The base order of Goal and Theme in Japanese double complement unaccusatives[*]

Yu Tazaki

(Nanzan University)

Tazaki, Yu. 2025. The base order of Goal and Theme in Japanese double complement unaccusatives. *Linguistic Research* 42(3): 515-538. This study investigates the base-generated order of internal arguments in Japanese double complement unaccusative (DCU) verbs, which contain both a Goal and a Theme argument. Because of the relatively free word order of Japanese and the EPP feature on *v*, surface configurations of DCUs (Goal-Theme-V and Theme-Goal-V) do not directly reflect the base structure. To address this issue, this study examines verbal nouns that share their Root with DCU verbs to determine the base word order. Since scrambling within nominal projections is generally ungrammatical, the relative order of arguments inside verbal noun phrases provides crucial insights into the base-generated word order. The Goal-Theme order (e.g., *ofisu-e-no tegami-no toochaku* 'the letter's arrival at the office') is consistently more acceptable than its counterpart structure, Theme-Goal, suggesting that the Goal argument is base-generated in a structurally higher position than the Theme argument. To validate this conclusion, this study conducted a formal acceptability judgment experiment with 36 native speakers of Japanese who rated transitive and DCU noun phrases that varied in argument order. The results confirmed that the Goal-Theme order in DCU nouns is more acceptable than the Theme-Goal order, supporting the hypothesis that the Goal argument occupies a structurally higher position than the Theme in the base structure. These findings facilitate our syntactic understanding of unaccusative constructions in Japanese and empirically support the use of nominal structures to infer verb argument hierarchies. **(Nanzan University)**

Keywords   double complement unaccusative, verbal noun, Japanese, NP-internal scrambling, experimental syntax

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1. Introduction

Japanese is characterized by a relatively free word order, provided that the verb appears sentence-finally, as is expected in a head-final language. For instance, sentences with transitive verbs, involving both a subject and an object, can appear in Subject-Object-Verb or Object-Subject-Verb configurations. The former is canonical, whereas the latter is typically derived via scrambling, whereby the object moves to a sentence-initial position (Yoshimura 2017). Both empirical and experimental studies have extensively supported the syntactic reality of scrambling (e.g., Kuno 1973; Koizumi and Tamaoka 2004), and considerable research has examined the base-generated word orders of transitive and ditransitive constructions (e.g., Koizumi and Tamaoka 2004; Miyagawa and Tsujioka 2004). However, these studies have paid less attention to a particular class of intransitive verbs that take two internal arguments but lack an external one. These verbs are known as *double complement unaccusatives* (DCUs; Takano 2011). DCU verbs select two internal arguments assumed to be base-generated within the VP, typically marked by the particles *-ni* and *-ga*, as illustrated in example (1). However, because both the Goal-Theme-V (*-ni-ga*-V) and Theme-Goal-V (*-ga-ni*-V) surface word orders are attested in Japanese, it remains unclear which of the two reflects the underlying syntactic structure.

(1) a. Ofisu-ni   tegami-ga   todoi-ta[1]
       office-to   letter-NOM   arrive-PAST
       'The letter arrived at the office.'
    b. Tegami-ga ofisu-ni   todoita

This lack of clarity is further compounded by the EPP feature on *v* (Saito 2009). Takano (2011) states that the EPP feature on *v* may be satisfied by either the *-ni* phrase or the *-ga* phrase. As a result, the observed surface orders—whether *-ni-ga*-V or *-ga-ni*-V—may emerge independently of scrambling solely because of the EPP effect. Consequently, the surface configuration does not reliably reveal these arguments' base-generated positions.

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1   Following Takano (2011), this study adopts the analysis of the goal marker *-ni* as a postposition. While some scholars (e.g., Aoyagi 2020) have proposed that it functions as a dative case marker, the distinction is not directly relevant to this discussion. I therefore leave this issue for future research.

The current study addresses this issue by investigating the base-generated order of internal arguments in DCU constructions. Drawing on the nominal counterparts of verbs—specifically, verbal nouns that share the same Root—this study shows that scrambling within nominal projections is generally unacceptable (or dispreferred). Therefore, the relative order of arguments within such noun phrases provides a unique window into their base structure. If the Goal-Theme order consistently yields higher acceptability than the Theme-Goal order within nominal constructions, this would prove that the Goal argument occupies a structurally higher position than the Theme argument at the base level.

We tested this hypothesis by performing an acceptability judgment experiment in which native Japanese speakers rated transitive and DCU nominal constructions with different argument orders. The findings reveal a consistent preference for the Goal-Theme order in DCU noun phrases, supporting the claim that this order reflects the base structure. These results not only strengthen our syntactic understanding of unaccusative constructions in Japanese but also empirically validate the use of nominal structures as diagnostic tools for probing argument hierarchy.
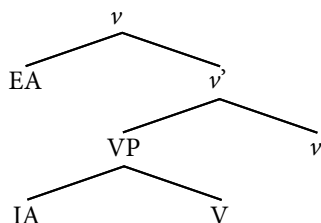
2. Double complement unaccusative verbs

Verbs are broadly classified as transitive or intransitive. Transitive verbs involve two arguments: an external one (typically an Agent) and an internal one (typically a Theme). The former is base-generated in the specifier of vP (Spec-vP), while the latter is merged as the verb's complement as illustrated in (2).[2] This structural configuration is motivated by the theta-role assignment: the Agent role is assigned by v within its projection, while the Theme role is assigned by V within the VP domain.[3]

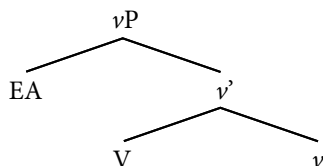2   The syntactic diagrams presented here are intended for Japanese.

3   The label "V" is used for expository convenience until the notion of *Root* is formally introduced in Section 3.

(2)

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              v
            /   \
         EA      v'
                /  \
             VP      v
            /  \
          IA    V
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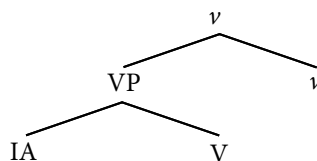
Meanwhile, intransitive verbs introduce only one argument and can be subdivided into unergatives, which have an external argument bearing the Agent role, and unaccusatives, which take an internal argument assigned a Theme role. These subclasses are semantically and syntactically distinct (Levin and Rappaport Hovav 1995). For discussions specific to unaccusativity in Japanese, see, for example, Miyagawa (1989a), Nakayama and Koizumi (1991), Tsujimura (1991), Kishimoto (1996), Fukuda (2017), and Tazaki (2025). Example (3) illustrates the structural distinction between unergative and unaccusative verbs, whose structures are shown in (3a) and (3b), respectively.

(3) a.

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           vP
          /  \
        EA    v'
             /  \
            V    v
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b.

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           v
          /  \
        VP    v
       /  \
     IA    V
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In canonical Japanese transitive constructions, the external Agent argument is marked with *-ga* (nominative), while the internal Theme argument is marked with *-o* (accusative), as in (4). Given the structural assumptions described above, transitives assume a base word order of *-ga-o*-V (Agent-Theme-Verb).[4,5] In the case of intransitives, only one argument appears—marked with *-ga*—regardless of whether

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4   In the derivation beyond *v*P, the external argument moves to Spec-TP to satisfy the EPP feature on T. However, since the focus of this paper is on base-generation positions, derivational steps beyond *v*P are not shown.

5   The term "word order" is used for expository purposes only. For instance, when stating that *-ga-o* is the base word order in transitive constructions, this should mean that the *-ga*-marked argument is base-generated in a position structurally higher than the -o-marked argument.

the verb is unergative or unaccusative, as shown in (5).

(4) Miki-ga   kareshi-o   ket-ta   (transitive)
    Miki-NOM   boyfriend-ACC   kick-PAST
    'Miki kicked her boyfriend.'

(5) a. Miki-ga   arui-ta   (unergative)
       Miki-NOM   walk-PAST
       'Miki walked.'
    b. Terebi-ga   koware-ta   (unaccusative)
       TV-NOM   break-PAST
       'The TV broke.'

Of particular interest are unaccusative verbs denoting a change of location, which are often seen with both a Theme and a Goal argument, as in (6), which shows a cooccurrence of the Theme *tegami* 'letter' and the Goal *ofisu* 'office.'[6] Following Takano (2011), we presume both arguments to be internal and base-generated within the VP. These verbs, which project two internal arguments without an external one, are called double complement unaccusative verbs (DCUs).
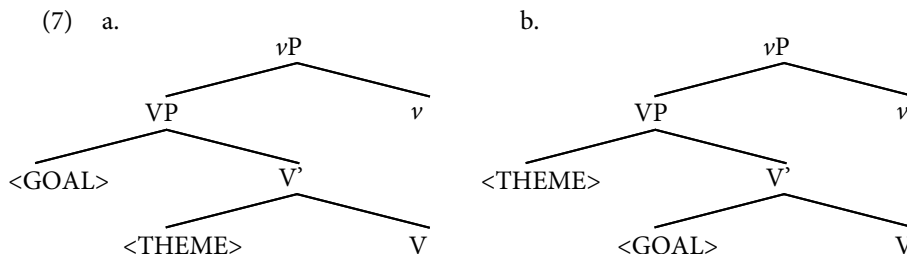
(6) a. Ofisu-ni   tegami-ga   todoi-ta
       office-to   tegami-NOM   arrive-PAST
       'The letter arrived at the office.'
    b. Tegami-ga   ofisu-ni   todoita

The central question is: What is the underlying order in which these two internal

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6   The Goal argument of double complement unaccusatives (DCUs) is an argument rather than a PP adjunct. In out-of-the-blue contexts, DCU sentences are unacceptable without a *ni*-marked Goal phrase. For example, when a DCU sentence is uttered with no prior context or an implied Goal for the entity denoted by the Theme argument, omitting the Goal phrase results in unacceptability, as shown in (i). Since arguments in Japanese cannot be omitted without context, the unacceptability of the omitted Goal phrase in DCUs indicates that the *ni*-marked Goal phrase functions as an argument (see also Ackema 2015 for a discussion of the argument–adjunct distinction).

   (i) Tegami-ga   *(ofisu-ni)   todoi-ta
        letter-NOM   office-to   arrive-PAST
        'The letter arrived at the office.'

arguments are introduced in the syntactic structure? Three logical possibilities arise: (i) Theme precedes Goal (Theme-Goal-V), as in (7a); (ii) Goal precedes Theme (Goal-Theme-V), as in (7b); and (iii) both orders are possible base structures.

(7)   a.   b.

If (i) is correct, the surface Goal-Theme-V order must be derived via movement of the Theme over the Goal. Conversely, if (ii) is correct, the derived order is Theme-Goal-V. If (iii) holds, either order may represent a base structure. (See Yatsushiro 1999 and Fukuda 2017 for related discussion) This study argues in favor of option (ii)—that the Goal is base-generated in a structurally higher position than the Theme. Section 4 discusses the empirical support for this analysis using verbal nouns and scrambling constraints. Section 5 further validates the hypothesis through an acceptability judgment experiment.

Before proceeding, we should address the syntactic subjecthood status of the arguments in DCU constructions. As is well-known, the reflexive pronoun *jibun* 'self' requires a subject antecedent. In the transitive sentence in (8), *jibun* can be coreferential with the subject *Miki* but not with the object *kareshi* 'boyfriend.' This asymmetry indicates that only the subject may serve as an antecedent for *jibun*.

(8) $Miki_i$-ga $kareshi_j$-o $jibun_{i/*j}$-no heya-de   ket-ta
    Miki-NOM   boyfriend-ACC   self-GEN   room-in   kick-PAST
    'Miki kicked her boyfriend in her/*his room.'

The question then arises: Which syntactic position confers subjecthood—Spec-*v*P or Spec-TP? Examining syntactic causative constructions, Saito (2009) argues that the subject status is assumed by the argument that satisfies the EPP feature on *v*. In the causative sentence in (9), the embedded clause is *v*P without T, yet *jibun* may

refer to either the matrix subject or the embedded dative argument, implying that whichever DP satisfies the EPP on v can function as the subject (see Saito 2009 and Takano 2011 for more detailed discussion).

(9) Miki$_i$-ga   [$_{vP}$ kareshi$_j$-ni   jibun$_{i/j}$-no   heya-de   ninzin-o
    Miki-NOM   boyfriend-DAT self-GEN   room-in   carrot-ACC
    tabe]-sase-ta
    eat-CAUSE-PAST
    'Miki made her boyfriend eat a carrot in her/his room.'

Extending this reasoning to DCUs, Takano (2011) observed that both the *-ga* (Theme) and *-ni* (Goal) arguments can antecede *jibun*, as shown in (10) and (11), indicating that either argument can satisfy the EPP on v and be interpreted as the subject.

(10) Ken$_i$-ga   jibun$_i$-no   heya-ni   modot-ta
     Ken-NOM   self-GEN   company-to   return-PAST
     'Ken returned to his room.' (Takano 2011: 234, with slight modification)

(11) Ken$_i$-ni jibun$_i$-no   saifu-ga   modot-ta
     Ken-to   self-GEN   wallet-NOM   return-PAST.
     'His wallet returned to Ken.' (Takano 2011: 234, with slight modification)

Schematically, these sentences correspond to the structures in (12).

(12) a. [$_{vP}$ Theme [$_{VP}$ Goal t V]] (= (10))
     b. [$_{vP}$ Goal [$_{VP}$ t Theme V]] (= (11))

Critically, the movement of Goal/Theme to Spec-vP in (12a) and (12b) are not scrambling because scrambled elements cannot typically serve as an antecedent of *jibun*. See the following dative subject constructions, where the subject is marked with *-ni*, whereas the object is marked with the nominative, as shown in (13).

(13) Ken-ni   jibun-ga   wakaranai   (koto)
      Ken-DAT   self-NOM   understand.not (koto)
      '(the fact that) Ken doesn't understand himself.'

                                 (Takano 2011: 238, with slight modification)

(14) *Ken-ga   jibun-ni   wakaranai   (koto)
      Ken-NOM   self-DAT   understand.not (fact)
      'Himself doesn't understand Ken.'

                                 (Takano 2011: 239, with slight modification)

In (13), the dative subject serves as the subject being an antecedent of *jibun*, and the sentence is acceptable; in (14), meanwhile, the nominative element is an antecedent of *jibun*, and the sentence is unacceptable. This is an expected contrast because the dative subject is base-generated in Spec-vP, satisfying the EPP on v (Takano 2011): in (13), the dative subject *Ken* obtains subject status in the base-generated position, while in (14), the nominative object *Ken* cannot be an antecedent of *jibun* since the dative marked element already satisfies the EPP to assume subject status. Put simply, an element scrambled to the sentence-initial position cannot function as an antecedent of *jibun*. With respect to DCUs, the movement of either the Goal or Theme argument to Spec-vP cannot be analyzed as an instance of scrambling.[7]

3. Verbal noun

As established in the previous section, DCU verbs project two internal arguments—one marked with *-ni* and the other with *-ga*—and both can satisfy the EPP feature on v. Because of the Japanese's relatively free word order and the optionality in EPP satisfaction in Japanese, determining the arguments' base-generated positions solely from verbal data remains difficult. To overcome this challenge, the present study discusses verbal nouns (VN), which are morphologically nouns but retain verbal properties such as argument structure. Crucially, many VNs can be observed in two distinct syntactic environments: as part of a nominal construction, or as the verbal

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7   I am grateful to an anonymous reviewer who brought this discussion to my attention.

component in a light verb construction (VN + *suru*). Such dual distribution allows us to compare configurations where scrambling is generally restricted (nominal contexts) with those where surface variation is more likely (verbal contexts), offering a novel window into argument structure (see Section 4).

Verbal nouns are assumed to possess their own argument structure (Grimshaw and Mester 1988; Kageyama 1993; Saito and Hoshi 2000). As shown in (15), transitive verbal nouns can take both an Agent and a Theme argument, while intransitive ones typically license only one argument. In nominal constructions, both arguments are expressed with the genitive *-no*, and are internal to the noun phrase.

(15) a. Miki-no   eigo-no   benkyoo
      Miki-GEN   English-GEN   study
      'Miki's study of English.'
  b. Miki-no   undoo
      Miki-GEN   exercise
      'Miki's exercise.'

In (15a), *Miki* is the Agent and *eigo* the Theme, both bearing the genitive case. Because genitive marking is assigned within the nominal domain, these arguments are assumed to be base-generated within the noun's projection. This study refers to these phrases as nominal constructions.

When a verbal noun is combined with the light verb *suru*, as in (16), it functions syntactically as a verb.

(16) a. Miki-ga   eigo-o   benkyoo-shi-ta
      Miki-NOM   English-ACC   study-do-PAST
      'Miki studied English.'
  b. Miki-ga   undoo-shi-ta
      Miki-NOM   exercise-do-PAST
      'Miki exercised.'

In such cases, the verbal noun's arguments appear outside the noun phrase and receive a regular structural case (*-ga*, *-o*), indicating that the VN has been verbalized via *suru*. Alternatively, the VN and *suru* can be separated, allowing the VN to surface

with the accusative case -*o*, as in (17).

(17) a. Miki-ga   eigo-no   benkyoo-o   shi-ta
      Miki-NOM   English-GEN   study   do-PAST
      'Miki studied English.'
   b. Miki-ga   undoo-o   shi-ta
      Miki-NOM   exercise-ACC   do-PAST
      'Miki exercised.'

These examples are structurally distinct from (16): in (16), the VN and *suru* form a compound verb, whereas in (17), they are separate syntactic elements (Miyamoto and Kishimoto 2016). The adverbial test in (18) supports this distinction.

(18) a. *Miki-ga   eigo-o   benkyoo   takusan   shi-ta
       Miki-NOM   English-ACC   study   a.lot   do-PAST
       'Miki studied English a lot.'
   b. Miki-ga   eigo-no   benkyoo-o   takusan   shi-ta
      Miki-NOM   English-GEN   study-ACC   a.lot   do-PAST
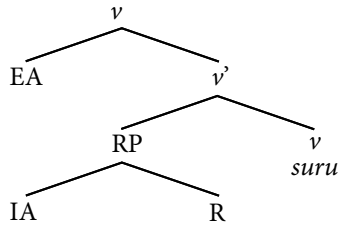   'Miki studied English a lot.'

In (18a), the adverb *takusan* 'a lot' intervenes between the VN and *suru*, disrupting the compound structure. Meanwhile, (18b) allows adverbial insertion, supporting the claim that *benkyoo-o* and *shi-ta* are syntactically independent[8]

Since the argument structure of the light verb *suru* is determined by the verbal noun attached to it, the light verb is assumed to lack an argument structure and thus requires a verbal noun that has an argument structure (Grimshaw and Mester 1988; Saito and Hoshi 2000; Sugimura 2012; but see Kishimoto 2019, 2025 for an alternative view). To explain this property, Sugimura (2012) proposed that a verbal noun's category-less Root (R) carries an argument structure, which is realized as
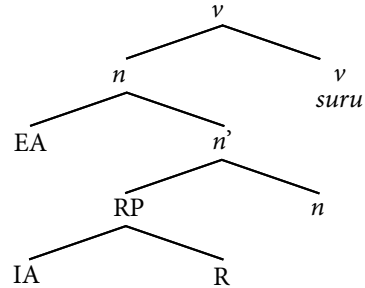
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8   Studies have proposed these two light verb constructions as a diagnostic for unaccusativity; that is, unaccusative nouns can combine with the light verb *suru* as a compound verb (e.g., *kakudai-suru* 'expand'), but cannot appear with the accusative -*o* marked on the nominal (e.g., **kakudai-o suru*). See Kageyama (1993), Miyagawa (1989b) and Tsujimura (1990a, 1990b) for detailed discussion, and Uchida and Nakayama (1993) and Kishimoto (2019) for counterarguments to this generalization.

VN-*suru* or VN-*o suru* depending on which category-defining functional head—*v* and *n*—is merged with it. When the R is merged with *v*, it is verbalized, as in *benkyo-suru* 'study,' as shown in (19a); when the R is merged with *n*, it is nominalized and subsequently marked with -*o*, as in *benkyo-o suru*, as illustrated in (19b).

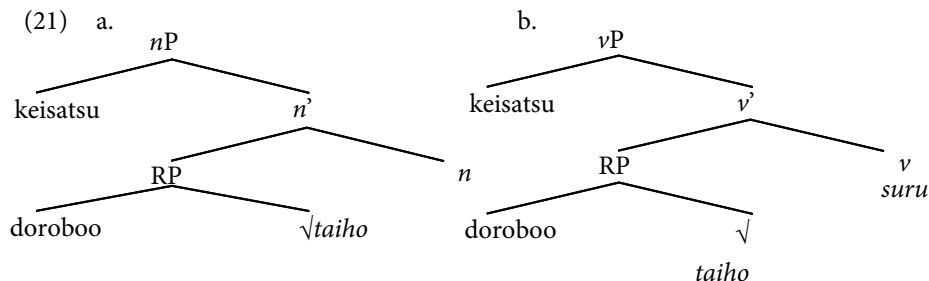(19) a.   b.

In (19a), the R selects an internal argument and then merges with the verbalizing head *v*, yielding a verbal structure. Because the R is verbalized in this configuration, it cannot obtain the accusative marker -*o*. Meanwhile, in (19b), the nominalizing head *n* first merges with the RP, rendering the R nominal. This nominal structure is then merged with *v*, resulting in a VN-*o suru* configuration. Since the R is nominal in this case, the accusative case marker -*o* is permitted.

Crucially, a verbal noun derives from the same R whether it appears in a nominal construction or as part of a light verb construction. Its categorial status is determined by the category-defining head (*n* or *v*). For example, the VN *taiho* 'arrest' appears in both environments, as shown in (20). Similar to other verbal nouns, *taiho* can be used in the nominal construction, as in (20a), and in the light verb construction, as in (20b). Although the case particle of each argument of *taiho* differs between (20a) and (20b), the R *taiho* is the same. Each syntactic structure is presented in (21)

(20) a. [*nP* Keisatsu-no   doroboo-no   taiho]-ga   hoodoo-sare-ta
           police-GEN   thief-GEN   arrest-NOM   report-PASS-PAST
         'Police's arrest of the thief was reported.'
      b. [*vP* Keisatsu-ga   doroboo-o   taiho-shi]-ta
           police-NOM   thief-ACC   arrest-do-PAST
         'Police arrested the thief.'

(21) a.   b.

*n*P   *v*P

keisatsu   *n*'   keisatsu   *v*'

RP   *n*   RP   *v*
                                                              suru

doroboo   √*taiho*   doroboo   √

taiho

Examples (20a/21a) and (20b/21b) differ only in terms of whether the √*taiho* is merged with *n* or *v*. The argument structure of *taiho* is in its lexical entry; that is, √*taiho*, but not *v* or *n*, selects both an external argument and an internal one.

4. Double complement unaccusative noun

As established in the previous section, verbal nouns (VNs) used in both nominal and verbal contexts share the same Root; therefore, the argument structure is preserved across these environments. This section shows that the arguments of a verbal noun cannot freely undergo scrambling within the NP. This restriction provides a way to determine the base positions of DCU arguments.

To illustrate this point, we first consider transitive verbal nouns. As shown in (22), these nouns host an Agent and a Theme and are both marked with the genitive particle -*no*. Although Japanese allows scrambling in clausal contexts, this flexibility is disabled within the NP (see Kishimoto 2006 for a similar observation).

(22) a. [$_{nP}$ Miki-no   eigo-no   benkyoo]
          Miki-GEN   English-GEN   study
       'Miki's study of English.'
      b. *[$_{nP}$ Eigo-no   Miki-no   t   benkyoo]

In (22b), the Theme *eigo* 'English' precedes the Agent *Miki* within the NP, reversing the canonical order and resulting in unacceptability, suggesting that the base-generated order is fixed within nominal projections and scrambling is disallowed. Thus, the word order within the NP directly reflects the underlying argument structure.

The two arguments in the transitive example in (22) are marked similarly, and

the scrambled word order, as in (22b), is unacceptable. However, when each argument is marked differently, scrambling appears possible. In (23), arguments of the verbal noun *keikoku* 'warning,' which involves an Agent, a Goal, and a Theme, undergo scrambling. The canonical order, shown in (23a), is fully acceptable, and deviations, as in (23b) and (23c), result in marginal acceptability.

(23) a. [$_{n\text{P}}$ Taro-no   murabito-e-no [ookami-ga   kuru-to]-no
               Taro-NOM villager-to-GEN wolf-NOM   come-COMP-GEN
         keikoku]
         warning
         'Taro's warning to the villagers that a wolf is coming.'
      b. ??[$_{n\text{P}}$ [Ookami-ga   kuru-to]-no   Taro-no   murabito-e-no   keikoku]
      c. ??[$_{n\text{P}}$ Murabito-e-no   Taro-no   [ookami-ga   kuru-to]-no   keikoku]

Unlike the transitive case in (22), the examples in (23) show only marginal, rather than outright unacceptability. This difference suggests that when the arguments have a distinct case marking, NP-internal scrambling is an option though dispreferred, as indicated by the degradation of (23b) and (23c). Importantly, scrambling within a nominal phrase consistently results in degraded acceptability.

The same logic can apply to DCU nouns, which take both a Theme and a Goal argument. Many such verbs are also seen in light verb constructions, confirming that their nominal counterparts retain the same argument structure. Consider (24).

(24) Ofisu-ni tegami-ga   toochaku-shi-ta
      office-to letter-NOM   arrive-do-PAST
      'The letter arrived at the office.'

Here, the verbal noun *toochaku* 'arrival' appears in a light verb construction. To determine its arguments' base word order, we can examine its nominal counterpart in both Goal-Theme and Theme-Goal configurations. Recall the three logical possibilities: (i) Goal-Theme is the base order, (ii) Theme-Goal is the base order, and (iii) both are possible base orders. See the examples in (25).

(25) a. Ofisu-e-no   tegami-no   toochaku[9]
        office-to-GEN   letter-GEN   arrival
        'The letter's arrival at the office.'
     b. ?Tegami-no   ofisu-e-no   toochaku

   Three native informants (and the author) consider the Goal-Theme order in (25a) consistently more acceptable than the Theme-Goal order in (25b). Unlike the contrast between transitive nouns with nonscrambled arguments (22a) and scrambled arguments (22b), acceptability between (25a) and (25b) is minimally different. That is, when a Theme argument precedes an Agent in transitive nominals, the phrase is entirely unacceptable, whereas when a Goal precedes a Theme, the phrase remains acceptable, though slightly degraded. Despite this smaller gap between the Goal-Theme and Theme-Goal orders in DCUs compared with the gap between the Agent-Theme and Theme-Agent orders in transitives, the degradation of the Theme-Goal order supports the hypothesis that in DCUs, the Goal is base-generated in a structurally higher position than the Theme. Crucially, because the Root is shared across nominal and verbal domains, this preference in nominal constructions suggests that the base order for DCU verbs is also Goal-Theme. The verbal noun *toochaku* and the verb *toochaku-suru* are derived from the same Root, and the argument structure projected in the NP reflects the verbal domain's syntactic structure.

   A natural question that arises at this point is why the Theme-Goal order is only marginally acceptable rather than completely unacceptable (a similar question also applies to (23)). One explanation is that scrambling within an NP is generally banned, but the distinct case marking improves the acceptability of the scrambled word order. In DCU VNs, the Goal argument bears *-e-no*, while the Theme argument takes *-no*. As opposed to transitive VNs (e.g., *Miki-no eigo-no benkyoo*), where both arguments are marked with *-no*, the morphological distinction in DCUs facilitates theta-role disambiguation, partially rescuing the scrambled order. Adopting the assumption that NP-internal scrambling is generally banned, we can attribute the degraded status of (25b) to the illicit scrambling of the Theme over the Goal within the NP.

   The (un)acceptability of (22), (23), and (25) also has an alternative explanation: scrambling within the NP is in fact grammatically available in Japanese, but since

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9   Within the NP, a Goal argument must be marked with *-e*, rather than *-ni*.

-no marks both arguments of transitive nouns, identifying which argument bears the Agent role and which bears the Theme role becomes impossible. In contrast to transitive nouns such as *benkyoo* 'study', arguments of *toochaku* 'arrival' are distinctly marked, allowing for identification of each argument's theta role. If this analysis holds, NP-internal scrambling is not banned but merely dispreferred in Japanese.

Although both accounts successfully explain the degradation of scrambled word order in nominal phrases, they share a problematic assumption that the disambiguation of the theta role assignment plays a key role in the (un)acceptability of scrambled word order. If this assumption were correct, nominal phrases such as (22b) should be acceptable because the two arguments, *Miki* and *eigo* 'English,' are easily interpreted as Agent and Theme, respectively, even without distinct marking. Contrary to this expectation, however, (22b) is entirely unacceptable. Nevertheless, I leave this issue open for future studies.

These observations suggest the possibility of scrambling inside NPs only when arguments are distinctly marked; importantly, however, even when arguments bear distinct marking, scrambled word order remains dispreferred. In sum, based on the dispreference for Theme-Goal orders within DCU noun phrases, coupled with the shared Root hypothesis, one may conclude that in both noun and verb forms, the Goal argument is base-generated in a higher position than the Theme argument.

5. An acceptability judgment experiment

The preceding section suggested that within DCU nouns, Goal-Theme is a more acceptable order than Theme-Goal, indicating that the Goal is base-generated in a structurally higher position than the Theme. However, this conclusion was drawn from a limited set of lexical items and was based on judgments by a small number of native speakers. To test this finding's generalizability and robustness, we conducted a formal acceptability judgment experiment using a larger, more diverse participant pool.

5.1 Participants

Through the Japanese crowdsourcing platform *Lancers*[10], we recruited a total of

36 native speakers of Japanese, whose ages ranged from 19 to 71 years (M = 41.8). They received ¥130 as compensation for completing the task.

5.2 Materials and procedure

The experiment followed a 2 × 2 design, crossing Verb Type (Transitive vs. DCU) with Argument Order (Canonical vs. Scrambled). Canonical orders included Agent-Theme for transitive nouns and Goal-Theme for DCU nouns, whereas scrambled orders reversed these sequences (i.e., Theme-Agent and Theme-Goal, respectively). We used a total of 12 verbal nouns: 6 transitive and 6 DCU nouns. The selected items are listed in (26).

(26) a. Transitive nouns:
        kenkyu 'research', *soosa* 'operation', *hiroo* 'performance', *hatumei* 'invention', *happyoo* 'presentation', *keikaku* 'plan'
      b. DCU nouns:
        toochaku 'arrival', *rakka* 'fall', *chakudan* 'missile landing', *toutatu* 'arrival', *idoo* 'movement', *jooshoo* 'ascent'

Within the verbal noun construction, all arguments were marked with *-no*. For each of the 12 nouns, two syntactic variants were constructed: arguments of transitive nouns in the Agent-Theme and Theme-Agent word orders, and arguments of DCU nouns in the Goal-Theme and Theme-Goal word orders. The limited number of DCU nouns prompted the instantiation of each noun in two distinct lexical contexts, resulting in 48 critical items in total (12 nouns × 2 argument orders × 2 lexicalizations). To avoid repetition and reduce participant fatigue, the 48 critical sentences were divided into two experimental lists using a Latin square design. Each participant read only one version of each item (canonical or scrambled), resulting in 24 experimental sentences per list. An example sentence involving the DCU *rakka* 'fall' is provided in (27). (The experimental materials can be accessed at OSF: https://osf.io/q3dm8/)

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10 Recent years have witnessed the widespread use of crowdsourcing services to recruit participants for psycholinguistic experiments (e.g., Asami 2024; Chaves 2025; see also Sprouse 2011).

(27) a. Goal-Theme

    Chikyu-e-no   in'seki-no   rakka-ga   ishikawaken-de

    earth-GEN   meteorite-GEN   fall-NOM   Ishikawa.Prefecture-in

    kansoku-sare-ta

    observe-PASS-PAST

    'The meteorite's fall to Earth was observed in Ishikawa Prefecture.'

   b. Theme-Goal

    In'seki-no   chikyu-e-no   rakka-ga   ishikawaken-de   kansoku-sare-ta

In addition, 48 filler sentences with different levels of acceptability were included, yielding a total of 72 sentences per list, presented in pseudo-randomized order. The participants rated each sentence's naturalness on a 7-point scale (1 = unnatural, 7 = natural) and underwent four practice trials before the main task to familiarize themselves with the rating procedure.

5.3 Results

One participant was excluded from analysis for noncompliance because they were not a native speaker of Japanese. To control for individual differences in scale use, raw acceptability scores were standardized (z-scored) within each participant before the analysis. The experiment crossed two factors—Verb Type (Transitive vs. DCU) and Argument Order (Agent-Theme/Goal-Theme vs. Theme-Agent/Theme-Goal)— resulting in four experimental conditions: transitive:Agent-Theme, transitive:Theme-Agent, DCU:Goal-Theme, and DCU:Theme-Goal. Verb Type and Argument Order were combined to create a new factor variable, Condition. A linear mixed-effect model was implemented with Condition as a fixed factor and Participant and Item as random intercepts.

    Table 1 shows the mean raw scores and standard deviations for each condition. Descriptive statistics revealed clear patterns. For transitive nouns, the Agent-Theme order received high acceptability ratings, whereas the Theme-Agent order was rated much lower. For DCU nouns, both Goal-Theme and Theme-Goal received mean scores above 4, indicating general acceptability; however, Goal-Theme was consistently rated higher than Theme-Goal, suggesting a structural preference. Figure 1 illustrates these

trends, presenting the mean z-scores for each of the four experimental conditions and highlighting a substantial drop in acceptability for the scrambled transitive condition (Theme-Agent) and a moderate decline for the scrambled DCU condition (Theme-Goal), relative to their canonical counterparts.

Table 1. Mean scores and standard deviations

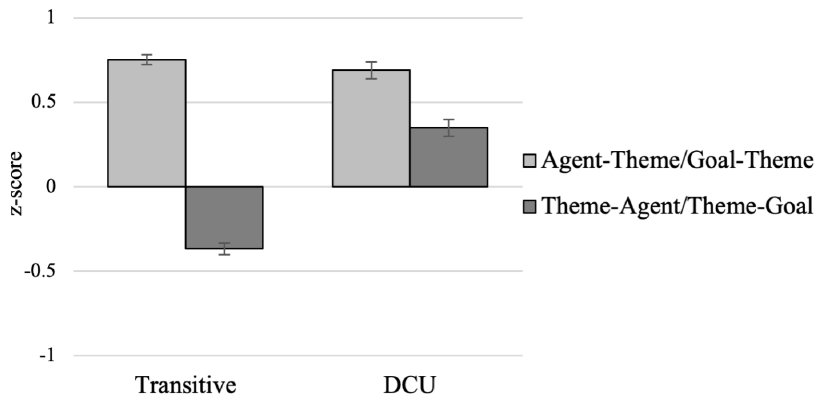| Verb Type	Argument Order	Mean (SD)
Transitive	Agent-Theme	6.22 (1.01)
	Theme-Agent	3.76 (1.76)
DCU	Goal-Theme	6.07 (1.19)
	Theme-Goal	5.32 (1.71)

Figure 1. Mean z-scores and error bars

The linear mixed-effects model revealed that Condition had a significant effect on standardized ratings. Table 2 presents the fixed effect estimates from the model. Ratings of transitive nouns in the Theme-Agent condition and DCU nouns in the Theme-Goal condition were significantly lower than those of DCU nouns in the Goal-Theme condition, whereas ratings for transitive nouns in the Agent-Theme condition and DCU nouns in the Goal-Theme condition did not show a significant difference. These results were validated by pairwise comparisons with Tukey adjustments. Transitives in the Theme-Agent condition were rated significantly lower than all other conditions ($p < .001$), while DCU nouns in the Goal-Theme condition were rated significantly higher than those in the Theme-Goal condition ($p < .0001$).

No significant differences were observed between DCU nouns in the Goal-Theme condition and transitive nouns in the Agent-Theme condition (p = .9319).

Table 2. Fixed effects from the linear mixed-effects model

Condition	Estimate	SE	t value	p value
(Intercept)	0.753	0.078	9.642	< .0001 ***
Tran.: Agent-Theme	0.063	0.161	-0.595	.562
Tran.: Theme-Agent	–1.121	0.161	–19.727	< .0001 ***
DCU: Theme-Goal	–0.403	0.073	–3.804	< .002 **

Note. SE = standard error. ** p < .01. *** p < .0001.

To further determine whether the word order effect differs across verb types, separate models were also fitted for transitive and DCU nouns. Transitives in the Agent-Theme condition were accepted more frequently than those in the Theme-Agent condition (β = 1.12, SE = 0.057, $t(379)$ = 19.76, p < .0001). Similarly, DCU nouns in the Goal-Theme condition received significantly higher ratings than those in the Theme-Goal condition (β = 0.34, SE = 0.055, $t(379)$ = 6.23, p < .0001).

Overall, Japanese speakers easily accept the Agent-Theme order in transitive nouns and the Goal-Theme order in DCU nouns and easily reject the Theme-Agent order in transitive nouns but tend to evaluate the Theme-Goal order in DCU nouns as less acceptable than their Goal-Theme counterparts. These findings demonstrate that scrambling an element inside a nominal projection when elements inside such projection are similarly marked makes for an ungrammatical construction; however, when NPs are marked differently, acceptability becomes limited because of the disambiguation of theta roles.[11] Most importantly, these results provide robust empirical support for the claim that the two arguments of DCU nouns are

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11 As an anonymous reviewer also noted, this experiment has an alternative interpretation: Although both Goal-Theme and Theme-Goal word orders are possible in Japanese, the former is preferred for some reason (see Section 6 for further discussion). I cannot definitively determine whether this interpretation is correct, but I propose several experimental methods that may address this issue. Recently, reaction-time experiments have been widely conducted to investigate base word order (e.g., Koizumi and Tamaoka 2004, 2006; 2010; Tamaoka et al. 2005; Imamura et al. 2016; Asami 2024; see also Koizumi 2015, 2023). These experiments are based on the assumption that sentences involving scrambling incur a higher processing cost, reflected in longer reaction (reading) times, than those without it. Simply put, scrambled word orders require more processing time than nonscrambled ones. Applying this methodology to DCU nouns will allow us to determine which word order—Goal-Theme or Theme-Goal—is canonical.

hierarchically ordered, with the Goal argument occupying a structurally higher position than the Theme argument.
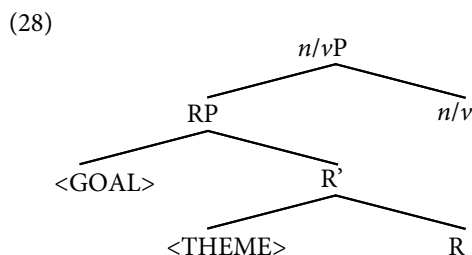

6. Discussion and conclusion

This study investigated the base-generated order of arguments in Japanese DCUs—a class of unaccusative verbs with both a Goal and a Theme. Given the flexibility of surface word order in Japanese and either argument's optional satisfaction of the EPP feature on *v*, verbal data alone do not provide sufficient evidence for identifying the underlying syntactic structure of DCUs. To address this issue, we examined nominal constructions derived from verbal nouns sharing the same Root as their verbal counterparts. Because of the general dispreference for scrambling within nominal projections, the argument order observed in these constructions functions as a diagnostic for base-generated structure. Our key hypothesis was that if the Goal-Theme order is systematically more acceptable than the Theme-Goal order within the noun phrase, the Goal is considered to be base-generated in a higher structural position than the Theme.

This hypothesis was supported on two fronts. First, native speakers consistently favored the Goal-Theme order in DCU noun phrases over the Theme-Goal order, which they judged as degraded but not entirely unacceptable. Second, the results of a formal acceptability judgment experiment confirmed that DCU nouns display a preference for the Goal-Theme configuration, which parallels the strong preference for Agent-Theme observed in transitive nominal constructions.

As an anonymous reviewer also questions, one might wonder how we can conclude that the Goal-Theme order represents the base word order if scrambling is allowed within an NP (if we adopt the alternative premise that NP-internal scrambling is not grammatically allowed, this question does not arise). As discussed in Section 4, the possibility of scrambling inside an NP is explained by two competing assumptions. If we adopt the view that scrambling is permitted, then both the Goal-Theme and Theme-Goal orders could be base-generated, with a certain independent factor rendering the Goal-Theme order preferable to Japanese speakers. However, it is difficult, if not impossible, to determine why the Goal-Theme order would be preferred, or why this mere preference would result in higher acceptability than the

Theme-Goal order.[12] Meanwhile, if we assume that the Goal-Theme order is the nonscrambled order and the Theme-Goal order is the scrambled one, the difference in acceptability can be reasonably attributed to the presence or absence of scrambling: that, is, scrambled phrases impose a higher processing cost than nonscrambled phrases (Koizumi and Tamaoka 2010; Koizumi 2015, 2023), degrading the acceptability of DCU nominals with a Theme-Goal order. Simply put, the Goal-Theme order incurs a lower processing cost than the Theme-Goal order, and this difference in processing load explains its higher acceptability.

The current findings strongly suggest that the base order of arguments in DCUs is Goal-Theme, as illustrated in (28).

(28)

n/vP
├── RP
│   ├── \<GOAL\>
│   └── R'
│   ├── \<THEME\>
│   └── R
└── n/v

This conclusion is supported by the theoretical assumption that verbal nouns and their corresponding verbs share the same Root and thus project the same argument structure. The restriction against NP-internal scrambling guarantees that nominal data would provide a more transparent view of syntactic hierarchy than their verbal counterparts.

Based on these results, we propose that the derivation of DCU verbs involves the base-generation of the Theme lower than the Goal. Either argument may subsequently raise to Spec-vP to satisfy the EPP feature, causing surface variation between the Goal-Theme-V and Theme-Goal-V word orders. This explains the possibility of both configurations in actual usage despite only one reflecting the underlying structure.

The present findings strengthen our syntactic understanding of unaccusativity in

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12 This may be explained by frequency. If the Goal-Theme word order in DCU nominals occurs more frequently in the input, it may become the preferred order, resulting in higher acceptability (Goodall 2021).

Japanese by demonstrating that nominal diagnostics can empirically capture argument order asymmetries. More broadly, this study methodologically supports the use of verbal noun constructions to infer argument hierarchy, particularly in languages such as Japanese where surface order is often obscured by scrambling.

Nevertheless, several important questions remain unaddressed. Why does Japanese DCU syntax prefer the Goal-Theme order in the first place? Is this order cross-linguistically stable? How do language learners—especially children whose first language is Japanese—develop sensitivity to this structure? Is the constraint on NP-internal scrambling innate or acquired? These issues are beyond the scope of this study but offer fertile ground for future research.

References

Ackema, Peter. 2015. Arguments and adjuncts. In Tibor Kiss and Artemis Alexiadou (eds.), *Syntax–theory and analysis: An international handbook*, 246-273. Berlin; Boston: De Gruyter Mouton.

Aoyagi, Hiroshi. 2020. On the peculiar nature of double complement unaccusatives in Japanese. *Journal of Japanese Linguistics* 36(1): 75-119.

Asami, Daiki. 2024. Deriving and processing experiencer subject causatives. *Glossa: a journal of general linguistics* 9(1): 1-57.

Chaves, Rui P. 2025. Exploring reward effects in experimental syntax. *Linguistic Research* 42(1): 1-30.

Fukuda, Shin. 2017. Split intransitivity in Japanese is syntactic: Evidence for the Unaccusative Hypothesis from sentence acceptability and truth value judgment experiments. *Glossa: a journal of general linguistics* 2(1): 1-41.

Goodall, Grant. 2021. Sentence acceptability experiments: What, how, and why. In Grant Goodall (ed.), *The Cambridge handbooks of experimental syntax*, 7-38. Cambridge, MA: Cambridge University Press.

Grimshaw, Jane and Armin Mester. 1988. Light verbs and θ-marking. *Linguistic Inquiry* 19(2): 205-232.

Imamura, Satoshi, Yohei Sato, and Masatoshi Koizumi. 2016. The processing cost of scrambling and topicalization in Japanese. *Frontiers in Psychology* 7: 531.

Kageyama, Taro. 1993. *Bunpō to gokeisei* [*Grammar and word formation*]. Kasukabe: Hitsuji.

Kishimoto, Hideki. 1996. Split intransitivity in Japanese and the unaccusative hypothesis. *Language* 72(2): 248-286.

Kishimoto, Hideki. 2006. Japanese syntactic nominalization and VP-internal syntax. *Lingua*

116(6): 771-810.

Kishimoto, Hideki. 2019. Keidoushikōbun ni okeru imiyakuwarihuyo no mekanizumu [The mechanism of theta role assignment in the light verb construction]. In Hideki Kishimoto (ed.), *Rekishikon no gendairiron to sono ouyō*, 99-126. Tokyo: Kuroshio.

Kishimoto, Hideki. 2025. On the light verb. In Anna Riccio and Jenes Fleischhauer (eds.), *Light verbs: Synchronic and diachronic studies*, 233-276. Berlin; Boston: Walter de Gruyter.

Koizumi, Masatoshi. 2015. Experimental syntax: Word order in sentence processing. In Mineharu Nakayama (ed.), *Handbook of Japanese Psycholinguistics*, 387-421. Berlin; Boston: De Gruyter Mouton.

Koizumi, Masatoshi. 2023, *Constituent order in language and thought: A case study in field-based psycholinguistics.* Cambridge, MA: Cambridge University Press.

Koizumi, Masatoshi and Katsuo Tamaoka. 2004. Cognitive processing of Japanese sentences with ditransitive verbs. *Gengo Kenkyu* 125: 173-190.

Koizumi, Masatoshi and Katsuo Tamaoka 2010. Psycholinguistic evidence for the VP-internal subject position in Japanese. *Linguistic Inquiry* 41(4): 663-680.

Kuno, Susumu. 1973. *The structure of the Japanese language.* Cambridge, MA: MIT Press.

Levin Beth and Malka Rappaport Hovav. 1995. *Unaccusativity: At the syntax-lexical semantics interface.* Cambridge, MA: MIT Press.

Miyagawa, Shigeru. 1989a. *Structure and Case Marking in Japanese.* New York: Academic Press.

Miyagawa, Shigeru. 1989b. Light verbs and the ergative hypothesis. *Linguistic Inquiry* 20(4): 659-668.

Miyagawa, Shigeru and Takae Tsujioka. 2004. Argument structure and ditransitive verbs in Japanese. *Journal of East Asian Linguistics* 13(1): 1-38.

Miyamoto, Tadao and Hideki Kishimoto. 2016. 12. Light verb constructions with verbal nouns. In Taro Kageyama and Hideki Kishimoto (eds.), *Handbook of Japanese Lexicon and Word Formation*, 425-458. Berlin; Boston: De Gruyter Mouton.

Nakayama, Mineharu and Masatoshi Koizumi. 1991. Remarks on Japanese subjects. *Lingua* 85(4): 303-319.

Saito, Mamoru. 2009. Optional A-scrambling. In Yukinori Takubo, Tomohide Kinuhata, Szymon Grzelak and Kayo Naga (eds.). *Japanese/Korean linguistics* 16, 44-63. Stanford, CA: CSLI Publications.

Saito, Mamoru and Hiroto Hoshi. 2000. The Japanese light verb construction and the minimalist program. In Roger Martin, David Michaels, and Juan Uriagereka (eds.), *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*, 261-295. Cambridge, MA: MIT Press.

Sprouse, Jon. 2011. A validation of Amazon Mechanical Turk for the collection of acceptability judgments in linguistic theory. *Behavior Research Methods* 43: 155-167.

Sugimura, Mina. 2012. Root vs. *n*: A study of Japanese light verb construction and its implications for nominal architecture. *Proceedings of ConSOLE*: 289-298.

Takano, Yuji. 2011. Double complement unaccusatives in Japanese: Puzzles and implications.

Journal of East Asian Linguistics 20: 229-254.

Tamaoka, Katsuo, Hiromu Sakai, Jun-ichiro Kawahara, Yayoi Miyaoka, Hyunjung Lim, and Masatoshi Koizumi. 2005. Priority information used for the processing of Japanese sentences: Thematic roles, case particles or grammatical functions? *Journal of Psycholinguistic Research* 34: 281-332.

Tamaoka, Katsuo and Masatoshi Koizumi. 2006. Issues on the scrambling effects in the processing of Japanese sentences: Reply to Miyamoto and Nakamura (2005) regarding the experimental study by Koizumi and Tamaoka (2004). *Gengo Kenkyu* 126: 181-226.

Tazaki, Yu. 2025. Lexical semantic approach to the unaccusative mismatch in Japanese. *Buckeye East Asian Linguistics* 10: 61-77.

Tsujimura, Natsuko. 1990a. Ergativity of nouns and case assignment. *Linguistic Inquiry* 21(2): 277-287.

Tsujimura, Natsuko. 1990b. Unaccusativity hypothesis and noun classification. *Linguistics* 28(5): 927-957.

Tsujimura, Natsuko. 1991. On the semantic properties of unaccusativity. *Journal of Japanese Linguistics* 13(1): 91-116.

Uchida, Yoshiko and Mineharu Nakayama. 1993. Japanese verbal noun constructions, *Linguistics* 31(4): 623-666.

Yatsushiro, Kazuko. 1999. *Case licensing and VP structure*. PhD Dissertation. University of Connecticut.

Yoshimura, Noriko. 2017. Scrambling. In Masayoshi Shibatani, Shigeru Miyagawa, and Hisashi Noda (eds.), *Handbook of Japanese syntax*, 807-844. Berlin; Boston: De Gruyter Mouton.

Yu Tazaki
Graduate Student
Linguistic Science
Nanzan University
18 Yamazato-cho, Showa-ku,
Nagoya 466-8673 Japan
E-mail: m24hl703@m.nanzan-u.ac.jp