical decision latencies than the control condition but longer lexical decision latencies than the identity condition, the priming effect is referred to as a partial priming effect. Sonnenstuhl et al. (1999) suggest that full-priming effects indicate morpho-orthographic decomposition and that partial priming effects indicate the activation of memorized forms through spreading activation (Collins and Loftus 1975).

Although the priming experiments of Sonnenstuhl et al. (1999) are not masked priming experiments but standard priming experiments with prime-target pairs, partial priming effects have also been reported in masked priming experiments in Japanese (Nakano and Kishimoto, 2019). In Nakano et al. (2016), the results suggest the activation of a kanji that corresponds to a root of prime words in the masked priming experiment. Unfortunately, however, no identity condition was included to test the kanji activation in their experiment; hence, Nakano and Kishimoto (2019) ran a masked priming experiment with three conditions: the test (はこぶ /hakobu/ ‘carry’ - む /mu/ ‘luck’), control (わたる /wataru/ ‘cross’ - む /mu/ ‘luck’), and identity (うん - む /mu/ ‘luck’) conditions. Both prime and target words were presented in hiragana but in different types of fonts (prime words: MS Mocho, and target words: MS PGothic). They used materials in which prime words are orthographically, phonologically, semantically, or morphologically unrelated to target words unless written in kanji (運) and found a partial priming effect. The results confirm the kanji activation at word roots.

To sum up so far, in previous priming experiments for alphabetical languages, when the prime and target words are identical, regardless of their

script differences, priming effects have been reported. However, the situation is different in the non-alphabetical language of Japanese. A full priming effect was reported when prime-target pairs were presented in a typical script, but when prime words were presented in an atypical script, this effect was not always observed. Instead, a partial priming effect was found. This means that orthographic information plays an important role in morphological processing. Few studies, however, have been conducted on this phenomenon. Therefore, the present study investigates the role of orthography in word roots and an affix in morphological processing.

Experimental stimuli were loanword deadjectival nominals of English origin with the nominalizing affix *sa*, e.g., キュートさ /kju:tosa/ 'cuteness'. Since the word roots of loanwords of European origin are typically written in katakana and cannot be written in kanji, we will therefore be able to avoid the effect of kanji activation at the word root.

Three masked priming experiments were conducted. The script typicality for the word root and affix of prime words was manipulated in the three experiments. In Experiment 1, word roots were in their atypical script, hiragana, and the nominalizing affix was in its typical script, hiragana, e.g., きゅーとさ. In Experiment 2, word roots were in their typical script, katakana, and the affix was also in its typical script, hiragana, e.g., キュートさ. In Experiment 3, word roots were in their typical script, katakana, and the affix was in its atypical script, katakana, e.g., キュートサ. Target words were in their typical script, katakana, e.g., キュート in all three experiments.

The results for Experiments 1 and 2 will reveal the role of orthography in word roots, and those for Experiments 2 and 3 will reveal the role of orthography in affixes.

2 Experiment 1

2.1 Participants

Forty-two native speakers of Japanese (22 males, 20 females, mean age: 18.58, SD: 0.84, age range: 18–21) participated in the experiment. All participants gave written informed consent in accordance with the Declaration of Helsinki.

2.2 Materials

Twenty-four sets of critical items were constructed. Each set constituted three types of prime words (identity, test, and control) and a target word. In the test condition, prime words were loanword deadjectival nominals of English origin with the nominalizing affix *sa*. Target words were the dictionary form of the loanword adjective of English origin corresponding to the prime words.

They were presented in katakana, which is the typical script for loanwords. In the identity condition, prime words (きゅーと /kju:to/ 'cute') were identical to the target words (キュート /kju:to/ 'cute'). In the control condition, prime words were semantically unrelated to the target word (しゃーぷさ /ʃa:pusa/ 'sharpness'). The word root and affix of prime words were in hiragana, and the target words were in katakana. Generally, loanwords of European origin are written in katakana, and suffixes are written in hiragana. Therefore, word roots of prime words were orthographically atypical, and suffixes of prime words were orthographically typical (e.g., きゅーとさ). Twelve sets of prime-target pairs in which some mora were phonologically overlapping (くれーん /kure:n/ 'crane'– クレープ /kure:pu/ 'crepe') and another twelve sets of prime-target pairs that were semantically related were also constructed (そふあ /sofa:/ 'sofa'– ベンチ /bentʃ/ 'bench'). The items were divided into three lists. The three conditions were counter-balanced across the three lists.

All stimuli were from the Balanced Corpus of Contemporary Written Japanese (the National Institute for Japanese Language and Linguistics 2011), and frequencies of the test word (mean = 0.09 per million) and control word (mean = 0.09 per million) were not significantly different in a two-tailed paired *t*-test ($p > .9$).

Eighty-four non-word fillers were constructed and mixed with twenty-four critical prime-target pairs, twelve prime-target pairs for semantic relatedness and twelve prime-target pairs for orthographic relatedness. In total, there were 168 items in each stimuli list.

2.3 Procedure

Stimuli were presented on a computer screen in white with a black background. After a 500-millisecond fixation, a forward mask (####), whose length was twice as long as the prime word, was presented. The prime word was presented for 50 milliseconds, and at its offset a target word was presented for 500 milliseconds. After the target word disappeared, the display was blacked out for 1,000 milliseconds until the beginning of the next trial. Participants were instructed to make lexical decisions on the target word by pressing one of two buttons on a gamepad to indicate YES and NO responses as accurately and as fast as possible. The latency between the onset of the prime word and the lexical decision was recorded.

2.4 Prediction

Since the roots of prime words are in their atypical script, hiragana, and the affix is in its typical script, hiragana, if the atypical script of word roots triggers the activation of an abstract representation of word roots, a partial priming effect will be found. If the prime words are decomposed, regardless of the script typicality, a full-priming effect will be observed.

2.5 Analysis

First, linear mixed-effect regression models were fitted to analyze lexical decision latencies (henceforth, RTs) by using *R* (R-Development Core Team, 2020) and the *lme4* package (Bates et al. 2015). According to Barr et al. (2013), the maximal random-effects structure with random intercepts and slopes for both subjects and items was adopted in all models. A fixed factor was Prime Type (Control, Test, and Identity), subject and item were random factors, and RT was the dependent variable. In cases of convergence failure, the models with the next maximal structure were adopted. Post-hoc analyses were also conducted with linear mixed-effects regression analyses. The models with a maximal random-effects structure were adopted when the mean RTs were compared between the test and identity conditions (the formula: “RTs ~ identity * control + (1 + identity + control | subject) + (1 + control | item)”), and between the test and control conditions (the formula: “RTs ~ test * control + (1 + test + control | subject) + (1 + control | item)”).

2.6 Results and discussion

Data from three participants, whose accuracy rate for lexical decisions on existing words was below 80 percent or whose mean RTs were over 1 second, were excluded from further statistical analyses. Individual data points that were beyond a 2.5-SD range from the mean were also excluded as outliers.

Overall accuracy rate was 89.95 percent (SD = 30.07). Mean RTs were calculated as shown in Table 1.

<i>Item Type</i>	<i>Prime Type</i>		
	Identity	Test	Control
<i>Critical</i>	483 (99)	498 (95)	519 (111)
<i>Phonologically Overlapping</i>	480 (101)	488 (104)	503 (95)
<i>Semantically Related</i>	468 (96)	497 (93)	502 (108)

Table 1: Mean RTs in milliseconds (with standard deviations) by Prime Type in Experiment 1

As for the critical items, the linear mixed-effects model with the maximal structure with random intercept and slope for subject and item (“RTs ~ PrimeType + (1 + PrimeType | subject) + (1 + PrimeType | item)”) was adopted. The main effect of Prime Type had a statistically reliable effect on the dependent variable of RTs ($\beta = -31.42$, $SE = 7.73$, $df = 32.94$, $t = -4.07$, $p = 0.0005$). Further analyses by linear mixed-effect regression models revealed that the mean RT in the test condition was faster than in the control condition ($\beta = 19.25$, $SE = 8.32$, $df = 26.52$, $t = 2.31$, $p < .05$), and the difference was not significant between the test and identity conditions but indicated marginality ($\beta = -11.86$, $SE = 6.77$, $df = 28.66$, $t = -1.75$, $p = .08$). The results indicate that a full-priming effect was obtained in Experiment 1. With respect to the phonologically overlapping items, the same model with the maximal random-effects structure for the critical items was adopted. The main effect of Prime Type had a significantly reliable effect on RTs ($\beta = -23.46$, $SE = 7.60$, $df = 49.267$, $t = -4.07$, $p = 0.003$), and the mean RT was shorter in the identity condition than in the test condition ($\beta = -31.42$, $SE = 7.73$, $df = 32.94$, $t = -4.07$, $p = 0.0005$). However, no significant difference was observed between the test and control conditions ($\beta = 11.94$, $SE = 7.87$, $df = 43.53$, $t = 1.52$, $p = 0.14$). The results indicate no priming effect in the phonologically overlapping items. With respect to the semantically related items, the same model with the maximal random-effects structure for the critical items was also adopted. The main effect of Prime Type had a significantly reliable effect on RTs ($\beta = -34.89$, $SE = 6.41$, $df = 152.78$, $t = -5.44$, $p < 0.0001$). Further analyses revealed that mean RTs were shorter in the identity condition than in the test condition ($\beta = -28.89$, $SE = 6.43$, $df = 33.00$, $t = -4.50$, $p < 0.0001$), but there was no significant difference between the test and control conditions ($\beta = 6.27$, $SE = 6.37$, $df = 112.43$, $t = 0.98$, $p = 0.33$). Therefore, the results indicate no priming effect in the semantically related items.

The full-priming effect observed in the critical items indicates that prime words were decomposed into a word root and an affix. Since no masked priming effects were found either in the phonologically overlapping or in the semantically related items, the masked priming effect was not due to the phonological or semantic relatedness between the prime and target words.

3 Experiment 2

3.1 Participants

Thirty-five native speakers of Japanese (14 males, 21 females, mean age: 26.09, SD: 11.06, age range: 19–60) participated in the experiment. All participants gave written informed consent in accordance with the Declaration of Helsinki.

3.2 Materials

Materials were basically the same as in Experiment 1, except both prime and target words were written in typical scripts. The roots of prime words were written in katakana (キュート /k'ju:to/ 'cute'), which is the typical script for the root of loanwords from English, and the deadjectival suffix was written in hiragana (さ /sa/), which is the typical script for suffixes. The target words were the dictionary forms of loanword adjectives of English origin that correspond to the prime words (キュート /k'ju:to/ 'cute'). They were presented in katakana, which is the typical script for loanwords.

3.3 Procedure

The procedure was the same as in Experiment 1.

3.4 Prediction

On the one hand, since both the word roots and the affixes of prime words were presented in their typical scripts, if morphological information represented in orthography, like in English, triggers the morpho-orthographic decomposition, a full-priming effect will be observed. On the other hand, if the activation of an abstract representation of word roots is a regular path in the visual processing of morphologically complex words, regardless of whether the script of word roots is typical or atypical, a partial priming effect will be observed.

3.5 Analysis

Data were analyzed in the same way as in Experiment 1.

3.6 Results and discussion

Data from three participants whose accuracy rate was below 80 percent or whose mean RT was over 1 second were excluded from further analysis, and the data points that were outside the 2.5-SD range were also excluded as outliers.

Overall accuracy rate was 91.55 percent (SD = 27.82). Mean RTs and standard deviations were calculated as shown in Table 2.

<i>Item Type</i>	<i>Prime Type</i>		
	Identity	Test	Control
<i>Critical</i>	512 (119)	509 (97)	528 (89)
<i>Phonologically Overlapping</i>	501 (105)	516 (105)	525 (91)
<i>Semantically Related</i>	483 (84)	510 (80)	527 (88)

Table 2: Mean RTs in milliseconds (with standard deviations) by Prime Type in Experiment

As for the critical items, the linear mixed-effects model with the maximal structure with random intercept and slope for subject and item (“RTs ~ PrimeType + (1 + PrimeType | subject) + (1 + PrimeType | item)”) was adopted. The main effect of Prime Type had a statistically reliable effect on the dependent variable of RTs ($\beta = -22.31$, SE = 10.44, $df = 17.36$, $t = -2.137$, $p = 0.047$). Further analyses indicated that the mean RT was significantly shorter in the test condition than in the control condition ($\beta = 24.38$, SE = 10.08, $df = 19.87$, $t = 2.42$, $p = 0.025$) but that there was no significant difference in RTs between the test and identity conditions ($\beta = 7.57$, SE = 14.03, $df = 34.73$, $t = 0.54$, $p = 0.59$). Therefore, a full-priming effect was found for the critical items. With respect to the phonological overlapping items, the same model with the maximal random-effects structure for the critical items was adopted. The main effect of Prime Type had a statistically reliable effect on RTs ($\beta = -26.06$, SE = 8.64, $df = 28.66$, $t = -3.02$, $p = 0.005$), and there was no significant difference in RTs between the identity and test conditions ($\beta = 12.95$, SE = 10.04, $df = 29.62$, $t = 1.29$, $p = 0.2$). However, the mean RT was marginally shorter in the test condition than in the control condition ($\beta = 12.88$, SE = 6.98, $df = 104.15$, $t = 1.84$, $p = 0.07$). Therefore, no masked priming effect was observed in the phonologically overlapping items. With respect to the semantically related items, only the model with “RTs ~ PrimeType + (1|subject) + (1|item)” converged. The main effect of Prime Type had a statistically significant reliable effect on RTs ($\beta = -46.62$, SE = 5.20, $df = 546.46$, $t = -8.96$, $p < 0.0001$). The mean RT was significantly shorter in the identity condition than in the test condition ($\beta = 11.40$, SE = 7.60, $df = 17.0$, $t = 1.50$), but there was no significant difference between the mean RTs in the test and control conditions ($\beta = 34.77$, SE = 6.85, $df = 19.13$, $t = 5.08$, $p < 0.0001$). Therefore, no masked priming effect was found in the semantically related items.

A full-priming effect was found for critical items. Since there was no masked priming effect, either in the phonologically overlapping items or in the semantically related items, the full-priming effect for the critical items was not due to either of them. Rather, the full-priming effect for critical items

is possibly due to the decomposition of prime words into a word root and a suffix.

4 Experiment 3

4.1 Participants

Thirty-eight native speakers of Japanese (14 males, 24 females, mean age: 20.18, SD: 2.74, age range: 18–35) participated in the experiment. All participants gave written informed consent in accordance with the Declaration of Helsinki.

4.2 Materials

Materials were basically the same as in Experiments 1 and 2 except for the script types of roots and suffixes in the prime words. In Experiment 3, word roots (キュート /k'ɯ:to/ 'cute') were presented in katakana, which is the typical script for the roots of loanwords from English, and the deadjectival suffix (サ /sa/) was in katakana, which is the atypical script for suffixes. The target words were the dictionary forms of loanword adjectives of English origin. They were presented in katakana, which is the typical script for loanwords (キュート /k'ɯ:to/ 'cute').

4.3 Procedure

The masked priming experiment procedures were the same as in Experiments 1 and 2.

4.4 Analysis

The methods for analyzing the data were the same as in Experiment 1.

4.5 Prediction

Since roots of prime words were in their typical script, katakana, and the affix was in its atypical script, katakana, if the script typicality of word roots triggered decomposition, as in Experiment 2, a full-priming effect would be observed. However, if the script type of the affix also plays some role in morphological processing, a partial priming effect may be observed.

4.6 Results and discussion

Data from seven participants whose accuracy rate was below 80 percent or whose mean RT was over 1 second were excluded from further analysis, and the data points that were outside the 2.5-SD range were also excluded as outliers.

Overall accuracy was 91.58 percent (SD = 27.77). Mean RTs and standard deviations were calculated as shown in Table 3.

<i>Item Type</i>	<i>Prime Type</i>		
	Identity	Test	Control
<i>Critical Items</i>	516 (114)	555 (121)	564 (122)
<i>Phonologically Overlapping</i>	505 (115)	520 (109)	547 (109)
<i>Semantically Related</i>	500 (106)	521 (96)	528 (96)

Table 3: Mean RTs in milliseconds (with standard deviations) by Prime Type in Experiment 3

As for the critical items, the model with the maximal random-effects structure was “RTs ~ PrimeType + (1 + PrimeType | subject) + (1 + PrimeType | item).” The main effect of Prime Type had no statistically reliable effect on the dependent variable of RTs ($\beta = -67.84$, SE = 95.19, $df = 26.89$, $t = -0.71$, $p = 0.48$). The mean RT was significantly longer in the test condition than in the identity condition ($\beta = -43.50$, SE = 16.05, $df = 355.16$, $t = -4.12$, $p < 0.001$), and no significant difference in RTs was found between the test and control conditions ($\beta = 2.40$, SE = 10.64, $df = 26.52$, $t = 0.23$, $p = 0.82$). With respect to the phonologically overlapping items, the same model with the maximal structure for the critical item was adopted. The main effect of Prime Type had a statistically reliable effect on RTs ($\beta = -38.39$, SE = 8.74, $df = 3.81$, $t = 4.39$, $p = 0.01$). There was no significant difference between the mean RTs for the identity and test conditions ($\beta = 11.33$, SE = 11.04, $df = 31.56$, $t = 1.03$, $p = 0.3$), but the mean RT was shorter in the test condition than in the control condition ($\beta = 27.29$, SE = 12.04, $df = 22.44$, $t = 2.27$, $p = 0.03$). Therefore, a full-priming effect was found in the phonologically overlapping items. With respect to the semantically related items, the same model with the maximal structure for the critical item was also adopted. The main effect of Prime Type had a statistically reliable effect ($\beta = -29.36$, SE = 7.933, $df = 27.84$, $t = -3.70$, $p = 0.0009$). The mean RT in the test condition was significantly longer than that in the control condition ($\beta = 22.78$, SE = 7.43, $df = 37.54$, $t = 3.07$, $p = 0.004$), but there was no significant difference with respect to mean RTs between the test and control conditions ($\beta = 6.15$, SE = 7.28, $df = 134.28$, $t = 0.85$, $p = 0.40$). Thus, no masked priming effect was found in the semantically related items.

The results for the critical items indicate no masked priming effect. Therefore, neither morpho-orthographic decomposition nor the activation of word roots was found in the critical items of Experiment 3.

5 General discussion

The present study investigated the role of orthography in word roots and affixes in morphological processing through three masked priming experiments. The results for the critical items in the three experiments are summarized in Table 4.

<i>Experiment</i>	<i>Prime Word</i>		<i>Target Word</i>	<i>Priming Effect</i>
	<i>Root</i>	<i>Affix /sa/</i>	<i>Dictionary Form</i>	
<i>Exp. 1</i>	hiragana (Atypical)	hiragana (Typical)	katakana (Typical)	Full priming
	きゅーと	さ	キュート	
<i>Exp. 2</i>	katakana (Typical)	hiragana (Typical)	katakana (Typical)	Full priming
	キュート	さ	キュート	
<i>Exp. 3</i>	katakana (Typical)	katakana (Atypical)	katakana (Typical)	No priming
	キュート	サ	キュート	

Table 4: Summary of results for critical items in Experiments 1–3

Note: The example words are for the test condition. The prime word is the loanword deadjectival nominal /kʲuːtosa/ ‘cuteness,’ which constitutes the root /kʲuːto/ and the nominalizer /sa/, and the target word is the dictionary form of the corresponding adjective /kʲuːto/ ‘cute.’ In each tier, the first line indicates script type, and the second line indicates the typicality of the script type. In the third line, words are shown in the script type indicated in the first line.

Full-priming effects were observed in Experiments 1 and 2, and no priming effect was found in Experiment 3. The full-priming effects indicate that the prime words were decomposed into a root and a suffix in Experiments 1 and 2.

As for the role of orthography in affixes, the pattern of priming effects matches the pattern of script typicality of the nominalizing suffix rather than the pattern of script typicality of word roots in the three experiments. Therefore, it is conceivable that the script typicality of suffixes triggered the decomposition in the three experiments.

As for the role of orthography in word roots, one of the results in Experiment 1 makes the interpretation complex. In Experiment 1, the differences in RTs between the test and identity conditions were marginally significant, and the RT was shorter in the test condition than in the control condition. The marginally significant difference of RTs for the test and identity conditions

in Experiment 1 ($p = 0.08$) can be interpreted in two ways. On the one hand, if the marginality were interpreted as the effect of different types of primes between the test and identity conditions, the results for Experiment 1 could be interpreted as a partial priming effect, suggesting the activation of the word root, probably in the typically used script, katakana. On the other hand, if the marginal difference between the test and identity conditions are interpreted as no effect in the two conditions, together with the significant difference between the test and control conditions, the results can be interpreted as a full-priming effect, suggesting the morpho-orthographic decomposition of prime words. In other words, regardless of whether scripts are typical or atypical for a particular word root, the prime words were automatically decomposed into a root and an affix. Therefore, the results are inconclusive.

A further experiment needs to be conducted in order to clarify whether the script typicality of word roots triggers the activation of their corresponding abstract representation or morpho-orthographic decomposition. In the further experiment, the word root should be in its atypical script, and the affix should be in its atypical script. Unfortunately, the COVID-19 pandemic did not allow us to run it. When the situation improves, we will run it and clarify the role of the script typicality of word roots.

6 Conclusion

The present study investigated the role of orthography in word roots and an affix in processing morphologically complex words through three masked priming experiments. Since the pattern of priming effects matched the pattern of script typicality of suffixes, it can be concluded that morpho-orthographic information about suffixes triggers the decomposition of morphologically complex words in the early stage of visual processing. A further study needs to be conducted to clarify the orthographic role of word roots.

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Part V

Usage-Based Oral
Linguistics

A Revisit to the Processing of Control Sentences in Japanese

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1 Introduction

Verbs can provide information about upcoming elements and the type of structure of a sentence. It has been argued that language users can use this information in incremental online processing. However, from a cross-linguistic perspective, the position of the verb differs in languages, and these differences could influence how syntactic structures are computed for the incoming word input in online processing. The phenomena we focused on in this study are control sentences such as (1).

- (1) a. Mary_i promised John_j [PRO_{i/*j} to come to Japan].
 b. Mary_i persuaded John_j [PRO_{*i/j} to come to Japan].

In (1a), the person who goes to Japan is Mary, the matrix subject, while in (1b), it is the matrix object, John, who goes to Japan. In example (1), the identity of the empty subject of an infinitive clause (PRO), is ‘controlled’ either by the matrix subject or the matrix object. A sentence structure like (1a), where the PRO is controlled by the matrix subject, is called subject

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control (SC), and a sentence like (1b) is called object control (OC), because the empty embedded subject is controlled by the matrix object. The control type, either SC or OC, is determined by the matrix verb. In this paper, we call ‘promise’-type verbs SC verbs, and ‘persuade’-type verbs OC verbs.

Like in English, Japanese also has control structures, as in (2)

- (2) a. Mary_i-ga John_j-ni [PRO_{i/*j} nihon-e ikukoto-o] yakusokusita.
 Mary-NOM John-DAT Japan-to go-fact promised
 ‘Mary promised John to come to Japan.’
- b. Mary_i-ga John_j-ni [PRO_{*i/j} nihon-e ikukoto-o] meireisita.
 Mary-NOM John-DAT Japan-to go-fact ordered
 ‘Mary ordered John to go to Japan.’

In (2a), the matrix verb is *yakusokusita* (‘promised’), and the person who goes to Japan is Mary, the matrix subject, whereas in (2b), the verb is *meireisita* (‘ordered’), and it is the matrix object, John, that goes to Japan.

In English, the matrix verb (‘promised’ or ‘persuaded’ in (1)), provides information about what controls the empty subject of the embedded clause to come. For example, in (1a), given that in real-time processing people understand sentences incrementally, when the reader reads ‘promised,’ it becomes evident that the sentence contains an SC structure if it is followed by an infinitive clause. However, in Japanese, a verb-final language, the matrix control verb is not reached until the sentence-final position, as in (2). In real-time incremental processing, if the matrix subject or matrix object is interpreted as the embedded subject before the input of the matrix control verb, the identity of PRO (the person who goes to Japan) would have to be determined without information from the control verb. Also, if either the SC or OC structure was predicted, processing difficulty would occur if the matrix control verb type did not match the prediction.

There have been mixed results regarding preference for control type in Japanese. Some studies found SC preference (Oda et al. 1997; Ninose et al. 1998; Ariga et al. 2020), and others found OC preference (Sakamoto 1995; Witzel and Witzel 2011) (see Sakamoto 2002, 2006 for a review). In a recent study, Witzel and Witzel (2011) conducted a self-paced reading experiment using the sentences in (3).

(3) a. SC/Empty Condition:

Daisuke-ga Kyoko-ni [kuruma-o koonyuusurukoto-o]
 Daisuke-NOM Kyoko-DAT [PRO car-ACC purchase-fact-ACC]
 kyuutoositu-de jimansita yoodesu.
 office kitchen-in showed off seems

'It seems that Daisuke showed off to Kyoko in the office kitchen that he would purchase a car.'

b. SC/Overt Condition:

Daisuke-ga Kyoko-ni [karejisin-ga kuruma-o
 Daisuke-NOM Kyoko-DAT [he-himself-NOM car-ACC
 koonyuusurukoto-o] kyuutoositu-de jimansita yoodesu.
 purchase-fact-ACC] office kitchen-in showed off seems

'It seems that Daisuke showed off to Kyoko in the office kitchen that he would purchase a car.'

c. OC/Empty Condition:

Daisuke-ga Kyoko-ni [kuruma-o koonyuusurukoto-o]
 Daisuke-NOM Kyoko-DAT [PRO car-ACC purchase-fact-ACC]
 kyuutoositu-de saisokusita yoodesu.
 office kitchen-in urged seems

'It seems that Daisuke urged Kyoko in the office kitchen (for her) to purchase a car.'

d. OC/Overt Condition:

Daisuke-ga Kyoko-ni [kanojojisin-ga kuruma-o
 Daisuke-NOM Kyoko-DAT [her-herself-NOM car-ACC
 koonyuusurukoto-o] kyuutoositu-de saisokusita yoodesu.
 purchase-fact-ACC] office kitchen-in urged seems

'It seems that Daisuke urged Kyoko in the office kitchen (for her) to purchase a car.'

Examples (3a) and (3b) had an SC-type verb as the matrix verb, namely *jimansita* ('showed off'), whereas (3c) and (3d) had an OC-type verb, namely *saisokusita* ('urged') as the matrix verb. Examples (3a) and (3c) were control structures that had an empty subject in the embedded clause, while (3b) and (3d) served as baselines; therefore, they had an overt embedded subject (*karejisin-ga/kanojojisin-ga* ['himself-NOM/herself-NOM']), but they shared the same matrix verbs with empty conditions. Witzel and Witzel's results showed that reading time for the matrix verb in the empty condition was longer than that for the overt condition for SC verbs, while such a difference was not observed in the OC conditions. It is assumed that this increase in reading time

in the SC condition reflects the processing difficulty that stems from the unexpected encounter with the SC-type verb. Their results suggest that when readers read sentences like (3a) or (3c), they interpret the matrix object as the embedded subject before they actually read the matrix control verb. Therefore, Witzel and Witzel (2011) concluded that there was an online OC preference in Japanese control sentences.

It should be noted that Witzel and Witzel's design assumed that, before the matrix verb, readers could recognize that the sentence involved a control construction but could not recognize the type of control construction. However, it was not clear exactly at which point in the sentence the control structure is confirmed, mostly due to the ambiguity in the function of the dative marker *-ni*. In the case of (3), for example, the input up to the embedded verb could allow other readings. 'Purchase a car for Kyoko' could be a possible reading, or there could be a one-clause reading, or a more complex structure as in (3)' below.

(3)' Daisuke-ga [Kyoko-ni kuruma-o koonyuusurukoto-o]
 Daisuke-NOM [Kyoko-DAT car-ACC purchase-fact-ACC]
 Taro-ni saisokusita.
 Taro-DAT urged.
 'Daisuke urged Taro to purchase a car for Kyoko.'

[Daisuke-ga Kyoko-ni kuruma-o koonyuusurukoto-o]
 [Daisuke-NOM Kyoko-DAT car-ACC purchase-fact-ACC]
 Taro-ga iifurasita.
 Taro-NOM said
 'Taro said that Daisuke will purchase a car for Kyoko.'

Daisuke-ga [[Kyoko-ni kuruma-o koonyuusurukoto-o
 Daisuke-NOM [[Kyoko-DAT car-ACC purchase-fact-ACC
 kimeta] Taro-ni] ...
 decided] Taro-DAT] ...
 'Daisuke (verb) Taro who decided to purchase a car for Kyoko...'

There are other possible constructions before the matrix verb's input as in (3), and it is possible that no prediction about the control type would be generated until the sentence-final matrix verb. That is, readers may not have anticipated that the sentence involved a control construction before they reached the matrix verb.

First, we examined this issue in Ariga et al. (2020). We conducted a web-based version of the self-paced reading experiment. We modified Witzel and Witzel's experimental items to minimize the temporary ambiguity. In Ariga

et al. (2020), we found only the main effect of matrix verb type, showing that SC-type verbs were read faster than OC-type verbs. However, there was no interaction between the matrix verb type and the presence of the embedded subject, which means that, regardless of the presence of the embedded subject, SC-type verb sentences were preferred.

To sum up, previous studies investigated whether the referent of an embedded subject is determined before the matrix control verb's input. In the earlier experiment in Ariga et al. (2020), we examined whether the control structures were anticipated before the matrix verb. We found an advantage in processing sentences with SC-type verbs regardless of the presence of an embedded subject. One possible explanation for this is that the processing cost increases when comprehenders need to construct the OC-type verb structure, rather than reflecting the online prediction of a particular control type. However, in Ariga et al. (2020), information about what structure each participant had anticipated in each sentence was not available. In the present study, we investigated whether the structures that the participants anticipated before the matrix control verb predict the processing cost at the matrix verb.

2 Present study

In the present study, we conducted a sentence-completion experiment to consider what structures readers anticipated for each item in the processing of control sentences in order to test their choice of control type before the sentence-final control verb's input in a simpler and more direct way. This allowed us to ensure that what participants preferred offline could be taken into consideration in the data analysis of the online experiment. Thereafter, we conducted a self-paced, phrase-by-phrase reading experiment with modified experimental sentences to confirm Witzel and Witzel's findings.

2.1 Participants

Fourteen native speakers of Japanese from the university of Tokyo community participated in the present study. The same participant group participated in the sentence-completion experiment as the self-paced reading experiment, because we wanted to consider what they expected, and how they reacted to the sentences in the data analysis. Participants completed this task up to one week and at least one day before they participated in the self-paced reading experiment.

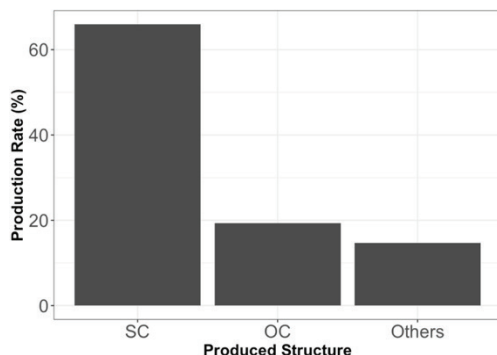


Figure 1. The production rate in the sentence completion task.

2.3 Self-paced reading experiment

We also conducted the self-paced reading experiment after the offline sentence completion experiment.

2.3.1 Stimuli

We followed the same two-by-two experimental design as Witzel and Witzel, but we used modified sentences as in (5). Forty-eight sets of sentences were used in the experiment.

(5) a. SC-verb/Empty Condition:

kinoo Daisuke-ga/ Kyoko-ni taisite, / [asu
 yesterday Daisuke-NOM/ Kyoko-DAT to, / [tomorrow
 kuruma-o/ koonyuusurukoto-o)/ kyuutoositu-de/
 car-ACC/ purchase-fact-ACC)/ office kitchen-in/
 jimansita/ yoodesu.
 showed off/ seems

‘It seems that yesterday Daisuke showed off to Kyoko in the office kitchen that he would purchase a car tomorrow.’

b. SC-verb/Overt Condition:

kinoo Daisuke-ga/ Kyoko-ni taisite, / [asu
 yesterday Daisuke-NOM/ Kyoko-DAT to, / [tomorrow
 karejisin-ga/ kuruma-o/ koonyuusurukoto-o)/
 he-himself-NOM/ car-ACC/ purchase-fact-ACC)/
 kyuutoositu-de/ jimansita/ yoodesu.
 office kitchen-in/ showed off/ seems

‘It seems that yesterday Daisuke showed off to Kyoko in the office kitchen that he would purchase a car tomorrow.’

c. OC-verb/Empty Condition:

kinoo	Daisuke-ga/	Kyoko-ni taisite, /	[asu
yesterday	Daisuke-NOM/	Kyoko-DAT to, /	[tomorrow
kuruma-o/	koonyuusurukoto-o)/	kyuutoositu-de/	
car-ACC/	purchase-fact-ACC)/	office kitchen-in/	
saisokusita/	yoodesu.		
urged/	seems		

'It seems that yesterday Daisuke urged Kyoko in the office kitchen (for her) to purchase a car tomorrow.'

d. OC-verb/Overt Condition:

kinoo	Daisuke-ga/	Kyoko-ni taisite, /	[asu
yesterday	Daisuke-NOM/	Kyoko-DAT to, /	[tomorrow
kanojojisin-ga/	kuruma-o/	koonyuusurukoto-o)/	
her-herself-NOM/	car-ACC/	purchase-fact-ACC)/	
kyuutoositu-de/	saisokusita/	yoodesu.	
office kitchen-in/	urged/	seems	

'It seems that yesterday Daisuke urged Kyoko in the office kitchen (for her) to purchase a car tomorrow.'

First, the ambiguous dative marker *-ni*, which can mean 'to/for/by' etc. was replaced by *ni taisite* ('to'). In addition, to minimize the temporary ambiguity, a comma was added at the clause boundary after *ni taisite*. Two different adverbs were also added, one in each clause, for example, *kinoo* ('yesterday') and *asu* ('tomorrow'). Those different adverbs indicated that the event in the matrix clause and the event in the embedded clause could not occur at the same time. Both (5a) and (5b) are SC-verb conditions with an SC-type matrix verb, and (5c) and (5d) are the OC-verb conditions. Both (5a) and (5c) are empty conditions, where the subject of the embedded clause is empty, whereas (5b) and (5d) are overt conditions with an overt embedded subject. The critical region is the matrix control verb region *jimansita* ('showed off') and *saisokusita* ('urged'), respectively. Ninety-six filler sentences were also included in the experiment. The filler sentences contained structures that were unrelated to the target sentences. All experimental sentences, including the filler sentences, were followed by a yes/no comprehension question (e.g., 'Did Daisuke show off to purchase a car?' – the equivalent English translation for (5a) and (5b)).

Predictions

If readers anticipate that the sentence contains control constructions and interpret the matrix object as the embedded subject before the matrix control verb's input (OC-structure preference), the reading time for (5a) will be

longer than (5b), while reading times for (5c) and (5d) will not differ at the critical region (matrix control verbs), reflecting the unexpected encounter with the SC-type verb.

On the other hand, if readers anticipate that the sentence contains control constructions and interpret the matrix subject as the embedded subject before they read the matrix control verb (SC-structure preference), the reading time for (5c) will be longer than (5d), and the reading times for (5a) and (5b) will not differ at the critical region, reflecting the unexpected encounter with the OC-type verb.

2.3.2 Procedure

We used *Linger* software developed by Doug Rohde in the self-paced reading experiment. Each experimental sentence was presented in a non-cumulative, moving window, self-paced reading paradigm (Just et al. 1982). In each trial, the dashes were shown up on the screen. Every sentence was followed by a '+' symbol, which signaled where the sentence started. The participants were asked to press the space bar, which would call up each phrase on the screen. In the comprehension questions, the participants received feedback on incorrect answers. Participants conducted five practice trials to become familiar with the experiment's procedure before the main experiment. The self-paced reading experiment took approximately 15–20 minutes to complete, including the practice trials.

2.3.3 Statistical analysis

Trials including reading-time data of less than 80ms or more than 4,000ms were excluded. We also excluded trials with incorrect answers in the comprehension questions. Statistical analyses were conducted with linear mixed-effects models (Baayen et al. 2008) in R (R Core Team 2019). Reading-time data was submitted to the *lmer* function in the *lme4* package (Bates et al. 2015). The models included MATRIX VERB TYPE (SC/OC) and EMBEDDED SUBJECT (empty/overt) as fixed factors. Both participants and items were included as random factors. The dependent variable was reading time. The final models were selected using the backward stepwise method. After the final models were selected, the data points above 2.5 standard deviations from the residual between the estimated data points and the actual reading times were excluded, after which the final models were calculated (Baayen et al. 2008). *P*-values were calculated by the *lmer* function of the *lmerTest* (Kuznetsova et al. 2017). A negative value for the coefficient of MATRIX VERB TYPE indicates that SC-verb conditions were read more slowly than OC-verb conditions, and a positive value indicates the opposite pattern (we coded SC-verb condition = -0.5 , and OC-verb condition = 0.5). A negative value for the

coefficient of EMBEDDED SUBJECT indicates that empty conditions were read more slowly than overt conditions, and a positive value indicates the opposite pattern (empty condition = -0.5 , overt condition = 0.5). Estimated reading times based on the resulting models will be shown in the figures in the results section.

2.3.4 Results

Matrix control verb region (critical region)

There were no significant main effects, nor interaction at the critical region ($\beta = 11.51$, $SE = 12.21$, $p = 0.35$; $\beta = 0.51$, $SE = 12.19$, $p = 0.97$; $\beta = 7.61$, $SE = 24.46$, $p = 0.76$).

The following region (spill-over region)

A significant main effect of MATRIX VERB TYPE was observed ($\beta = 53.57$, $SE = 23.52$, $p = 0.027$). The SC-verb conditions were read faster than the OC-verb conditions. The main effect of EMBEDDED SUBJECT was marginally significant, indicating that overt conditions were read more slowly than empty conditions ($\beta = -36.54$, $SE = 19.71$, $p = 0.064$). However, there was no interaction between the MATRIX VERB TYPE and the EMBEDDED SUBJECT to demonstrate a preference regarding the prediction of the control type ($\beta = -1.56$, $SE = 45.90$, $p = 0.97$). We replicated our previous results (Ariga et al. 2020).

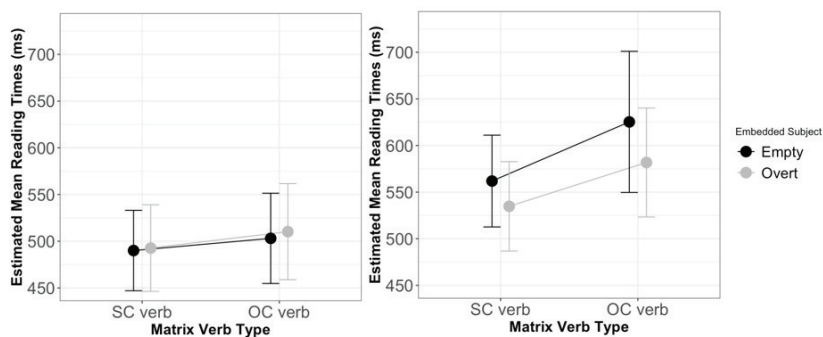


Figure 2. Estimated reading times at the critical region (matrix verb) (left) and the spill-over region (right).

These results do not provide any clear evidence that comprehenders anticipate a control structure before the matrix control verb. However, it might be the case that the control structures are anticipated in some cases but not others. The earlier sentence-completion task results showed there was variation in the produced structures. The data for the items that were expected to be followed by a specific control-type verb may also show a specific control-

type prediction in real-time processing. We will look at the reading-time data including the sentence-completion task results in the following section to test this possibility.

2.4 Combined analysis

The reading-time data from the self-paced reading experiment and the control verb production rate from the sentence-completion task were analyzed together in order to investigate whether the structures that the participants anticipated predicted the processing cost of the control sentences. We analyzed the reading-time data, with linear mixed-effect models including the production response as a fixed factor (PRODUCED STRUCTURE) as well as MATRIX VERB TYPE and EMBEDDED SUBJECT. The SC structures were produced more frequently in the sentence-completion task, which means most participants expected the SC structure for the experimental items. If the structures that the participants expected predict the processing cost of the control sentences, there will be a three-way interaction, which means that a specific control type is predicted in the real-time processing only when the sentence is expected to be followed by the specific control type.

2.4.1 Results

Matrix control verb region (critical region)

There were no significant effects at the critical region (all $ps > 0.1$).

The following region (spill-over region)

The main effect of MATRIX VERB TYPE was significant, showing SC-verb conditions were read faster than OC-verb conditions ($\beta = 101.15$, $SE = 50.49$, $p = 0.049$) (Figure 3). Also, there was a marginally significant interaction between MATRIX VERB TYPE and PRODUCED STRUCTURE ($\beta = -156.00$, $SE = 92.04$, $p = 0.091$). However, there was no significant three-way interaction among MATRIX VERB TYPE, EMBEDDED SUBJECT and PRODUCED STRUCTURE nor a significant two-way interaction between MATRIX VERB TYPE and EMBEDDED SUBJECT ($\beta = -133.423$, $SE = 166.07$, $p = 0.422$; $\beta = 82.80$, $SE = 80.78$, $p = 0.31$).

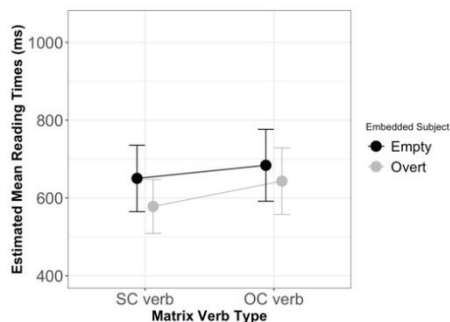


Figure 3. The estimated reading times at the following region

To summarize, there was no three-way interaction, and the only reliable result in the combined analysis was the main effect of MATRIX VERB TYPE. The reading time in the SC-verb conditions was faster than in the OC-verb conditions. This result was the same as in the reading time analysis without the factor of the produced structure in the sentence-completion task. The marginally significant interaction between MATRIX VERB TYPE and PRODUCED STRUCTURE implies that there was a trend in which the participants' expectation for these particular sentences seemed to affect their online processing of data. However, we could not find clear evidence that a particular control type was anticipated in real-time prediction before the comprehenders encountered the actual control verb's input.

3 Discussion

In the sentence-completion experiment, control verbs were produced at a high rate, and SC structures were produced more frequently than OC structures. The self-paced reading experiment showed faster reading times with SC verbs, regardless of the presence of an embedded subject. The results from the offline sentence-completion and the online self-paced reading experiments together also showed the SC-verb advantage.

The results indicate an overall SC-verb advantage. One possibility for this is that when identical noun phrases have the same function in the clause, the sentence is easier to understand, which is referred to as the Parallel Function Hypothesis (Sheldon 1974). In the SC-verb condition, the empty subject of the embedded clause was identical to the matrix subject, so this may make the processing of SC sentences easier and enable more frequent SC structure production. However, for the matrix object phrase *Kyoko-ni taisite* ('to Kyoko') was not identical. This difference may have led to the SC-verb advantage.

Another possibility is that we used *surukoto-o* ('verb-fact-ACC') in the embedded clause in our experiments (following Witzel and Witzel), but for some OC-type verbs, it might sound more natural with *suruyoo-ni* instead of *surukoto-o*; for example, *suruyoo-ni saisokusita* ('urged to do').

Our stimuli were based on Witzel and Witzel's items, but our results differed from theirs. We updated the materials by adding a comma and adverbs for each clause and by replacing the dative marker. Those modification reduced the temporary structural ambiguity and increased the expectation of the control structures, which may have led the readers to the SC-verb advantage within the control structure in our experiments.

4 Conclusion

We conducted a sentence-completion experiment and a self-paced reading experiment to investigate whether the control structures were anticipated before the matrix verb's input. The results of the sentence-completion experiment indicated readers' expectations of an SC-structure for the experimental sentences. This result may lead to the possibility that SC-structures are also predicted before the matrix verb in real-time sentence processing. However, we could not find any evidence that such predictions were reflected in the online reading-time data. Our results showed that when the sentence contained an SC-verb as the matrix verb, processing cost was lower than for sentences with an OC-verb as the matrix verb, regardless of the presence of the embedded subject. That is, we found an SC-verb advantage in the processing of the control sentences in Japanese in both online reading experiments and offline sentence-completion experiments.

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ERP Responses to Different Types of Pitch Accent Violation in Tokyo Japanese: Rule Application or Lexical Memory?

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1. Introduction

The present paper reports the results of an ERP (event-related potentials) experiment in which native speakers of Tokyo Japanese listened to words with or without a pitch accent violation. The aims of the study are two-fold. First, given the scarcity of ERP studies on pitch accent, we obtain basic ERP data on pitch accent violations. Second, exploiting the accent system of Tokyo Japanese, where both rules and lexical memory are involved in determining the accent pattern of words, we examine whether different types of violation (i.e., of a rule or of lexical memory) elicit different ERP responses.

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1.1 Accent pattern determination in Tokyo Japanese

In Tokyo Japanese, word accent is lexically specified with respect to the presence or absence of an accent nucleus and the position of the nucleus if present, as exemplified in (1). The accent nucleus is the point at which the tone changes from H (high) to L (low).

- (1) a. *ha'si-ga* 'chopstick NOM': HLL
 b. *hasi'-ga* 'bridge NOM': LHL
 c. *hasi-ga* 'edge NOM': LHH

Note that the three words in (1) are differentiated only by the accent pattern, which confirms that the presence/absence and the position of accent nucleus is lexically specified (that is, memorized for each lexical item).

Given the lexical specification of the accent nucleus, the tone of the other moras in the word is determined by the rules of tone association (McCawley 1968; Haraguchi 1977) summarized in (2):

- (2) a. Given a lexically determined accent (HL), H spreads leftward, and L spreads rightward.
 b. Initial lowering: The first mora is L unless it is accented.

Thus, a three-mora word with a case particle, for instance, exhibits four different accent patterns, as shown in (3), and basically no other pattern is allowed.¹

- (3) a. HLL(L): *me'gane-ga* 'eyeglasses NOM'
 b. LHL(L): *tama'go-ga* 'egg NOM'
 c. LHH(L): *otoko'-ga* 'man NOM'
 d. LHH(H): *sakana-ga* 'fish NOM'

When two words form a compound, another rule comes into play: the Compound Accent Rule (CAR), which determines the accent of a compound word. CAR can be summarized as follows:²

- (4) a. The first member of a compound loses its accent nucleus.
 b. The compound as a whole has at most one accent nucleus.

¹ We designate the position of accent nucleus by an apostrophe (').

² CAR should in fact specify where the accent nucleus falls in different phonological conditions, a complexity beyond the scope of the present study (for a review, see Kawahara 2015). The simple description in (4) suffices for our purposes.

The rules in (4) apply obligatorily, at least for compound nouns consisting of two nouns.³ For instance, when the two nouns *me'gane* (HLL, 'eyeglasses') and *ke'esu* (HLL, 'case') form a compound, the accent nucleus is assigned to the first mora of the second noun, yielding *meganeke'esu* (LHHLL 'eyeglass case').

Notably, the system of tone determination of Tokyo Japanese as described above involves both lexical memory and rule computation, whether the rule is word-internal (tone-association rules) or post-lexical (CAR). It thus provides an ideal case for examining whether these two different mental mechanisms are actually employed in word-level processing.

1.2 Previous ERP studies on prosodic violations

A number of studies have investigated relevant ERP components associated with Japanese pitch accent violations, employing a variety of tasks. In particular, Koso and Hagiwara (2009) and Koso et al. (2011) established that Pitch Accent Negativity (PAN), a widespread negativity at around 400–800ms post-stimulus onset, occurs in response to a sentence-final verb pronounced with the wrong accent in a spoken sentence. Because the violation pattern used in these studies (e.g., **ta'beru* (HLL) 'eat-Prs') is illegal for any verb in the given form, it can be regarded as a type of rule violation.⁴ Another study looked at the violation of CAR (4) (Matsuura et al. 2017), which elicited a negativity at around 400–700ms post-stimulus onset when the second constituent failed to contain the nucleus that should be assigned by CAR.

There are also reports of similar results from prosodic violations in different languages. A study on French (Magne et al. 2007) found a negativity more prominent in the right than in the left hemisphere at around 250–400ms post-stimulus onset, as well as a late positivity in response to an inappropriately lengthened syllable (i.e., the penultimate syllable of a trisyllabic word in a sentence-final position, which is never stressed in French), where the lengthening reflects the accent.

In the rule versus lexical memory dichotomy, the violations examined in the studies reviewed thus far can be regarded as rule violations. In contrast, there are few ERP studies concerning lexical memory violations. A notable exception is Friedrich et al. 2001, which examined responses to the violation of what can be regarded as lexically determined stress (either initially stressed or initially unstressed) in German. The study reported behavioral differences

³ Various exceptions to these rules have been reported, but are irrelevant to the present study.

⁴ In brief, Japanese verbs are lexically determined as either accented or unaccented, and for accented verbs, the place of the accent nucleus is determined by rule: on the penultimate mora in the non-past form (*tabe'ru*) and on the antepenultimate mora in the past form (*ta'beta*). Hence the form *ta'beru* can be regarded as violating this accent association rule for verbs (i.e., no non-past verb appears in the HLL pattern).

but no ERP differences between words with the correct stress pattern and words with an incorrect stress pattern.

Therefore, the negativities observed in the previous studies on prosodic violations have left us with a question: Do the observed negativities reflect a prosodic violation in general, or the violation of a rule-assigned prosodic pattern (as opposed to a lexically memorized pattern)?

1.3 The present study

We measured EEG as participants listened to tri-moraic, initially accented nouns such as *me'gane* (HLL) 'eyeglasses' pronounced with the correct accent (5a) or with one of three different types of accent violation (5b–d).

(5) *me'gane* 'eyeglasses', pronounced as:

- a. HLL: correct accent
- b. LLH: tone-association rule violation
- c. LHL: lexical memory violation
- d. LHH: overapplication of CAR/lexical memory violation

The sequence in (5b) is simply not generatable (an impossible output) by the tone-association rule (2) in Tokyo Japanese, no matter which mora in the word is linked to the accent nucleus. On the other hand, (5c) exhibits a pattern regarded as a lexical memory violation, where the initially accented word is pronounced as if it were a medially accented word such as *tama'go* 'egg' (LHL). The violation status of (5d) is ambiguous: It could be just another example of a lexical memory violation, where the initially accented word is pronounced as if it were an unaccented word such as *sakana-* 'fish' (LHH). Alternatively, it could be a case of overapplication of CAR (4): The pattern would be correct if *megane-* 'eyeglasses' (LHH) were the first constituent of a compound losing its nucleus as a result of undergoing CAR.

The purpose of our study is to investigate whether the negative component (i.e., Pitch Accent Negativity) found in the previous studies is common to all types of accent violation or is a response to rule violation specifically. We also seek to find any difference between rule violation and lexical memory violation in ERP responses, which would in turn suggest that lexical memory information and phonological rule information are processed differently in the brain. Finally, we expect that comparing the results of the three violation conditions will provide an answer about the status of the violation in (5d).

2. ERP experiment

2.1 Methods

2.1.1 Materials

The four critical conditions employed in the ERP experiment are illustrated in (5) above. Thirty-six such quadruples were created. All items in all conditions were presented to each participant in a randomized order, together with 168 filler items (of which 120 were either HLL, LHH, or LHL words with the correct accent, while 48 had an incorrect accent). In total, each participant had 312 trials (half with the correct accent). The materials were recorded by a female native speaker of Tokyo Japanese who is trained in phonetics. The means of the onsets of the second/third mora in each condition were, from the word onset: (a) HLL, 238/615ms; (b) LHH, 276/574ms; (c) LLH, 260/590ms; (d) LHL, 260/551ms.

2.1.2 Participants and procedures

Sixteen native speakers of Tokyo Japanese participated in the experiment, for which they received payment. They were all right-handed, and had no visual or hearing impairment. Each participant was presented with a written list comprising all target nouns used in the main ERP experiment, and was asked to read each word aloud. This procedure confirmed that each participant was familiar with all of the target words and produced them with the correct accent. In the main session, the participants were seated in a dimly lit, sound attenuated, and electrically shielded chamber. A 24-inch computer monitor was set at a distance of 100 cm from the participant, and two external speakers were set to the sides of the monitor. The participant was asked to keep both hands on a computer mouse during the judgment task, and told to left-click for yes and right-click for no.

The EEG was recorded using 60 Ag/AgCl electrodes, which were fixed on the participant's scalp using the 10/20 system (Quikcap, NeuroScan, Compumedics, Charlotte, North Carolina, USA). The AFZ served as the ground electrode and the electrode located between CZ and CPZ served as the reference electrode. The electro-oculogram (EOG) was monitored via four electrodes around the participant's eyes (VEOU, VEOL, HEOR and HEOL electrode).

The EEG was amplified using NeuroscanSynAmps2 Amplifier (Neuro Scan, Compumedics, Charlotte, NC, USA) and digitized with a sampling rate of 250 Hz. Electrode impedances were kept below 10k Ω . The EEG data were filtered online by a low-pass 70 Hz filter.

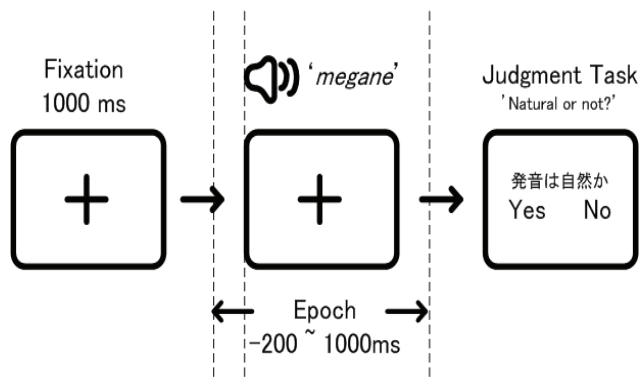


Figure 1. Illustration of the procedure of one experiment trial

The visual and auditory stimuli were presented in E-prime 2.0 (Psychology Software Tools, Sharpsburg, PA, USA). The procedure of a trial is illustrated in Figure 1. A fixation cross appeared in the center of the screen; after 1,000ms, the auditory stimulus was presented via the speakers while the cross remained on screen. Participants were asked to look at the cross and avoid eye blinks until the end of the trial. To ensure participants' concentration, half of the trials were followed by judgment tasks requiring a yes/no response on the naturalness of the pronunciation. The whole experiment was divided into four blocks with a brief rest between blocks. Including electrode preparation, a short practice run, and the main session, the experiment lasted approximately 90 minutes.⁵

2.2 Analysis

The EEG data were preprocessed using EEGLAB (Delorme and Makeig 2004). The EEG signals were re-referenced to mastoid electrodes (the mean of M1 and M2) and refiltered with a 0.1–30 Hz band pass offline. The data were then epoched from –200 to 1000ms relative to the word onset, and baseline-corrected from –200 to 0ms. Epochs containing artifacts beyond $\pm 100\mu\text{V}$ were automatically excluded from the analysis. One participant's data were removed from the dataset due to excessive artifacts.

We report the results from two methods of statistical analysis: a non-parametric cluster-based permutation analysis (Maris 2012; Maris and Oostenveld 2007) and a linear-mixed effects regression model (Bates et al. 2014). Cluster-based permutation analysis is suitable when the relevant time windows or electrodes for an analysis are hard to pre-define according to existing theories or previous studies. At the same time, it solves the multiple

⁵ The experimental procedure was approved by the Ethics Committee on Human Subjects Research of the Graduate School of Arts and Sciences, University of Tokyo.

comparisons problem (over many time points, electrodes) while maintaining statistical power. We used an EEGLAB plug-in, FieldTrip (Oostenveld et al. 2011) for this analysis.

The EEG data were first averaged by participant, electrode,⁶ and condition for each sample (4ms/250 Hz). Then, the means between the two conditions of interest were compared using a dependent samples *t*-test. Adjacent electrodes or time points that exceeded a significance level of 0.05 in the same direction (negative or positive) were clustered together, and the *t*-values were summed within the cluster to make a cluster-level *t*-value. Next, the labels of the two conditions in the original data were randomly assigned 1,000 times to create a null-distribution. If the observed statistic falls within one of the 2.5 percentiles of the null-distribution, the effect is considered significant.

Despite the benefits of permutation analysis, it is unsuitable for comparing more than two conditions or examining the interactions of multiple factors directly. Therefore, we also employed a linear mixed-effects regression model (LME) to compare the three violation conditions with the congruent (baseline) condition and to test for interactions of anteriority and hemisphere by condition. The dependent variables were the EEG amplitude averaged by condition, electrode, and participant. We used 42 electrodes, grouped by anteriority and hemisphere (left-anterior: FP1, AF3, F7, F5, F3, F1, FT7, FC5, FC3, FC1; right-anterior: FP2, AF4, F2, F4, F6, F8, FC2, FC4, FC6, FT8; left-posterior: TP7, CP5, CP3, CP1, P7, P5, P3, P1, PO7, PO3, O1; right-posterior: CP2, CP4, CP6, TP8, P2, P4, P6, P8, PO4, PO8, O2). We constructed LME models with Condition, Anteriority, and Hemisphere as the fixed factors, and Subject as the random factor.⁷ We ran the model using the lme4package (Bates et al. 2014), and we used the lmerTest package to compute *p*-values (Kuznetsova et al. 2017).

2.3 Results

The results are shown in Figure 2. We used the ERP waveforms on the CZ electrode in which the effects in question can be most clearly observed.

⁶ The 60 electrodes used in the permutation analysis were: FP1, FPZ, FP2, AF3, AF4, F7, F5, F3, F1, FZ, F2, F4, F6, F8, FT7, FC5, FC3, FC1, FCZ, FC2, FC4, FC6, FT8, T7, C5, C3, C1, CZ, C2, C4, C6, T8, TP7, CP5, CP3, CP1, CPZ, CP2, CP4, CP6, TP8, TP7, P5, P3, P1, PZ, P2, P4, P6, P8, PO7, PO5, PO3, POZ, PO4, PO6, PO8, O1, OZ, O2.

⁷ The LME model syntax: lmer(voltage ~ Condition * Anteriority * Hemisphere + (1+Condition | Subject)) (selected by backward step).

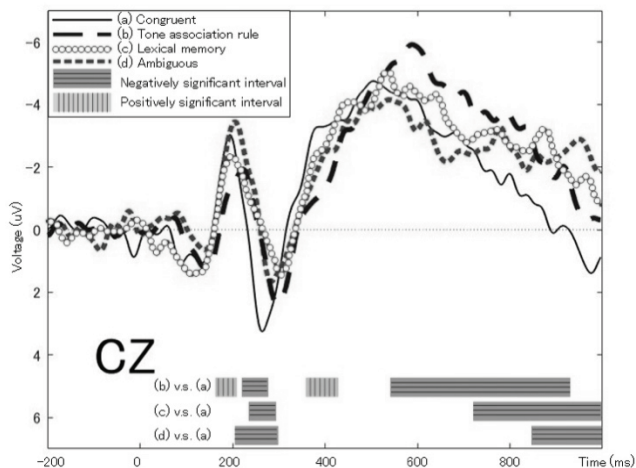


Figure 2. ERPs elicited by each condition at CZ. The time intervals included in the significant or marginally significant clusters are indicated at the bottom of the ERP plot. (The colored version of the graph with topographic maps can be found at <https://osf.io/mu4tg>)

2.3.1 Cluster-based permutation analysis

The tone-association rule violation condition elicited a sustained negativity relative to the congruent (baseline) condition ($p=0.001$, a cluster from 544 to 928ms, with 59 electrodes involved in the cluster (henceforth CH)). We also found some clusters to be marginally significant. They were a positive cluster from 164 to 212ms ($p=0.084$, 54 CH), a negative cluster from 220 to 280ms ($p=0.055$, 46 CH), followed by a positive cluster from 360 to 432ms ($p=0.082$, 38 CH). Because the small positivities in the two short clusters mentioned above do not have their own peaks and are most reasonably interpreted as part of an overall negative shift (or a reduced positivity) slightly out of phase, they are not considered independent positive components and therefore were not subjected to the subsequent analyses.

The lexical memory violation condition elicited two phases of negativity compared to the congruent condition ($p=0.045$, a cluster from 232 to 292ms, 43 CH, and $p=0.001$, a cluster from 716 to 1000ms, 60 CH). The ambiguous condition also elicited two phases of negativity compared to the congruent condition ($p=0.026$, a cluster from 204 to 296ms, 47 CH, and $p=0.001$, a cluster from 844 to 1000ms, 60 CH). There was no sign of laterality or any localization in the observed negativities.⁸

⁸ Given that the violation type did not show reliable interactions with either hemisphere or anteriority in the LME analyses reported below, we assume all the reported effects are largely

2.3.2 Linear mixed-effects model analysis

Based on the results of the permutation-based analyses, a series of LME analyses were conducted for further confirmation of effects where the three violation types and their interactions with hemisphere and anteriority were taken into consideration. We rounded the time windows detected in the permutation-based analyses to the nearest hundred milliseconds where the clusters for the violation effects overlapped. This resulted in three time windows to examine. (Multiple comparisons were corrected using the Holm-Bonferroni method.) The first time window was 200–300ms, wherein the clusters associated with the first negativities in all conditions were included. The second window was 500–800ms; this focused on the interval where a cluster for (5b) was identified in the absence of clusters detected for other conditions so as to confirm if (5b) indeed elicited an earlier effect than (5c) and (5d). The third window was 800–1000ms, which included the time clusters identified for the second negativity effects in all three conditions.

The results from the LME analysis are shown in the lower panel of Figure 2. In the 200–300ms window, there were significant main effects of Condition in all violation conditions (vs. the congruent condition), but no interaction with anteriority or hemisphere was revealed. In the 500–800ms window, only the tone-association rule violation condition differed significantly from the congruent condition. There were no interactions involving the factor Condition. In the 800–1000ms window, the main effects of Condition with negativity were found in all conditions, but no interaction effect with hemisphere or anteriority was revealed.

In summary, two phases of widespread negativities were found in the three violation conditions relative to the congruent condition. At 200–300ms, the negativity was present in all violation conditions relative to the congruent condition. After 500ms, the tone-association rule violation condition differed from the other two violation conditions. Only the tone-association rule violation condition elicited a negativity at 500–800ms, whereas all violation conditions elicited a negativity at 800–1000ms. The rule-violation condition elicited negativities of an earlier and larger effect than the other two violation conditions.

widespread without localization. We omit discussion of the spatial distribution of the effects in the permutation analyses due to space limitations.

3. Discussion

The widespread negativity or reduced positivity relative to the congruent (baseline) condition in the 200–300ms interval in all violation conditions can be seen as reflecting a detection of pitch accent violation in general, regardless of whether it is a lexical memory or rule violation. It has an earlier onset compared to the original negativity reported as Pitch Accent Negativity in Koso and Hagiwara (2009) and Koso et al. (2011), which emerged around 400–800ms from the violation point. If we consider the difference in the timing at which the accent violation can be detected, the apparent difference in latency becomes comparable between these experiments. In the studies by Koso and colleagues, the pitch accent violation status between verb pairs such as *tabe'ru* (eat-Pres) and *ta'beta* (eat-Past) depended on the verb tense marked on the third mora; therefore, even though the difference in the accent type (the position of the accented mora) could be detected as early as the first mora, it was not until the third mora, when the tense morphology was processed, that the violation status became evident. In our study, pitch accent violations always occurred within a stem and could be recognized as early as the second mora. This is because the participants went over the list of the words used in the experiment in advance and therefore the target lexical item had been pre-identified at the time the participants encountered the initial two moras, rendering the possibility of temporary ambiguity at the segmental level up to this point less likely (e.g., *me'gane* (eyeglasses) vs. *me'gami* (goddess) vs. *megaba'nku* (mega bank)). Therefore, the accent information provided in the audio input would be evaluated against the unique lexical candidate.

The negativity after 500ms was also common in all violation conditions, but the tone-assignment-rule condition (5b) elicited an earlier and greater effect compared to the other violation conditions. (5), showing the conditions, is repeated here.

(5) (repeated) *me'gane* 'eyeglasses', pronounced as:

- a. HLL: correct accent
- b. LLH: tone-association rule violation
- c. LHL: lexical memory violation
- d. LHH: overapplication of CAR/ lexical memory violation

This finding is in line with our earlier finding (Kobayashi et al. 2017) from an experiment in which the target words were visually presented prior to the auditory stimuli: The LLH occurrence of the target word (e.g., 5b) produced a greater negative shift compared to the LHH (e.g., 5d) and LHL (e.g., 5c) versions around the same timing.

The two distinct negativities may reflect a mora-by-mora processing of the input signal. The early negativity may reflect a reaction to the unexpected L for an initially accented word (which should start with H), which was common to all violation conditions. If this is followed by another H tone, (as in (5b,c)), even though it is already obvious that the word is not carrying the designated tonal sequence, the nature of the anomaly is unclear at this point. The subsequent mora provides additional information about the possible interpretation of the violation (either wrongly chosen accent type or misapplication of a rule), but making use of that information would likely require one's lexical knowledge. On the other hand, if the initial erroneous L is followed by another L tone (LLH, as in 5b), it is already evident that the tonal sequence is never generatable in the language. The temporal advantage associated with detecting the violation in the LLH (5b) condition could be explained by the immediate judgment of the error because participants did not need to consult their lexical knowledge.

With respect to the status of the ambiguous condition (e.g., whether *megane* pronounced with LHH as in (5d) is perceived as a lexical memory violation or overapplication of the compound rule), we found that the brain response in this condition patterned with the response to the lexical memory violation. That is, listeners judged *megane* (LHH) to be a single word associated with a wrong accent type, rather than as the initial part of a compound. This is again consistent with what was found in Kobayashi et al. (2017), where the target words were visually presented prior to the auditory stimuli: The LHH and LHL occurrences of the target word (HLL if correctly pronounced) produced no difference in the brain response. Our next goal is to investigate whether this finding can be generalized to a situation where listeners cannot predict the words they will encounter.

4. Conclusions

The findings of this study can be summarized as follows. First, the widespread negativity observed in the 200–300ms post-onset time window can be regarded as reflecting the response to pitch accent violation in general, irrespective of the type of violation. Second, the difference in timing and amplitude of the later negativity (after 500ms post-onset) is likely to reflect different processes of violation detection: rule-based detection without lexical search, and memory-based detection. The former produced an earlier onset with a greater amplitude compared to the latter. In addition, the violation associated with LHH for an initially accented word such as *me'gane* 'eyeglasses' was likely to be processed as a lexical memory violation.

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Beyond L1-L2 Morphological Similarities: L2 Korean WH Lexical Ambiguity*

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1 Introduction

A key conceptualization of transfer from a first language (L1) to a second language (L2) is that L2 learners apply the feature sets of L1 morpholexical items to perceived L2 equivalents in the input. The L1 feature sets then form the preliminary basis for their L2 grammar (Lardiere 2009). Accordingly, it may be expected that L2 acquisition is facilitated in the context of L1–L2 morpholexical similarity. We investigate this in relation to the L2 acquisition of Korean *wh*-morphemes by speakers whose L1s are Japanese, Chinese, and English. Korean *wh*-morphemes share some key morpholexical properties with their counterparts in Chinese and Japanese, whereas the English equivalents behave quite differently. On this basis, this paper addresses the question of whether the L1-Chinese and L1-Japanese learners of Korean can acquire Korean *wh*-morphemes more readily than L1-English

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speakers. In the following section, we detail the relevant cross-linguistic similarities and differences between these four languages. In Section 3, we situate the research question within current L2 acquisition theory, identifying the research gap in relation to a prior study. Section 4 details our experiment and its results. We discuss the findings and their implications in Section 5. Section 6 concludes.

2 Linguistic background

In Korean, *wh*-morphemes such as *nwukwu* in (1) can be interpreted either as a *wh*-interrogative ('who'), or as an existential quantifier ('anyone/someone'). In the absence of discourse cues, the sentence in (1) is ambiguous, as indicated by the three translations in (1a–c). In addition to the discourse context, the sentence can be disambiguated by different prosodic patterns, such as the pitch range and the final pitch contour.¹ In the *wh*-question interpretation (1a), the *wh*-morpheme receives a high pitch accent, while the sentential ending has a falling or level pitch contour (Jun and Oh 1996; Yun 2019). The yes-no question interpretation (1b) does not have a high pitch accent on the *wh*-morpheme but a distinctive sentence-final rising pitch contour (Lee 1997). In the declarative interpretation (1c), there is neither high pitch accent on the *wh*-morpheme nor sentence-final rising pitch contour (Yun 2019).

- (1) Yeonghi-ka nwukwu-lul cohahay-yo
 Yeonghi-NOM who-ACC likes-PARTICLE
 a. 'Who does Yeonghi like?'
 b. 'Does Yeonghi like anyone/someone?'
 c. 'Yeonghi likes someone.'

Chinese *wh*-morphemes are similarly ambiguous. However, disambiguation of *shei* ('who', 'anyone/someone' in (2)) does not occur through prosody alone. The existential quantifier interpretation (2b) arises through a dependency relationship between the *wh*-morpheme *shei* and the polarity-question marker *ma* (Cheng 1994). The *wh*-interrogative interpretation may be signaled by the optional *wh*-question particle *ne* (2a). When sentence-final question particles are present (whether *ne* or *ma*), the question has sentence-final rising pitch contour (Hsu and Xu 2019). However, in the absence of a sentence-final particle, prosody can disambiguate, with a high pitch accent

¹ We present the cross-linguistic comparison in prosody in terms of the pitch range and the pitch contour for the sake of consistency. However, the studies cited here use a range of different terms, such as intonational focus.

on the *wh*-morpheme in a *wh*-interrogative question, and on the VP in a yes-no question (Hu 2002).

- (2) Meiying xihuan shei (ne) / ma?
 Meiying like who (WH-Q) / YES-NO-Q
 a. 'Who does Meiying like?'
 b. 'Does Meiying like anyone/someone?'

In Japanese, too, *wh*-morphemes are employed in both *wh*-interrogatives and existential quantifiers, but here, the existential quantifier is unambiguously identified by a disjunction affix *-ka* (3) (Kuroda 1965). In terms of intonation, both question types have a sentence-final rising pitch contour, and the *wh*-question – but not the yes-no question – has a high pitch accent on the *wh*-morpheme (Deguchi and Kitagawa 2002; Kitagawa 2007).

- (3) Hanako-wa dare-o / dare-ka-o mimasu ka?
 Hanako-TOP who-ACC / who-DISJ-ACC see Q
 a. 'Who will Hanako see?'
 b. 'Will Hanako see anyone/someone?'

Thus, Korean, Chinese and Japanese, while each differing from the other in the details, nonetheless share the property that both *wh*-interrogative pronouns and existential quantifiers are formed from *wh*-morphemes. English presents a different situation, in which distinct morphemes (*who*; *anyone/someone*) express the *wh*-interrogative and existential quantifier meanings, respectively, as is clear from the translations in (1–3). However, in terms of prosody, English is similar to Korean: a sentence-final rising pitch contour is common in yes-no questions,² but not in *wh*-questions (e.g., Hedberg et al. 2004; Ladefoged and Johnson 2014; Geffen and Mintz 2017). The key cross-linguistic differences are summarized in Table 1.

² The prosody in yes-no questions is subject to variation between British English and American English: in the former, the yes-no question typically finishes with a rising pitch contour, while in the latter, there is typically rising pitch towards the end of the sentence, but then a final fall in the last word (Ladefoged and Johnson 2014).

	Korean	Chinese	Japanese	English
<i>Form of wh-interrogative/existential quantifier morpheme</i>				
in <i>wh</i> -questions	bare <i>wh</i>	bare <i>wh</i>	bare <i>wh</i>	bare <i>wh</i>
in yes-no questions	bare <i>wh</i>	bare <i>wh</i>	<i>wh</i> +suffix	<i>any/some</i>
<i>Sentence-final rising pitch contour</i>				
in <i>wh</i> -questions	no	yes	yes	no
in yes-no questions	yes	yes	yes	yes

Table 1. Cross-linguistic comparison of the morphology and prosody of key features of *wh*- and yes-no questions

3 L2 acquisition of Korean *wh*

Under the Feature Reassembly Hypothesis (Lardiere 2009), L2 acquisition proceeds by means of mapping the formal abstract features of the linguistic units of the L1 onto perceived L2 counterparts, and then by reassembly of these features when this is motivated by evidence in the input. Given such a process, it follows that, if the formal features of a functional morpheme are configured similarly in the L1 and the L2, the task of acquiring the L2 representation should be easier than if the L1 and L2 configurations differ. Applying this logic to the L2 acquisition of the interpretation of Korean bare *wh*-morphemes gives rise to contrasting predictions about relative ease of acquisition, depending on whether similar morphosyntax is more facilitative than similar prosody, or vice versa (4–5):

(4) *Morphosyntax prediction*

Acquisition of Korean bare *wh*-morpheme interpretation is easier for L1-Chinese and L1-Japanese speakers than for L1-English speakers.

(5) *Prosody prediction*

Acquisition of Korean bare *wh*-morpheme interpretation is easier for L1-English speakers than for L1-Chinese and L1-Japanese speakers.

A previous study by Choi (2009) bears on this issue. Choi conducted an experiment with L1-English speakers of Korean whose Korean proficiency was described as high-intermediate ($n = 24$) and advanced ($n = 23$). The participants completed a listen-and-translate task, in which they heard six *wh*-questions and six yes-no questions containing bare *wh*-morphemes, such as (6) (Choi 2009: 303):

- (6) Chelswu-ka nwukwu-lul cohaha-ni
 Chelswu-NOM who-ACC likes-PARTICLE
 ‘Who does Chelswu like?’ / ‘Does Chelswu like anyone/someone?’

The *wh*-question and yes-no question interpretations were disambiguated by prosody, with sentence-final falling intonation in the *wh*-questions and sentence-final rising intonation in the yes-no questions. Participants were asked to translate the sentences they heard into English. Choi found that the participants in both proficiency levels accurately identified *wh*-questions, translating them as *wh*-questions at least 94% of the time. However, on the yes-no question condition, accuracy was only 7% in the high intermediate group and 86% in the advanced group. This finding suggests that it is difficult for L1-English speakers to acquire the existential quantifier interpretation of Korean *wh*-morphemes. However, without a comparison group of L2-Korean speakers with different L1s, it is difficult to know what the source of the difficulty for Choi’s L1-English speakers is. This gap motivates the current study.

4 The experiment

4.1 Participants

Four groups of participants were investigated in the current study: three groups of L2 speakers of Korean, whose L1s were Chinese ($n = 78$), Japanese ($n = 49$), and English ($n = 34$), respectively, and a control group of 38 native speakers of Korean. Most of the participants were in Korea at the time of testing. Some of the L1-English participants were in the UK but had previously spent study-abroad time in Korea. A 40-blank cloze test was used to gain a measure of the L2 participants’ Korean proficiency. Each group’s mean score on the cloze test, along with age and number of months resident in Korea are given in Table 2. A one-way ANOVA run on the scores of the three groups confirms that there were no between-group differences in proficiency score ($F(2, 160) = 1.766, p = .174$).

L1	N	Mean age	Mean months in Korea	Mean cloze score out of 40
Chinese	78	24.3 (4.37)	12.2 (10.4)	26.3 (4.89)
Japanese	49	25.7 (5.69)	7.6 (4.4)	28.1 (6.05)
English	34	24.3 (6.02)	13.4 (10.4)	26.2 (6.55)
Korean	38		n/a	n/a

Table 2. Participant groups’ background details (standard deviations are given in brackets)

4.2 Task design

The task was an adapted replication of Choi's (2009) listen-and-translate task. Participants heard ten questions that contained *wh*-morphemes and that –without context or prosody – would be ambiguous, such as (7):

- (7) Minswu-nun mwues-ul masyesse-yo
 Minsoo-TOP what-ACC drank-PARTICLE
 'What did Minsoo drink?' / 'Did Minsoo drink anything/something?'

Prosody was used to disambiguate the questions: five were recorded as *wh*-questions, with high pitch accent on the *wh*-morpheme; and five as yes-no questions, with no pitch accent on the *wh*-morpheme and with a rising sentence-final pitch contour. Five fillers were also included in the test battery. These were questions that did not contain a *wh*-morpheme.

The L2 participants were asked to translate each sentence into their first language. For the native Korean participants, a modified version of the task was created, in which they selected one of three multiple-choice options as a response to the stimulus. The options for (7) are given in (8).

- (8) a. ney b. kolla c. cengmalloy?
 'Yes.' 'Cola.' 'Really?'

Option (a) is plausible if the stimulus is interpreted as a yes-no question; option (b), if it is interpreted as a *wh*-question; and option (c), if a declarative interpretation is made. Although the stimuli were not intended to elicit a declarative interpretation, this option was included in order to check whether or not a declarative might nonetheless be judged possible by the native Korean speakers.

Choi's (2009) experiment also included native Korean control participants, but they translated into English, like the L2 participants. Choi did not use the multiple-choice response options described here. Another difference between Choi's experiment and the present study is the sentence-final particle. Choi used *-ni*, which always indicates a question, whereas the present study used *-yo*, which is a polite form that can be used either in questions or declaratives. *-Yo* was selected on the grounds that most Korean language teaching materials make use of this particle more than the less formal *-ni*, so L2 Korean speakers are likely to be more familiar with *-yo*.

4.3 Results

The translations provided by the participants were coded according to the type of interpretation they expressed: *wh*-question, yes-no question, declara-

tive, or ‘other’. Percentages of interpretation types were calculated for each group (Chinese, Japanese, English, Korean), for each condition as indicated by the intonation (*wh*-question, yes-no question). Figure 1 illustrates the results for the *wh*-question condition (with a high pitch accent on the *wh*-word), and Figure 2, for the yes-no question condition (with a sentence-final rising pitch contour).

Consider the native Korean control group’s results first. These are represented in the rightmost bar in each figure. This group very clearly differentiates between the two conditions, with predominantly a *wh*-question interpretation in the *wh*-question condition (70.53%), and predominantly a yes-no question interpretation in the yes-no condition (86.84%). This testifies to the stimuli being identifiable on the basis of prosody in accordance with the intended interpretations. Nonetheless, we note that in the *wh*-question condition, the native control group selected a declarative interpretation just over a quarter of the time. The declarative interpretation was not the intended interpretation in any of the test items. We return to this issue in the discussion.

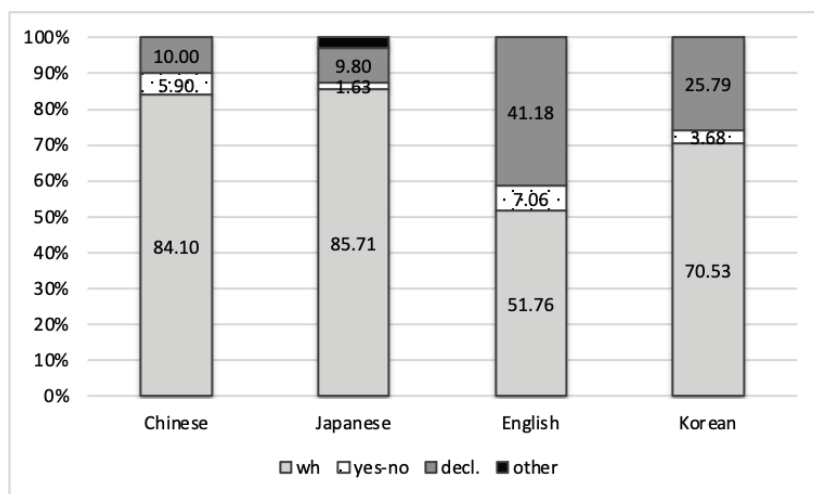


Figure 1. *Wh*-question condition: percentage of each type of interpretation, by each group.

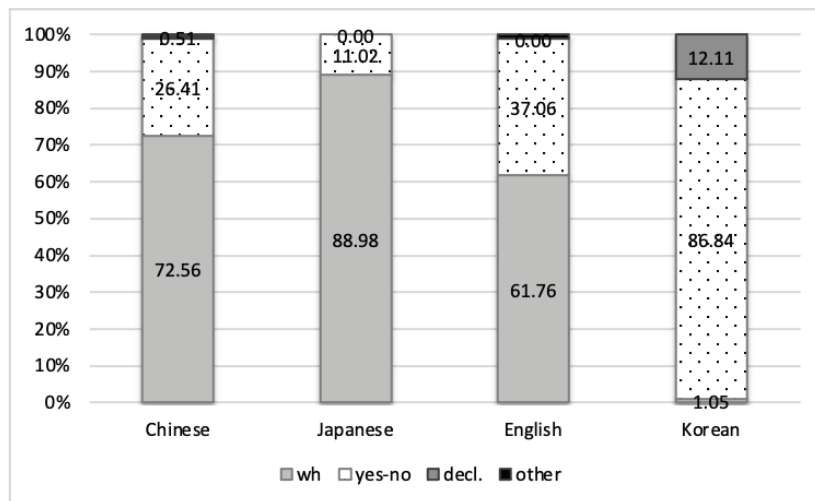


Figure 2. Yes-no question condition: percentage of each type of interpretation, by each group.

Turning to the L2 participants, a different picture emerges. In all three groups, the dominant interpretation in both the *wh*-question condition and the yes-no condition is a *wh*-question interpretation. The Chinese and Japanese groups have rather similar response patterns, with high rates (> 72%) of selection of the *wh*-question interpretation in both conditions. The English group also prefers this interpretation, but with rates of selection closer to the mid-point: 51.76% and 61.76% in the *wh*- and yes-no conditions, respectively. In short, none of the three L2 groups seems to reliably give the target interpretation in the yes-no condition. Further, it is notable that in the *wh*-question condition, the L2 groups all also give declarative interpretations to some degree, with this unintended interpretation accounting for around 10% of the responses by the Chinese and Japanese groups and 41.19% by the English group.

A mixed-effects logistic regression analysis was run on the L2 groups' data, to investigate the relationship between condition and L1 further. The analysis used the *glmer* function in the *lme4* package (Bates et al. 2015), in the R statistical environment (R Core Team 2020). For this analysis, the responses were binary coded as 'right' or 'wrong'. For example, in the *wh*-question condition, only a *wh*-question interpretation counts as 'right' and any other response counts as 'wrong'. The group variable (Chinese, Japanese, English) was Helmert coded, so that the L1-English group was compared with L1-Chinese and L1-Japanese groups together, then the L1-Chinese and L1-Japanese were compared with each other. The model also

included random effects for participant and item, and a participant random slope for condition. Table 3 presents the results of this analysis.

	β	SE	odds ratios	p
intercept	-1.33	0.36	0.27	<0.001
condition	3.47	0.61	32.18	<0.001
L1 [Eng v. (Ch + J)]	1.43	0.23	4.16	<0.001
L1 [Ch v. J]	0.08	0.17	1.08	0.656
condition × L1 [Eng v. (Ch + J)]	-2.60	0.56	0.07	<0.001
condition × L1 [Ch v. J]	-0.97	0.42	0.38	0.020

Table 3. Fixed effects for mixed-effects logistic regression model on the L2 data

The key findings of interest in Table 3 are the two significant interactions of condition with the different configurations of the groups. The significant interaction of condition with group when the English group is compared with the Chinese and Japanese groups together ($p < .001$) can be interpreted as confirmation that the chance of a non-target translation increases in the yes-no condition for the Chinese and Japanese groups compared with the English group. The significant interaction of condition with group when the English group is excluded ($p = .02$) shows that the chance of a non-target translation increased in the yes-no condition in the Japanese group, compared with the Chinese group.

5 Discussion

Let us consider the findings described so far, in relation to the predictions, repeated here in (9–10)

(9) *Morphosyntax prediction*

Acquisition of Korean bare *wh*-morpheme interpretation is easier for L1-Chinese and L1-Japanese speakers than for L1-English speakers.

(10) *Prosody prediction*

Acquisition of Korean bare *wh*-morpheme interpretation is easier for L1-English speakers than for L1-Chinese and L1-Japanese speakers.

Evidence for acquisition of Korean bare *wh*-morpheme interpretation being 'easier' in one group than another would be found if a given group is more likely to differentiate between the two conditions in a target-like way than another group. Applying this to the morphosyntax prediction in (9), this prediction is not supported. The significant interaction between condition and group (English versus [Chinese and Japanese]) confirmed that the chance of a target interpretation in both conditions is lower in the Chinese and Japanese groups together than in the English group. Conversely, the results provide support for the prosody prediction, in that the English group was more likely to give target-like responses in both conditions than the Chinese and Japanese groups. However, support for the prosody prediction can only be tentative, given that the English group had only 37% accurate identification of yes-no questions, and indeed only 51% accurate identification of *wh*-questions. While this overall accuracy is higher than in the Chinese and Japanese groups, it is still relatively low.

However, some further evidence from an additional descriptive analysis of the data is relevant to the predictions. This additional analysis, to be detailed below, focuses on participants' individual consistency in the way that they responded, and it takes into account the declarative interpretations in the *wh*-condition. Recall that 25% of the native Korean group's responses in this condition expressed a declarative interpretation. This shows that – although it was not planned in the experimental design – the declarative interpretation was a valid, native-like interpretation, so expression of this interpretation by the L2 groups should also be taken into account.

The individual consistency analysis was conducted by considering each participant's responses to the five tokens in each condition. If the participant gave the same category of response to at least four of the five tokens, this was counted as 'consistent'. For example, for a given condition, if a participant gave four *wh*-question responses and one declarative response, this was counted as a consistent *wh*-question response pattern (regardless of the intended interpretation for that condition). Table 4 presents the results of this individual consistency analysis. Note that the percentages do not add up to 100 in either condition within each group, because not all participants were consistent in their response patterns. Those who were not consistent are not represented in the table.

L1	<i>Wh</i> -question condition			Yes-no question condition		
	<i>Wh</i> -Q	Y/N Q	Decl	<i>Wh</i> -Q	Y/N Q	Decl
Chinese (n=78)	60 <i>76.92</i>	0	0	51 <i>65.38</i>	14 <i>17.95</i>	0
Japanese (n=49)	42 <i>85.71</i>	0	0	41 <i>83.67</i>	0	0
English (n=34)	11 <i>32.35</i>	1 <i>2.94</i>	8 <i>23.53</i>	19 <i>55.88</i>	10 <i>29.41</i>	0
Korean (n=38)	23 <i>60.53</i>	0	6 <i>15.79</i>	0	30 <i>78.95</i>	1 <i>2.63</i>

Table 4. Number *and* percentage of individuals who consistently gave each response type, by condition, by group. (Percentages are in italics.)

Within the Chinese and Japanese groups, participants who gave consistent responses overwhelmingly (exclusively, in the Japanese group) gave *wh*-question responses, whether in the *wh*-question condition or the yes-no condition. However, in the English group, the pattern is different. Consider the *wh*-question condition first. Here, 32.35% of the English group and 60.53% of the native Korean group consistently gave the intended *wh*-question interpretation. In addition, 23.53% of the English group and 15.79% of the native Korean group consistently interpreted the *wh*-question condition items as declaratives. This suggests that this interpretation was not random: for some individuals, these stimuli always sounded like declaratives. Turning to the yes-no condition, the native Korean group demonstrates high individual consistency (78.95%) in selection of the intended yes-no response. The rate is considerably lower in the English group, at 29.41%. However, among the ten individuals in the English group who consistently interpreted the yes-no condition stimuli as yes-no questions, six consistently interpreted the *wh*-question condition as declarative, and one consistently interpreted it as the intended *wh*-question. Since the declarative interpretation is a legitimate interpretation (as attested by the native control group), this means that seven individuals in the English group, or 17.65%, consistently differentiated between the *wh*-condition and the yes-no condition on the basis of prosody. In the Japanese group there were no participants who consistently differentiated between the two conditions. In the Chinese group there were five, or 6.41%. Thus, this provides evidence from the level of individual speakers, of apparently greater ease among the English group in using intonational cues to identify different meanings, than among the Chi-

nese or Japanese groups. In other words, it suggests further support for the prosody prediction that similar L1 prosody could be more facilitative in the acquisition of Korean bare *wh*-morpheme interpretation than similar morphosyntax.

However, the data also provide evidence that similar morphosyntax nonetheless plays a facilitative role. Recall that the statistical analysis (Table 3) showed that the L1-Chinese group was more likely than the Japanese group to correctly identify a yes-no question interpretation. Also, in the individual consistency analysis, while the proportion of consistently accurate individuals in the L1-Chinese group was very small, at 6.41%, there were none in the Japanese group. The slightly greater success of the Chinese group could be due to Chinese having bare *wh*-morphemes for both the *wh*-interrogative and existential quantifier meanings (like Korean), while Japanese requires a suffix for the existential quantifier meaning.

Finally, we note that of the three L1 groups, the Japanese speakers had the lowest mean length of residence in Korea by several months (7.4 months, compared with 12–13 months in the Chinese and English groups). Consequently, the Japanese speakers may have had a generally lower amount of exposure to Korean input in an immersion setting than the other two groups. Even though overall proficiency was controlled across the groups, this difference in input could play a role in the L1-Japanese group being the least likely to differentiate between the two question types. Further research in a study designed to investigate the effect of length of exposure in an immersion environment could shed further light on this issue.

6 Conclusion

In this paper, we have investigated the effect of L1 in terms of morphosyntax and prosody in the L2 acquisition of Korean *wh*-morphemes by three L1 groups, Chinese, Japanese and English. The study tested whether or not the L2 speakers were able to distinguish between different interpretations of ambiguous Korean *wh*-morphemes on the basis of prosody alone. The results showed that all three L2 groups exhibited a general tendency to apply a *wh*-question interpretation to both *wh*- and yes-no question prosody. However, this tendency manifested to a lesser degree in the English group than in the Chinese and Japanese groups, despite greater morphosyntactic differences in relation to *wh*-morphemes between English and Korean than between Chinese/Japanese and Korean. This suggests greater sensitivity to prosodic disambiguation in the English group. A further difference between the English group and the Chinese/Japanese groups was that the former frequently gave a declarative interpretation in the *wh*-question condition. The native Korean group also did this to some extent, apparently

following the sentence-final falling pitch contour in this condition. This provides further evidence of the English group's sensitivity to prosody. From this, we conclude that while both morphosyntactic features and prosodic features may affect the mapping process between L1 and L2, our results showed that it is the prosodic similarity between English and Korean that accounts for the English group's greater ability to differentiate between the conditions on the basis of prosody.

Finally, this study suggests directions for further research. A limitation of the current design was that the declarative interpretation was not explicitly included: future research should include the declarative too, in order to investigate the three-way prosodic distinction. In addition, since the findings testify to acquisition of Korean question prosody clearly being difficult, it would be useful to test more advanced speakers of L2 Korean, in order to find out whether the prosodic contrast can be made more reliably at higher proficiency levels.

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Contraction as Idiomatic Variation: A Corpus-based Study of Korean, Japanese, and English

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1 Overview

The purpose of this paper is to report on the phenomenon of contraction as a type of idiomatic variation. Here, we will describe three types of contraction – or, it might be better to say “three outcomes of contraction” – of idioms. Our data come from relatively comparable, large, web-based corpora of Korean, Japanese, and English. Analysis of these data, focusing on the relationship between the form and function of the dictionary idiom and its contracted variant in context, is used to distinguish the categories. Fi-

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nally, we will support our argument by differentiating a unique motivation for each type of contraction.

2 Background

Idioms are conventionalized, multi-lexemic expressions with a high degree of idiosyncrasy. This means that the meaning of an idiom is not compositional, or derivable from its individual parts (though compositionality is a matter of degree, rather than a black-and-white distinction; Wulff 2008). Because they are not compositional, idioms have largely been ignored, or considered peripheral, especially in the Chomskyan tradition. This is because it is unclear how to treat them using the building block theory of language (e.g. Pinker's (1999) book *Words and Rules*).

According to the building block theory, language is comprised of morphemes or words, which are combined to form phrases, which are combined to form sentences, based on grammatical rules.¹ However, idioms are neither words, nor grammar, but have characteristics of both.

The meaning of an idiom is not predictable based on its components. This unpredictability is similar to that of words, and dissimilar to non-idiomatic phrases or sentences, for which one can build up the meaning based on the individual parts as long as one knows the meanings of the parts. However, like larger grammatical constructions such as phrases and clauses, idioms have various components in them that are related in meaningful ways – based on syntax.

Idioms are typically described as being “frozen” or fixed (e.g. Bobrow and Bell 1973; McCarthy 1990; Gibbs 2007). However, careful study of natural language data reveals that speakers often use idioms in innovative ways. In other words, idioms are not frozen or fixed. In fact, our (and others') research shows that, for some idioms, variants are used more frequently than the “fixed form” of the idiom.

However, we do not want to dismiss this so-called “fixed form” entirely. This form is necessary for speakers in order to understand and master the idiom. Without first knowing the form and meaning of e.g. *the pot calling the kettle black*, speakers would presumably have a difficult time with variants such as *pot and kettle*.

Cognitive linguists (a label which should be understood to include the authors of this paper) might be tempted to call the “fixed form” the prototype, but the prototype tends to be the most frequent variant of an item, and therefore, whether this term is fitting is debatable due to the relative

¹ For arguments and evidence against the building block theory, see Arnon et al. (2017), Brandl (1989), Goldberg (2006), *inter alia*.

frequency of the “fixed form” vs. its variants. The “fixed form” of an idiom is often not the most frequent, according to our data. Therefore, it seems preferable to refer to the “fixed form” as the canonical form or dictionary form, and this is what we will do below.

Idiomatic variation is not well understood, despite its clear relevance to many aspects of linguistics, including most fundamentally linguistic theory and language description, as well as studies of collocations, formulaic language, phraseology, adages and proverbs, figurative meaning, and linguistic creativity, and also the creation of dictionaries of idioms and of pedagogical materials for second language learners. This study is part of our larger effort to catalogue and analyze idiomatic variation across languages.

Previous research on idiomatic creativity, including such groundbreaking work as R. Moon (1998), Langlotz (2006), and Tsuchiya (2013) is described in Oh (2020). Our own previous research (Benom forthcoming; Benom and Oh forthcoming; Oh 2018, 2020) on idiomatic variation has resulted in the creation of a preliminary typology of formal idiomatic variation, by which we refer to meaningful variations in the form of the idiom (Oh 2018). We have found four categories of such variation, including **contraction** (the idiom is used without certain elements present in the canonical form), **extension** (there are one or more additions to the canonical form of the idiom), **syntactic alteration** (the use employs some syntactic construction that is not present in the canonical form of the idiom), and **lexical substitution** (one or more lexemes in the canonical form are replaced). These categories are not mutually exclusive; two or more can apply to a single variant. Here, we will delve more deeply into contraction.

Contraction of idioms is a specific and unique case of the contraction of linguistic forms in general, which has long been described in the literature. For instance, a century ago, Sapir noted that “all languages have an inherent tendency to economy of expression” (Sapir 1949 [1921]: 29). Leech describes contraction in the following way:

If one can shorten the text while keeping the message unimpaired, this reduces the amount of time and effort involved both in encoding and in decoding. [...] the Economy Principle has a contributory Maxim of Reduction which might be simply enunciated as “Reduce where possible”. [...] The processes which are subsumed under the heading of ‘reduction’ here are (a) pronominalization, (b) substitution by other pro-forms, eg: *do*, *so*, and (c) ellipsis (or deletion). [...] The pragmatic point about reduction is that it abbreviates the text, and often simplifies its structure, while maintaining the recoverability of the message.

(Leech 1983: 67–68)

However, as we will see, idiomatic contraction differs from what Leech describes in two important ways. First, the message that is expressed (and

must be recovered) with the use of a contracted idiom can vary, depending on the idiom and the type of contraction used. Second, not all idiomatic contraction is based exclusively on the principle of economy. In fact, we will argue that the three types of idiomatic contraction have distinct motivations. While this is not the first research to describe the contraction of idioms, it is the first (to our knowledge) to describe the three distinct outcomes of contraction which we will present below.

K. Moon's (1996) paper on diachronic contraction of Korean idioms gives an overview of why idiomatic expressions are used, how they are created, and how they are transformed, shortened, and lost, based on a study of the (then) current literature. According to Moon, there is a directionality in the formal diachronic transitioning of Korean idioms. Idioms change from idiomatic sentences to idiomatic phrases or clauses, and from idiomatic clauses to words such as compound verbs, and from idiomatic phrases to words such as compound verbs or nouns (1996: 322).

K. Moon does not say if this is a cross-linguistic pattern, but our intuition tells us that similar patterns of historical change occur in other languages, such as the contraction of the English proverbial idiom (sentence) *A drowning man will clutch at straws* to (the Verb Phrase) *clutch at straws*, or the slang contraction of the idiom (Noun Phrase) *a piece of cake* 'easy to accomplish' to (the noun) *cake*. He also does not differentiate outcomes of contraction, as we will do here.

3 Methods

Our data come from in-depth, contrastive studies of seven proverbial idioms each in Japanese, Korean, and English, as well as several additional case studies of (non-proverbial) idioms (ongoing). Our work uses the largest publicly available corpus of each language we could find: we used, for Korean, the koTenTen18 (1.7 billion words), for Japanese, the jaTenTen11 (8.4 billion words), and for English, the enTenTen15 (15 billion words). All data in this paper come from these corpora.

We searched for two content words from each idiom at a time, one within a range of 10 words (i.e. 5 words to both the left and right) of the other, in order to extract the full range of idiomatic variation from each corpus. As an example, we searched for *pot* within 10 words of *kettle*, *call*, and *black*; *kettle* within 10 words of *call* and *black*, and *call* within 10 words of *black*. Of course, the results for each query included many irrelevant hits, so we manually examined the results and discarded non-examples. Thus, we extracted essentially every creative example of each idiom in the corpora.

To be clear, these queries only returned results in which two or more content words in the dictionary form of the idiom are present. However, we find this risk of missing data in the corpus to be small, given the requirement that a hearer understand that the utterance is intended to be a use of the idiom (or “the recoverability of the message”, in Leech’s (1983) terms), which necessitates the use of a sufficient number of clues. Considering both short idioms such as English V + P compounds (e.g. *stand out*) and longer, proverbial idioms (e.g. *the pot calling the kettle black*), it seems unlikely that speakers regularly produce creative idiomatic variants with only a single content word from the idiom, due to the difficulty it creates for the hearer to recognize the idiomatic intent.

The proverbial idioms we investigated are rough translational equivalents, such as (Korean) *cey pelus kay cwulka* ‘to give one’s own habits to a dog’, (Japanese) *mitsugo no tamasii hyaku made* ‘the spirit of triplets lives to one hundred’ and (English) *a leopard cannot change its spots*. For most of the non-proverbial idioms, we simply investigated idioms for which we could find copious data.

Due to the limitations of Sketch Engine, the interface we employed, the exact process of querying was slightly different for each of the three languages. We strove to make the process as similar as possible, but the following differences arose. Significantly, for English, all Sketch Engine functions work properly. For Japanese, however, there are tagging problems that the researcher must work around. For instance, if one searches for *kawa zan’you* ‘to count skins’ (a compound word which is part of a larger idiom we investigated) the query will return no results. Instead, one must search for *kawa* ‘skin’ first, and then filter the results for *zan’you* ‘count’. Korean is similar to Japanese, in that it is tagged inconsistently, but, additionally, tagging for parts of speech is incorrect, so searching for a verb such as *kata* ‘to go’ will return results for e.g. adjectives such as *kantanhata* ‘simple, easy’ despite the different parts of speech, due to the matching first syllable (due to the conjugation of *kata* as *kanta* in the plan form). Therefore, manual examination of the results was essential and quite time-consuming.

At this point, the reader may wonder why we persist in using Sketch Engine and these corpora of Korean and Japanese. The simple answer is that they are larger than other (balanced, carefully constructed) corpora which are coded more accurately or consistently, and this size advantage gives us access to more data (and that, at the risk of oversimplification, more data is better data, e.g. Baroni 2005).

After extracting all query results from the corpora, we manually examined them to clean the data, as mentioned earlier. We considered any shortening of the idiom’s dictionary form to be contraction – even if other

types of variation such as extension were also involved. Some of the data we encountered were easy to categorize, such as *A leopard can change its spots*. We considered this to be contraction, since the dictionary form uses *cannot*. Somewhat more subtle was this: *How one leopard changed its spots... and saved a baby baboon*. We considered this to be both contraction (of *cannot*) and extension (of *how*), as well as lexical substitution (of *one* for *a*).

Similarly, when we encountered *...but can the leopard change its spots?* we considered this to be contraction (of *not*), lexical substitution (of *the* for *a*), and syntactic alteration (the use of the question construction instead of the declarative statement).

4 Results

Our data show that there are three basic categories of contraction of an idiom's canonical form. This is based on the relationship between the canonical form–meaning pairing and the form–meaning pairing of the contracted variant. As a quick preview, we will refer to these three categories as

Type 1, in which part of the form is used to express the **full** idiomatic meaning present in the dictionary form,

Type 2, in which part of the form is used to express **part** of the meaning, and

Type 3, in which part of the form is used to express a **new** meaning.

We will describe and exemplify these categories below.

Note that this typology refers to different *uses* of contractions. This does not mean that each idiom studied can only be contracted in one way (although this is true for some of the idioms). On the contrary, it means that, potentially, a speaker might use a certain contraction of an idiom to express the entire meaning of the idiom (i.e. type 1) in one instance, and the identical contraction of the same idiom to convey a subset of the full meaning (i.e. type 2) or to convey a new meaning via semantic extension (i.e. type 3) in another instance. In fact, we will exemplify some idioms with multiple potential uses of contractions.

4.1 Type 1

With type 1, we find part of the idiom's form being used to express the entire meaning of the idiom. See Figure 1

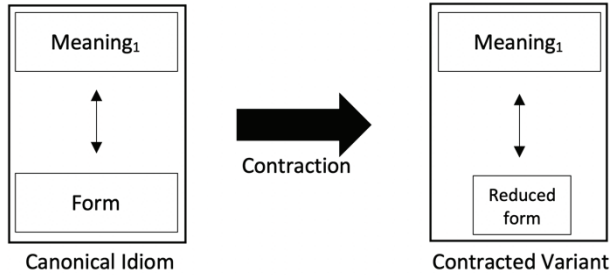


Figure 1. Type 1 contractions

One example of this is the frequent English expression *too many cooks*, a contraction of the full idiom *too many cooks spoil the broth*, as in the English example below:

- (1) *I also prefer to work on my own during the creative process. I believe it's easy to have **too many cooks**...*

Note that the meanings of both the canonical idiom and the contracted variant are exactly the same. The implication that something will be spoiled is present in the contracted variant above, despite the lack of the corresponding words which are present in the dictionary form of the idiom. As another example, consider this Japanese idiom:²

- (2) *me kara uroko ga ochiru*
 eye from scale NOM fall
 Lit. 'scales fall from the eyes'
 Fig. 'to be awakened to the truth, to be enlightened'

The contracted form is *me kara uroko* 'scales from the eyes', which can express the meaning of the full idiom, as it does in the example below.

- (3) *hagiwaraakira-san no kōen o kiki ko no hon*
 Aikra.Hagiwara GEN lecture ACC listen this GEN book
o yon-da ga, hontoni me kara uroko! tte kanji
 ACC read-PST and really eye from scales! QUOT feeling
 'I read this book after listening to Akira Hagiwara's lecture and I felt like it really opened my eyes.'

² Abbreviations used are ACC (accusative), ATT (attributive), COND (conditional mood), DEC (declarative mood), EPI (epistemic marker), FUT (future), GEN (genitive), GER (gerund), LOC (locative), NOM (nominative), PRS (present tense), PST (past tense), Q (question marker), TOP (topic).

As a final example, observe the Korean idiom below:

- (4) *ocilaph-i* *nelp-ta*
 the.front.part.of.an.outer.or.upper.garment-NOM wide-DEC
 Lit. 'the front part of an outer or upper garment is wide'
 Fig. 'be interfering, interfere'

Now, compare this contracted variant, in which part of the form is used to express the entire meaning.

- (5) *kacang khu-n yoin-un mana-uy cinachi-n*
 very big-ATT factor-TOP Mana-GEN excessive-ATT
ocilaph-ttaymwuney
 front.part.of.garment-because
 'The biggest factor is because of Mana's excessive being the front part of the outer garment (=interfering)'

4.2 Type 2

With type 2 contractions, the contracted variant expresses a subset of the meaning of the canonical idiom. See Figure 2.

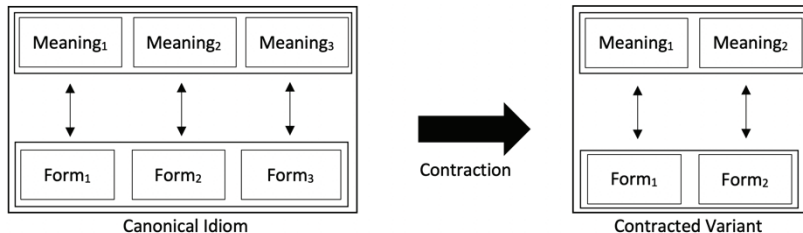


Figure 2. Type 2 contractions

Note that this is simply not possible with some idiomatic expressions – those for which it is not clear which element of the form corresponds with which element of the meaning (e.g. *kick the bucket* 'die').

Instances of type 2 are all necessarily contractions of **idiomatically combining expressions**, which means that the semantics of the whole is distributed among the parts of the idiom, according to the typology of idioms given in Nunberg et al. (1994). In other words, the idiom consists of parts that carry identifiable parts of its meaning. Take, for example, *spill the beans* 'divulge the information', in which *spill* means 'divulge' and *beans* means 'information'.

How does this relate to the non-compositionality of idioms we mentioned earlier – does it not contradict that definition? Importantly, *spill* does not have the meaning ‘divulge’ apart from when appearing in this idiom, just as *beans* does not have the meaning of ‘information’ elsewhere. Therefore, this idiom is not compositional: the meaning is not built up based on what we know of *spill*, *the*, and *beans*, the VO construction, and other constructional elements such as parts of speech.

As an example of type 2, observe the following Japanese idiom:

- (6) *mekuso hanakuso o warau*
 eye.booger nose.booger ACC laugh
 Lit. ‘eye boogers laugh at nose boogers’
 Fig. ‘the pot calls the kettle black’

The conventionalized contraction is *mekuso hanakuso* ‘eye boogers nose boogers’. It can be used as a type 2 contraction, as represented in Figure 3.

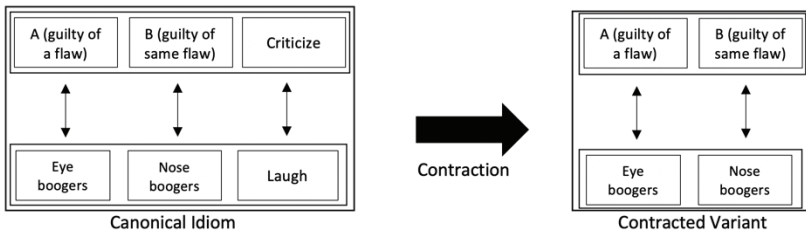


Figure 3. *mekuso hanakuso* as a type 2 contraction

An example of such a use is shown below.

- (7) *ippanjin kara mi-tara kensatsukan mo*
 regular.person from look-COND prosecutor also
bengoshi mo mekuso hanakuso.
 lawyer also eye.boogers nose.boogers
ryōhō tomo nijūjinkakusha-ga ōi-daro
 both all double-faced-NOM many-EPI
 ‘From the perspective of the general public, both prosecutors and lawyers are eye boogers and nose boogers (= guilty of the same flaw). Many of them are likely to be two-faced.’

In this example, note that neither criticizes the other. As a second example, observe the following Korean idiom, a translational equivalent of the English *too many cooks spoil the broth*, and an idiomatically combining expression, in its canonical form:

- (8) *sakong-i manh-umyen pay-ka san-ulo*
 boatman-NOM many-COND ship-NOM mountain-LOC
ka-n-ta
 go-PRS-DEC
 ‘if there are many boatmen, a ship will go to the mountains’

The contracted variant below is used to mean that something has gone in an unexpected or wrong direction, or that the final result is bad, without the semantics of ‘too many cooks/boatmen’.

- (9) *calyo-lul mwusiha-nun swunkan pay-nun*
 data-ACC ignore-ATT.PRE moment the ship-TOP
san-ulo ka-nta
 mountain-toward go-DES.PRE
 ‘The moment you ignore the data, the ship goes to the mountain.’

This contraction is represented in Figure 4.

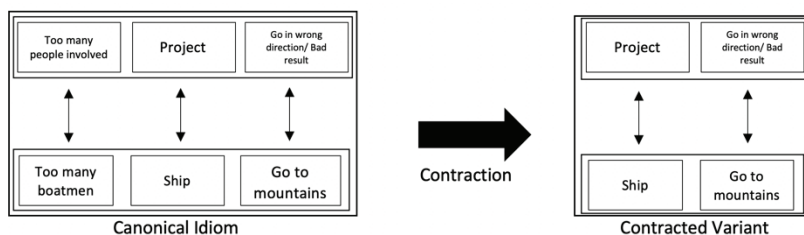


Figure 4. *san-ulo ka-nta* as a type 2 contraction

Finally, we present the English idiom *penny wise and pound foolish*, referring to someone who is careful with small amounts of money but acts in a risky or wasteful way with larger amounts. Note that it is an idiomatically combining expression in which *penny* refers to ‘small amounts of money’ and *pound* refers to ‘large amounts of money’. We found many examples of the contraction *penny wise*, referring to someone who is careful with small amounts of money. This contraction expresses just part of the larger idiom’s meaning, corresponding to the form used. The attested variant *penny wise and pound wise*, a case of lexical substitution, is evidence that not everyone who is called *penny wise* need be *pound foolish* as well.

4.3 Type 3

Finally, we will describe the third variety of contraction, involving semantic extension, in which the shortening of the idiom corresponds to the evolution of some new meaning. We assume that such cases need to be fairly conventionalized before this shift in meaning can occur. Therefore, we do not expect to find this usage type available in cases of novel contraction (a type of true idiomatic creativity). A representation of type 3 contraction is given in Figure 5.

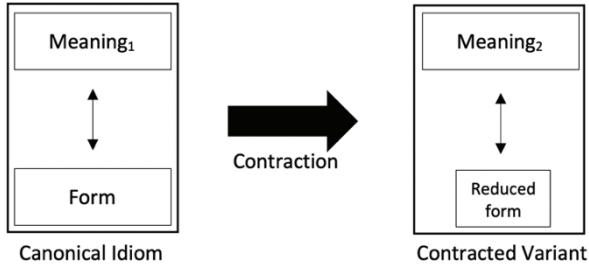


Figure 5. Type 3 contraction

To exemplify type 3, we will return to the Japanese idiom *mekuso hanakuso o warau* ‘eye boogers laugh at nose boogers’, discussed above. In some cases of contraction of this idiom (realized as *mekuso hanakuso* ‘eye boogers nose boogers’), there is no sense of being flawed, and the meaning is simply that two things have only a small difference, or are roughly equivalent. It is somewhat debatable whether this meaning shift is sufficiently robust to warrant an analysis of semantic shift, though we would argue that it is. However, there are even clearer cases, in which, due to semantic shift, the meaning of the contracted variant is simply ‘small’.

- (10) *mekuso hanakuso-teido no shikin-de-wa*
 eye.boogers nose.boogers-amount GEN funds-with-TOP
tachiuchi-deki-nai
 compete.with-can-not
 ‘cannot compete with the eye boogers and nose boogers (= small, small scale) amount of funds’

This semantic extension is based on metonymy: small difference → small (amount) due to the profiling (in the sense of Langacker 1987) of ‘small’.

Next, we will return to the Korean idiom which is a translational equivalent of the English *too many cooks spoil the broth*, discussed above. But it can also be used to mean that something has gone in a different di-

rection than expected, with no sense of ‘wrong’, as exemplified below. This extended meaning is a case of type 3.

- (11) *tto pay-ka san-ulo ka-ss-nuntey tasi*
 again ship-NOM mountain-LOC go-PST-although again
chayk-ulo tolaw-ase
 book-LOC return-GER
 ‘although the ship went to the mountain again, I will return to the book’ (although I went off track in my discussion, I will return to the topic of the book)

Here, we can see that there is no implication of too many boatmen, and no negative final result; rather, the speaker is referring to an unplanned change of direction (of the conversation). Because the speaker has talked about these issues, purposefully, it seems unlikely that s/he is saying that the direction is wrong. Because s/he can simply return to the relevant topic, there is no negative result. This is simply a different direction. Note that there is a metonymic relationship between ‘something has gone in an unexpected and wrong direction’ and ‘something has gone in an unexpected direction’.

Finally, we will present this English example of type 3, in which the idiom *put the cart before the horse* is used with a meaning distinct from the meaning of the dictionary form (‘reverse the proper order of something’).

- (12) *But whatever its vices or virtues, it must be seen, at least in Canada, as a symptom and not a cause. **The cart, not the horse.***

In this use, the cart represents a symptom, and the horse, a cause. Cause and effect are closely and naturally related to order, but there is a clear distinction between ‘the proper order’ and ‘cause and effect’.

5 Discussion

What motivates the use of contractions that we have described here? Type 1 are motivated by economy, or making linguistic production “easy to our organs of speech, to economize time and effort in the work of expression” (Whitney 1868: 28; see also Zipf 1949). As for type 2, we would motivate these examples with *concretization*, the modification of idioms, which have an abstract meaning, in order to make them refer to real-world situations concretely (see Benom and Oh forthcoming, Oh 2020).

Finally, as for type 3: all examples we cited involved related meanings that were connected by metonymy. The relationship between meanings should, we posit, be constrained by Blank's (1999, 2003) taxonomy of sense relations, based on the eleven types of diachronic semantic change he observed.

Note that there are limitations on contraction: contraction is only possible if the speaker judges that the hearer can recognize that the expression is intended to be an instance of the relevant idiom. Because of the risk of misunderstanding, most instances of contraction in our data are fairly conventionalized, but there are also cases of less conventionalized contractions.

Analysis of all examples of contraction, including both conventionalized uses and what appear to be novel uses, shows that they employ a sufficient number of keywords (and other formal aspects of the canonical form, including its structure) to allow the hearer to recognize the idiom being used creatively.

We wish we could provide a count of exactly how many examples we found of each of the three types. However, this proved to be impossible, because of the high extent of ambiguity observed. For example, the meanings of *pay-ka san-ulo* 'the ship goes to the mountains' (1) wrong direction and (2) different direction are often not clearly distinguishable in context. We found relatively few clear examples, among many ambiguous ones.

6 Conclusion

Here we showed evidence for a tripartite distinction in the relationship of the original, canonical form and meaning of an idiom with the form and meaning of its contracted variants. We showed instances of type 1 contractions, in which the contracted variant expresses the full meaning of the dictionary form; type 2, or contraction of idiomatically combining expressions, in which the contracted variant expresses part of the meaning of the dictionary form; and type 3, or semantic extensions, in which the contracted variant expresses some meaning distinct from but related to that of the dictionary form.

We argued that these three categories are outcomes of contraction in context, all of which might be available for a formally identical contraction of a single idiom, and that the categories are motivated by three distinct factors (economy, concretization, and Blank's (1999) taxonomy of sense relations, including metonymy, etc., respectively), further differentiating the three.

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Grammatical Integration of Mimetics and Accompanying Gestures in L2 Japanese Discourse*

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1 Introduction

This paper explores the way speech and gestures are coordinated in Japanese as a second language (henceforth L2 Japanese) in relation to the use of mimetics (variably referred to as “ideophones” or “expressives”). The tight coupling (i.e. high frequency of co-occurrence) of mimetic words and gestures has been observed in various languages. Kita (1997) has claimed that this is because Japanese mimetics have different semantic representations than ordinary words. Japanese has an extensive system of mimetics, including not only sound-mimicking expressive words like *baN* ‘bang’, but also conventional word-like expressions such as *yuQkuri* ‘slowly’ (romanized following Hamano 1998)¹. It has been argued that the co-occurrence of mimetics and gestures is susceptible to the degree to which the mimetic expression is integrated into the morphosyntactic structure of the utterance,

* We would like to thank the audience at JK 28 for their insightful comments.

¹ ‘N’ stands for syllable-final moraic obstruents and nasals, and ‘Q’ for the first half of a geminate cluster in mimetics.

i.e. gestures co-occur more often with mimetics in less grammatically integrated, optional, positions, as in *kabe-ni baaN-tte butukat-te* ‘smashed into a wall like *bang*’, but less with mimetics in obligatory positions, as in *me-ga paQtiri si-te-te* ‘eyes are big and bright’. Thus, there is an inverse relationship between the grammatical integration of mimetics and the co-occurrence of gestures (Dingemanse and Akita 2017).

The tight coupling of mimetics and gestures has also been noted in L2 Japanese (Iwasaki and Yoshioka 2019). However, it is not clear what motivates this among L2 speakers. Mimetics are reported to pose a challenge to L2 speakers (e.g. Nakaishi et al. 2011), and given the demanding nature of L2 production, the use of gestures in L2 may reflect a communication strategy (Gullberg 1998) whereby gestures may occur in both grammatically optional and obligatory positions, unlike in L1 Japanese. Alternatively, gestures frequently accompany mimetics because mimetics in L2 tend to occur in morphosyntactically free and optional positions. In this study, we thus examine the morphosyntactic positions where L2 mimetics occur, and the way in which mimetics and gestures are coordinated in L2 Japanese by two groups of L2 Japanese speakers with L1 Korean and L1 English.

2 Background

Some languages have a complex system of sound-symbolic expressions where the relationship between the sound and its referent is more iconic than arbitrary. As is the case with Korean, African languages (e.g. Siwu, Somali), and South and Southeast languages (e.g. Tamil, Semai), Japanese is a language with a rich repertoire of mimetic words which are used frequently in everyday communication (Akita and Tsujimura 2016).

Unlike most of the Indo-European languages² whose mimetic expressions mostly comprise sound-mimicking onomatopoeia, Japanese mimetics express such various meanings as manner of action/events (e.g. *gorogoro* ‘rolling’), internal feeling (e.g. *kuyokuyo* ‘worrying’), and perceptual sensation associated with actions (e.g. *biQkuri* ‘surprised’). In terms of their semantics, Japanese mimetic words have conventionally been classified into three groups: phonomimes for mimicking sounds, phenomimes for describing visual and tactile senses, and psychomimes for emotional psychological senses (Martin 1975). This classification has been widely adopted and used.

In comparison to their semantics, research has focused less on the syntactic aspects of mimetics, although more studies in this area have ap-

² Basque is an exception and has a vast inventory of ideophones (Ibarretxe-Antuñano 2006).

peared in the last two decades (e.g. Iwasaki et al. 2016; Toratani 2007; Tsujimura 2005; see Akita and Tsujimura 2016 for a review). One of the characteristics of Japanese mimetic words that is distinguishable from other word types is the various lexical categories in which they can appear. For instance, Tsujimura (2005) demonstrates that the psychomimetic word *iraira* ‘irritation’ can be categorized as a noun, adverb or verb, depending on the context. Although the majority of mimetics function as adverbs and are hence non-obligatory (Tamori and Schourup 1999), it is important to note that mimetics can also be obligatory if they act as verbs.

Like mimetic expressions, co-speech gestures iconically represent referents by their hand shape, size and often movement. Gestures are defined here as hand and arm movements that accompany speech which speakers are generally unconscious of (McNeill 1992). The two different modes of expression, speech and gesture, have been noted to be tightly coupled semantically and temporally (e.g. McNeill 1992 and many others). Example (1) below is an example produced by an L1 Japanese speaker³ from the current data where the utterance of the mimetic expression *pyooN* ‘spring up’ is accompanied by a gesture which depicts the direction and speed of the vertical movement.

- (1) *ikioi de* **[*pyooN-tte*** *ue ni tobu* *node*]
 force with MIM QUO above to jump so⁴
 ‘(he) jumps up with the force like pyoon, so’

left hand: held up in the upper left periphery of his body with the palm facing the interlocutor, making a C-form. The left hand is lowered as the right hand moves upward.

right hand: a C-form hand moving upward very quickly with ‘*pyooN-tte*’ and held up in the upper extreme right periphery until the end of the utterance.

According to Kita (1997), a mimetic expression is highly likely to be accompanied by gesture (94% of the utterances), more so than verbs (40% of the utterances). He also notes that the stroke phase of the gesture is likely to accurately synchronize with the mimetic. Similar gestural accompaniment of mimetic expressions is noted in other studies (e.g. Dingemans

³ In this study, ‘L1 Japanese speakers’ refers to monolingual Japanese speakers. L2 Japanese L1 English speakers are those who speak English as L1 and Japanese as L2.

⁴ Glosses for speech: ASP-aspect; CONT-contraction; CONJ-conjunction; MIM-mimetics; NOM-nominative; QUO-quotative.

Glosses for gesture: []-gesture nucleus; bold-stroke; underline-gesture hold.

and Akita 2017; Son 2010). Kita (1997) explains this phenomenon by distinguishing two mechanisms in language production: namely spatio-motoric thinking and analytical thinking. He maintains that gesture and mimetics are linked to the former, so that they tend to co-occur in language production. The other mechanism, analytical thinking, is used as the default means of organizing information in speaking. A similar dual-model approach has also been used by other linguists such as Dingemanse (2015) to explain the co-occurrence of mimetics and gesture.

In their recent work, Dingemanse and Akita (2017) show that the tight coupling between mimetics and gesture may be related to the morphosyntactic location the mimetic occupies in an utterance. As explained above, Japanese mimetics may take different morphosyntactic positions in the utterance. Based on the analysis of a corpus of Japanese TV interviews, the researchers show that the frequency of coupling has an inverse relationship with the degree of grammaticalization of mimetics. In other words, it is claimed that the more structurally integrated the mimetics are, the less likely gestures are to accompany them.

To use our data as examples, in utterance (2), the mimetic expression *paQtiri* is part of the main verb phrase. The mimetic is in an obligatory position. *Me-ga si-te-te*, without the mimetic, is not grammatical. In this sense, the mimetic expression is fully integrated into the utterance. It is claimed that this type of mimetics is less likely to be accompanied by gesture.

- (2) *me-ga paQtiri si-te-te*
 eye-NOM MIM do-CONJ-ASP.CONT.CONJ
 ‘(His) eyes are sparkling, and’

In contrast, in utterance (3), the mimetic expression *huuQ* is not in the main verb phrase. It is an optional adverb. The utterance *himo ka nanka de ton-de* is still grammatical without the mimetic. So, this mimetic is less grammatically integrated. It is claimed that gestures tend to co-occur with these types of mimetics.

- (3) *himo ka nanka de huuQ-tte ton-de*
 rope or something with MIM-CONJ jump-CONJ
 ‘(he) jumps with a rope or something’

What we address in this study is whether such an inverse relationship is also observed in L2. Research shows that mimetics are difficult to acquire or to use for L2 speakers (e.g. Nakaishi et al. 2011). However, studies also show that from intermediate proficiency levels onwards, the use of

mimetics tends to increase (e.g. Iwasaki 2017; Yoshioka 2017). When mimetics are indeed used, they are frequently accompanied by gesture (Iwasaki and Yoshioka 2019; Yoshioka 2017). However, these studies did not examine the relationship between the use of gesture and the morpho-syntactic constructions where mimetics occur.

Previous research shows that L2 speakers often use gestures as a communication strategy (e.g. Gullberg 1998). In such cases, mimetics–gesture couplings may occur in L2 irrespective of the variable optionality of mimetics in L1. Alternatively, just as in L1, mimetics–gesture couplings may occur in L2 because the mimetics appear in optional positions.

Since no study has so far examined the morphosyntactic structures that mimetics produced by L2 speakers occupy, we will examine speech and gesture together. Furthermore, the current study will use two L2 groups with different L1s, Korean and English. As stated above, unlike in English, Korean has a rich inventory of mimetics which, like Japanese, are commonly used as adverbs (Lee 2001). Research shows various similarities in their semantics, morphology and phonology (e.g. Garrigues 1995). The question is whether having a similar mimetic system in L1 affects the use of mimetics and mimetic–gesture coupling in L2.

Thus, we attempt to answer the following research questions about speech and gesture in spontaneous motion event descriptions.

- In what kind of morphosyntactic structures (i.e. obligatory or optional positions) do mimetics tend to occur in L2 Japanese?
- Are mimetics more likely to be accompanied by gestures when they occupy optional rather than obligatory positions?
- How are mimetics and gesture coordinated?
- Does having a similar mimetic system in L1 affect the performance of L2 speakers?

3 Methodology

3.1 Participants

Thirteen adult English-speaking L2 Japanese speakers (7 women and 6 men, ages 19 to 33, with mean age 22 years) residing in London (henceforth L2JL1 English) and 22 Korean speakers (14 women and 8 men, with mean age 24.7 years) residing in Seoul (henceforth L2JL1 Korean), and 8 L1 Japanese speakers who have limited to no proficiency in English and Korean participated. The L2 speakers' Japanese oral proficiency was assessed by the Oral Proficiency Interview, following the protocol of the American Council on the Teaching of Foreign Languages. The partici-

pants' proficiency ranged from Intermediate-Low to Advanced-Mid, approximately A2–B2 levels in the CEFR (Common European Framework of Reference for Languages).

3.2 Task

The participants saw four short video clips and were instructed to narrate what they saw in Japanese to a native-speaker interlocutor in one of four counter-balanced orders. The participants' narratives were all video-recorded.

3.3 Data analysis

The video-recorded narratives were first transcribed and inserted into ELAN, an annotation tool for audio and video recordings. Mimetics were coded according to their morphosyntactic position, following Dingemans and Akita (2017), and then categorized as optional or obligatory. Table 1 shows some of the constructions found in the data, with examples.

Table 1. Morphosyntactic structure of mimetics

Morphosyntactic Constructions	Examples	Optional?
Quotative	<i>kabe ni baaN-tte butukat-te</i> (he) crashes into the wall like <i>baaN</i> (crash)	Yes
Collocational	<i>doNdoN sita ni ittyai-masu</i> (he) goes down rapidly	Yes
Noun modifying verbal	<i>say sono gatagata gatagata-tte iu oto no syootai wa</i> The rattling sound ('saying <i>gatagata</i> ') was actually	Yes
Predicative 'do' verbal	<i>me-ga paQtiri si-te-te</i> the eyes are sparkling	No
Predicative 'become' verbal	<i>Sylvester-ga petyaNko ni naru kara</i> because Sylvester became flattened	No

For instance, the mimetics with a quotative *tte*, such as *kabe ni baaN-tte butukat-te* 'he crashes into the wall like *baaN*' are optional. Similarly, the mimetic in the collocation construction, where the word appears without a

quotative marker, is optional, but those in predicates using the light verb *suru* ‘do’, as in *me-ga paQtiri si-te-te* ‘the eyes are sparkling’, are in an obligatory position. These were categorized as ‘optional’ vs. ‘obligatory’.

To analyze the production of gesture, we first identified gestures whose nucleus (i.e. gesture stroke alone or with stroke-hold (Kendon 2004: 112)) accompanies the production of mimetics. Most of the hand gestures had strokes which often accompanied mimetic expressions. The two authors independently coded the presence/absence of gesture accompaniment for mimetics. The inter-rater reliability for mimetics was 100% and 93.8% for L1 English and L1 Korean groups respectively, while for verbs, it was 86.24% and 89.1% respectively. The instances of differences between the two raters were discussed in order to reach agreement.

4 Results

4.1 Analysis of mimetics

There was a total of 260 mimetics among the three groups in the data (L1 Japanese 113; L2JL1 English 53; L2JL1 Korean 94). These mimetics occurred in twelve different syntactic positions in the L1 Japanese data and eleven different positions in the L2 data. L1 Japanese speakers produced mimetics much more frequently in their narratives than the L2 speakers.

Figure 1 shows the ratio of optional (gray) to obligatory (black) mimetics in the narratives of each group.

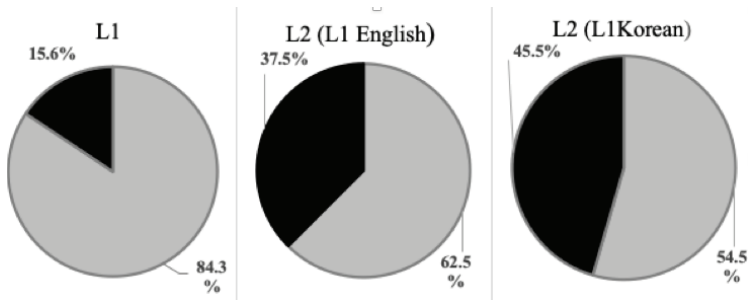


Figure 1. Optional vs. obligatory positions of mimetics in narratives in 3 groups.

Note: “L1=L1 Japanese speakers, L2 (L1English)=L2 Japanese by L1 English speakers, L2 (L1Korean)=L2 Japanese by L1 Korean speakers, black=the ratio of obligatory mimetics, gray=the ratio of optional mimetics.

The descriptive statistics show that in L1 Japanese, mimetics occurred in optional positions most of the time (84.4% vs. 15.6%). These results contrast with those of the two L2 groups, where mimetics were distributed

more equally between morphosyntactically optional and obligatory contexts: 54.5% vs. 45.5% in the L1 Korean group and 62.5% vs. 37.5% in the L1 English group. There is a slight tendency for more mimetics to occur in optional positions in L2 data as well. However, the pattern of distribution in the two L2 groups is rather different than in the L1 group.

Furthermore, on closer inspection, L1 and L2 differ in terms of the productivity of constructions used where the mimetics occur. In L1 Japanese, quotative (56.6%) and collocational positions (8.8%) account for about 65% of the mimetics produced in the optional positions. The frequent use of these constructions is in agreement with the previous findings by Dingemanse and Akita (2017). Other constructions in optional position include various forms of noun modification. Predicative constructions using ‘do’ and ‘become’ verbs and nominal complements account for most of the constructions in obligatory positions.

In L2, although quotative constructions were used, mimetics in predicate constructions were used much more productively than in L1, with the most frequently used construction being mimetics with the light verb *suru* ‘do’. Furthermore, L1 and L2 speakers differ as to how they use the *suru*-verb. In L1, the mimetics in this construction often described a state or a feature, as in (2), here again reproduced as (4).

- (4) *me-ga paQtiri si-te-te*
 eye-NOM MIM do-CONJ-ASP.CONT.CONJ
 ‘(His) eyes are sparkling’

In contrast, L2 speakers in both groups frequently used this form to describe an action, as in (5).

- (5) (*neko-ga*) *korokorokorokoro* *si-te*
 cat-NOM MIM do-CONJ
 ‘(the cat) went korokoro (lit. do-rolling), and’

Furthermore, mimetics were used as verb predicates, as in (6). This was observed more often among the L2JL1 English speakers.

- (6) *booringuzyoo made gorogoro*
 bowling alley until MIM
 ‘(he)(went) gorogoro up to the bowling alley’ (rolling)

While the two groups of L2 speakers’ mimetics in general share similarities in the way they occur in optional vs. obligatory positions, certain differences were also observed in terms of the frequency of constructions

used in optional positions. For L1 English speakers, the two most productive constructions used were holophrastic and quotative forms. Holophrastics are cases where an utterance consists of a single mimetic expression, as in (7).

- (7) *booringu jyoo e ikimasu. Phoon.*
 bowling alley to go-NONPAST MIM
 '(he) goes to the bowling alley. Phoon (sound)'

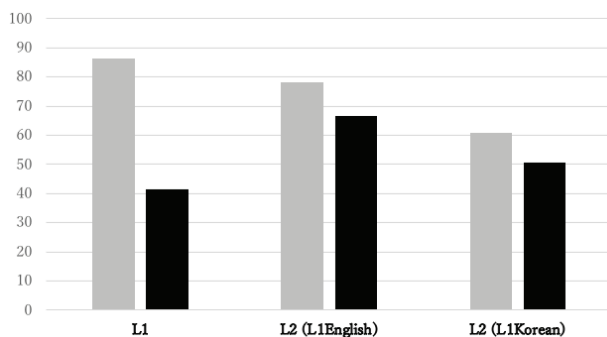
For L2JL1 Korean speakers, the two most productive constructions used for mimetics in optional positions were quotative and collocational constructions. The use of holophrastic forms was limited. In this sense, the L2JL1 Korean group is more similar to the L1 Japanese group. However, one noteworthy observation is the high frequency of the use of *zuQto*, an aspectual adverb expression of duration or progression (Kakehi et al. 1996). More than half the quotative tokens (55%) used by L2JL1 Korean speakers took the form of *zuQto*, which was used by almost half of the participants (9 out of 22). In comparison, only one speaker in the L2JL1 English group used *zuQto*. Incidentally, there was no case of *zuQto* in the L1 Japanese data. Interestingly, Korean has a similar expression *ccwuk*, which also indicates duration or progression. Furthermore, while some L2JL1 English speakers used English-like idiosyncratic sounds (e.g. *dun* or *pang*), this phenomenon was not observed in L2JL1 Korean speakers. L1 influence seems to have caused these variations between the two groups of L2 speakers.

4.2 Analysis of gesture

There was a total of 215 gestures in the entire data (L1 Japanese 96; L2JL1 English 49; L2JL1 Korean 70). Figure 2 shows the frequency with which gestures accompany mimetics in optional (gray) and obligatory (black) positions.

In all groups, mimetics in optional positions are accompanied by gesture at a relatively high rate. However, differences are also observed. Whereas, in L1, gestures accompanying mimetics in optional positions occurred much more frequently than those in obligatory positions, supporting the previous findings (86.4% vs. 41.6%), in the two L2 groups, such obvious variation is not observed, although they share a similar distribution pattern (78.3% vs. 66.6% for L2JL1 English and 60.7% vs. 50.7% for L2JL1 Korean, for optional and obligatory positions respectively).

We ran non-parametric statistical analyses of these findings.⁵ However, because of the small data sets, and importantly, because L2 speakers are characteristically variable in their performance, especially in the produc-



tion of mimetics and gesture, none of the statistical tests were significant (i.e., $p > .05$). However, the trends are self-evident.

Figure 2. Rate of gesture accompaniment in three groups

Lastly, we will briefly note some observations about the qualitative aspects of the coupling of mimetics and gesture. Gestures are coordinated with mimetics in timing and hand movements. Some qualitative variation between L1 and L2 was observed in how speech and gesture were coordinated. In L1, mimetics occurred with vowel lengthening and intonation foregrounding (e.g. *goo* ‘speed of movement’, *baN* ‘thud’), and were often accompanied by highly expressive gestures, marked by the use of wide gesture space, often extended arm(s) and two-handed sagittal or diagonal movements. In L2 gestures, hand movements (i.e. gesture stroke) generally occur in a smaller gesture space, with less arm extension than in L1 (especially in the sagittal plane). Gestures often depicted manner of motion/action expressed in mimetics, such as a rolling action, *gorogoro-site* ‘do-rolling’, or the continuation of motion whereby a hand keeps moving while accompanying mimetics such as *zuQto* ‘continue to’.

⁵ We ran Wilcoxon signed rank tests to compare the ratio of gesture co-occurrence in obligatory vs. optional contexts for each of the three language groups and Mann-Whitney tests to see whether L1 and L2 speakers differed in the gesture co-occurrence rates in obligatory vs. optional contexts. We also ran a Kruskal Wallis test to see if language (as between-subject independent variable) and obligatory/optional contexts (within-subject variable) had an effect on gesture occurrence rates.

5 Discussion

This paper set out to examine mimetic–gesture coupling in L2. We examined whether an inverse relationship between the grammatical integration of mimetics and the co-occurrence of gestures observed in L1 (Dingemans and Akita 2017) can also be found in L2. To summarize the findings, unlike in L1, where the majority of mimetics are produced in morphosyntactically optional positions, the mimetics in L2 take both morphosyntactically optional and obligatory positions. This is partially due to the frequent use of mimetics in predicate constructions. Many of these mimetics were used with a light verb *suru* ‘do’, and express (manner of) motion/action, a trend shared by the two groups of L2 Japanese speakers. At the same time, we observed that L2 Japanese speech by L1 Korean speakers contained more cases of “quasi-mimetics” such as *zuQto*, ‘continue to’ and *dondon* ‘increasingly’, adverbs which show degree, frequency or intensity with presumed mimetic origin (Tamori and Schourup, 1999).

As for gesture, L2 groups show a similar distribution pattern to that of L1 speakers, in that gestures tend to accompany mimetics in optional positions more than in obligatory positions; though, gestures in the two L2 groups also accompany mimetics in obligatory positions at a much higher rate than in L1. Hence, the difference between obligatory and optional positions was much smaller for L2. We also noted that L2 gestures seem less ‘expressive’ than their L1 counterparts, in that L1 gestures are often two-handed, with extended arms, using a relatively large gesture space in front of the speaker, whereas in L2, just about half of the gestures are two-handed. The use of gesture space was also mixed, and hand extensions were not used as often as in L1 gestures.

The findings suggest the possibility of different roles or motivations for gestures accompanying mimetics in L1 and L2. In L1, gestures accompanying mimetics might be one more means speakers use to be expressive, along with other means, such as vowel lengthening or changes in intonation. The current findings are thus in agreement with Dingemans and Akita (2017), who explain the infrequent occurrence of gestures with mimetics in obligatory positions in terms of morphosyntactic reasoning, i.e. they are more grammatically integrated. However, there seems to be a semantic reason as well. Given that the mimetics in predicates in L1 Japanese often describe states such as facial expressions, as in *me-ga paQtiri si-te-te* ‘the eyes are sparkling’ or *niyaniya site-te* ‘(he) was grinning’, they are less likely to be accompanied by gesture. However, although the number is limited, the current L1 Japanese data included mimetics with the *naru* ‘become’ verb followed not by a dative particle *ni* but by a quotative marker *te* as in *kaze-ga buwaaQ-te nat-te-te* ‘the wind went like bu-

waa (strong)’. These mimetics often capture the enhanced intensity of sound, speed and force of an action (e.g. *batiiN*, *zaaQ*, *baaN*), and were always accompanied by gesture, even when they occurred in an obligatory position. The variation in gesture accompaniment among the mimetics in an obligatory position thus suggests that there may be some other reason behind gesture marking. Further investigation is in order.

In L2, mimetics and gesture coupling may play a role as part of speakers’ attempts to be as expressive as in L1. However, the coupling may also be used strategically to compensate for the L2 speakers’ lexical shortcomings in describing some of the actions, especially when gestures accompany mimetics in morphosyntactically obligatory positions.

At the same time, these two roles are probably not categorically independent of each other. Rather, it may be more a matter of degree; some mimetics and gesture couplings are motivated more for the purpose of expressiveness, others more for strategic purposes.

In terms of the implications of the findings, especially with regard to the observation that L2 gestures are in general less overtly expressive in comparison to L1, one may wonder to what extent mimetic expressions are perceived or treated as a special category by L2 speakers. For example, when a mimetic expression is used with a light verb *suru*, as in *korokoro-site* ‘roll’ instead of a prosaic verb, *korogar-u* ‘roll’, the question is to what extent these mimetic verbs are lexicalized as ordinary words in the minds of L2 speakers. In fact, Japanese has many duplicated forms among the non-iconic prosaic words for nominal (e.g. *hitobito* ‘people’, *kuniguni* ‘countries’), adjectival and adverbial expressions (e.g. *samazama* ‘various’, *tokidoki*, ‘sometimes’) (Nasu 2015). Furthermore, there are mimetics which derived from non-mimetic words, including verbs such as *akiaki-suru* (from a verb *akiru* ‘to get bored’) or *nadenade-suru* (from a verb *naderu* ‘stroke’) (Akita 2009). Given that the line between the reduplicated prosaic words and mimetics is not easily drawn (Kwon 2017), it is plausible that some of the seemingly ‘non-L1-like’ use of mimetic verbs in L2 may be used as fully fledged lexicalized items rather than ad hoc strategic variants. We need a further detailed investigation into the relationship between mimetics and gesture, and what constitutes “mimetic expressions” for L2 speakers.

Lastly, a word on the possible influence of L1 on L2 in the use of mimetics is in order. We chose the two L2 groups with different L1s, Korean and English, to see whether (or not) having a rich inventory of mimetics in L1 affects the use of mimetics and mimetic–gesture couplings in L2. The results did show some possible L1 influence, especially in terms of the use of constructions or expressions. However, the overall trend between the two L2 groups was more similar than different (cf. Iwasaki 2017).

6 Conclusion

To conclude, it is probably safe to say that the pattern observed among the L1 speakers (i.e. the relationship between the grammaticalization of mimetics and the accompanying gesture) is to some extent observed in L2 (albeit statistically non-significant in the current data). Mimetics in syntactically optional positions are likely to be accompanied by gesture.

However, L2-specific characteristics are also observed in the use of mimetics–gesture coupling in the predicate. We discussed the possibility of the strategic use of such couplings to compensate for the L2 speakers' lack of vocabulary. We also discussed the plausibility of some of the mimetics, especially mimetic verbs not being considered a special class but established as lexicalized prosaic items in the minds of L2 speakers.

Obviously, more data are needed to test the preliminary findings that we have reported in this paper.

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Part VI

Poster Session Abstracts

How High is High Applicative in Japanese and Korean?

HIROSHI AOYAGI

The Effect of Honorific Affix on Processing of an Attachment Ambiguity

SO YOUNG LEE

Miami University

Grammatical Relation Sensitivity: Some Different Conceptions of Pre/Post-Predicative Structures

KATSUNOBU IZUTSU

Hokkaido University of Education

MITSUKO NARITA IZUTSU

Fuji Women's University

YONG-TAEK KIM

Georgia Institute of Technology

Indirect Comparison as a Last Resort by Interpretive Economy

TOSHIKO ODA

Tokyo Keizai University

The Japanese Particle *wa* Most Often Does Not Mark a Topic

DAVID Y. OSHIMA

Nagoya University

***Tte* in Complementizer Use Is a Strong Logophoric Complementizer**

FRANK SODE

Goethe University Frankfurt

AYAKA SUGAWARA

Waseda University

Decomposing the Japanese Deontic Modal *hoo ga ii*

KENTA MIZUTANI

Aichi Prefectural University

SHUN IHARA

Kobe University

Quantification into Cis: Reduplicated Indeterminate Pronouns in Japanese

KAZUYA KUDO

Ryukoku University

Korean Adverbials with Interrogative/Declarative Endings and the Speaker's Commitment

SEMOON HOE

Pusan National University

DONGSIK LIM

Hongik University

YUGYEONG PARK

Seoul National University

Apparent *de re* Construals of *de se* Anaphor in Japanese

TAKANOBU NAKAMURA

University of Edinburgh

YUSHI SUGIMOTO

University of Michigan

Root Complementizer *tte* in Japanese

YUKI ISHIHARA

Tokyo Institute of Technology

No Coordination after Movement in Japanese

HIRONOBU KASAI

On the Unavailability of Strong Resultatives in Japanese

MASASHI YAMAGUCHI

Kansai Gaidai University

Clefts, Freezing Effects, and *Wh*-movement in Japanese

YUYA NOGUCHI

University of Connecticut.

Ellipsis of Disjunction for LF-copy Analysis

SHUKI OTANI

Osaka University

**Syntactic and Post-Syntactic Verb-Raising in Korean:
Correlations Between Judgments of Negation Scope and
Verb-Stranding Ellipsis**

GWENDOLYN HILDEBRANDT

Short Passives in Japanese Dialects

HIDEYA TAKAHASHI

KENSUKA EMURA

Iwate Prefectural University

**On the Expletive Status of Copulas in Japanese and
Mandarin: A View from Answers to Narrow Focus
Questions**

SHIOHEI NAGATA

University of Tsukuba

YAMIN HU

Chengdu University of Technology

**Removing Accusative Marked Object from Verbal Root: A
Case of Motion Verb in Japanese**

YUSUKE YODA

Toyo Gakuen University

**SAYing Appositive Clause and Its Relevance to Hearsay-ish
Construction in Japanese**

KOJI SHIMAMURA