Japanese benefactive passives are difficult to comprehend than benefactive actives

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Abstract

This study investigates whether passives are more cognitively demanding to comprehend than actives in SOV languages, specifically written Japanese, using V-*te morau* benefactive passive. We conducted a self-paced reading (SPR) experiment to compare the reading time between V-*te morau* benefactive passive and its counterpart V-*te ageru* benefactive active, controlling the morphological complexity. Following each SPR trial, we also administered a comprehension question task using either the normal active V-∅ or V-(*r*)*are* passive. A difference in reading time between V-*te morau* passive and V-*te ageru* active was not statistically supported. However, accuracy in the comprehension questions targeting V-*te morau* was lower than those targeting V-*te ageru*. This indicates that the more cognitively demanding process is due to the mapping of patient to grammatical subject in passives, not morphological complexity. Moreover, accuracy in the comprehension question targeting V-*te morau* passives was enhanced by questions using V-(*r*)*are* passives. This is an empirical evidence for the primability and commonality of these different passive constructions.

In European SVO languages, the cognitive load required for the processing of passives, as measured by reading times and accuracy to comprehension questions, was the same as or less than that for the active. (Paolazzi et al., 2016; Paolazzi et al., 2017; Paolazzi et al., 2019, in English; Grillo et al., 2019, in German). On the other hand, the results of experiments using Japanese V-(*r*)*are* passive suggest that passives can create a processing difficulty (Tamaoka et al., 2005; Kinno et al., 2008; Tanaka et al., 2017). However, previous research on Japanese passives did not measure reading time, impeding direct cross-linguistic comparisons of reading time and comprehension accuracy. Moreover, these studies used a pair of constructions in which the passive verb chunk is not only syntactically but also morphologically more complex than the active verb chunk.

We conducted an experiment to compare reading times between V-*te morau* benefactive passive and its counterpart, V-*te ageru* benefactive active, controlling the morphological complexity. In this experiment, participants read sentences chunk by chunk at their own pace (i.e. a self-paced reading [SPR] task) targeting either of those two benefactive constructions, and then completed a comprehension question task using either the normal active V-∅ or V-(*r*)*are* passive.

No evidence was found to support the hypothesis that the reading time needed for V-*te morau* benefactive passives was different from the time needed for their counterpart V-*te ageru* benefactive actives. Nonetheless, accuracy in the comprehension question targeting V-*te morau* benefactive passives was drastically enhanced when the question itself used V-(*r*)*are* passive. This indicates the primability of patient-like beneficiaries and normal patients and implies that they may compose of a broad patientive macrorole.

Section 1 outlines the definition of 'passive' and how passive is expressed in Japanese using V-*te morau* and V-(*r*)*are* constructions. Section 2 reviews experimental results in English, German, and Japanese that measured processing difficulties in passives. Section 3 justifies the comparison of V-*te morau* passive and V-*te ageru* active, not V-(*r*)*are* passive and V-∅ active. Section 4 reports the methodology and results of our SPR experiment. A discussion follows in Section 5.

1 Definition of passive diathesis and voice and Japanese passive voices

In this article, the term 'diathesis' refers to the assignment of thematic roles to grammatical relations, and the term 'voice' refers to the verbal marking used to represent a certain diathesis, adopting Zúñiga and Kittilä's (2019) definition. According to these researchers, 'passive diathesis' the diathesis that maps a thematic patient

The glossing abbreviations in this article follow Leipzig Glossing Rules (Department of Linguistics of Max Planck Institute for Evolutionary Anthropology, 2008, last accessed on July 15, 2022), Brown and Anderson (2006), and Zúñiga and Kittilä (2019), except INFR. -: affix boundary / =: clitic boundary / ABL: ablative / ACC: accusative / ADV: adverb / BEN: benefactive / CVB: converb / DAT: dative / GEN: genitive / INTR: intransitive / INFR: inferential mood / MAL: malefactive / N-: non- (e.g. NPST nonpast) / NOM: nominative / PASS: passive / POL: polite register / POSS: possessive / PST: past / PTCP: participle / PRS: present / Q: question particle / SUNUCL: subjective undergoer nucleative role to a syntactic subject and demotes the agent role to an optional adjunct or oblique. 'Passive voice' is defined as a marker on a verb that indicates a passive diathesis. A marking style is synthetical if a morpheme is used to indicate passive; and it is analytical if passive is indicated by a construction that combines a non-finite form of a verb to convey the main lexical content and a functional auxiliary verb (Zúñiga and Kittilä, 2019). These definitions indicate that V-*te morau* is an analytical passive construction. Moreover, these definitions distinguish passive constructions using V-(*r*)*are* and V-*te morau*, from other constructions that use the same forms. The following discussion introduces the passive voice using V-(*r*)*are* and V-*te morau* in the passive diathesis, which is the main focus of the current study. Whilst V-(*r*)*are* and V-*te morau* voice are employed in non-passive diathesis, they are beyond the scope of this study. Refer to Appendix A. for further details on these usages.

The passive morpheme -(*r*)*are* following a main verb (*home*- 'to praise') synthetically marks the passive voice, as demonstrated in (1a). A patient (i.e. Mochizuki, the praisee of the praising event) is expressed by a nominative-marked subject and an agent (i.e. Kamimura, a praiser) by a dative-marked oblique. The agent is demoted from core argument status in the passive (1a), compared to in its active counterpart (1b), where the agent is a nominative-marked subject and a patient is an accusative-marked object.

(1) a. V-(*r*)*are* passive
Mochizuki=ga Kamimura=ni home-**rare**-*ta.*
M.=NOM K.=DAT praise-PASS-PST
'Mochizuki was praised by Kamimura.'

b. V-∅ active
Kamimura=ga Mochizuki=o home-ta.
K.=NOM M.=ACC praise-PST
'Kamimura praised Mochizuki.'

V-*te morau*, as shown in (2a), is another passive construction according to the above definitions. A main verb in non-finite form with the converb -*te* and the auxiliary verb *morau* compose a verbal chunk and analytically signal passive voice. Since the auxiliary verb *morau* originates from a receiving verb, V-*te morau* can be an example of what Keenan and Dryer (2007, pp337–338) called a 'periphrastic passive' whose 'passive auxiliary is a verb of reception'.

V-*te morau* has its active counterpart V-*te ageru*, as shown in (2b). Active voice in V-*te ageru* is indicated by a main verb in non-finite form with the converb -*te* and the auxiliary verb *ageru*, which originates from a giving verb.

(2) a. V-*te morau* benefactive passive
Mochizuki=ga Kamimura=ni home-**te** **morat**-*ta.*
M.=NOM K.=DAT praise-CVB BEN.PASS-PST
'Mochizuki was praised by Kamimura.'

b. V-*te ageru* benefactive active
Kamimura=ga Mochizuki=o home-te age-ta.
K.=NOM M.=ACC praise-CVB BEN.ACT-PST
'Kamimura praised Mochizuki.'

V-(*r*)*are* and V-*te morau* have similarities in the correspondences of semantic roles and grammatical function, especially when 1. the main verb denotes an event where one person acts on the other, such as praising and supporting events, and 2. the constructions only describe the event participants that are directly involved in that event (i.e. only agentive and patientive participants). In both constructions, the subject is assigned to the patient NP, which denotes an event participant who does not initiate the event (Hayatsu, 2020a,b). For instance, both addressers of (2a) and (1a) describe the event from the patient's perspective (i.e. not *who praised whom* but *who was praised by whom* in the event).

Despite their similarity, V-(*r*)*are* and V-*te morau* also differ in several ways. The most evident difference is that only V-*te morau* expresses the assumptions of the addresser that 1. an event induced by the agent benefits the patient or undergoer denoted by a sentential subject and that 2. the referent owes the same benefit to the agent (Takami and Kuno, 2002). For instance, an addresser use (2a), not (1a), when the addresser assumes that the patient of an event (e.g. a praising event) receives some sort of benefit from the event.

In typology, the beneficiary in benefactive constructions has been distinguished from patient, since beneficiaries are often coded differently from patients, especially using the oblique. Furthermore, the beneficiary is usually indirectly affected by the results of an event while the patient is directly affected (Kittilä and Zúñiga, 2010). However, in V-*te morau* constructions whose bivalent main verb denotes a human-to-human action, as shown in (2a), the beneficiary in the subject position is also a patient. The beneficiary in (2a), Mochizuki, is directly affected by the praising event, and is marked by nominative =*ga* in the same way as the patient in (1a).

2 Are passives more difficult to comprehend than actives?

2.1 Processing difficulty of passives found in European languages

Paolazzi and colleagues (2016; 2017; 2019) conducted SPR experiments in English and argued that the reading time necessary for the verb and post-verb regions in passives was shorter than or the same as that which was necessary for actives. They suggested that the auxiliary verb *be* and the preposition *by* in the passives contribute to readers' prediction of the (post-)verb region. For instance, the input of the sentence-initial NP in actives triggers various predictions about the upcoming elements, as different elements other than a verb can also follow that NP. Therefore, this makes it relatively less likely to predict whether a verb will immediately follow the sentence-initial NP. Conversely, in passives, the input of the auxiliary verb *be* makes it more predictable that a verb (in past participle form) will follow *be*. Thus, Paolazzi et al (2019; 2021) claim that elements preceding the verb region elevate predictability for verbs in passives compared to in actives, leading to shorter reading times for verbs in passives than in actives. They also argued that a non-subject NP might be more predictable in passives than in actives, which resulted in faster reading times for the post-verb region in passives, since the combination of a verb and the preposition *by* in passives signalled a non-subject NP, whilst in actives only the verb is available for such a prediction.

Paolazzi et al. (2021) also emphasised that the processing difficulties for passives arises during comprehension questions in active voice targeting thematic roles (i.e. questions asking *who* did something to *whom*). They also argued that processing difficulties for passives hardly occurs during the reading process itself. Similar results were also found in German (Grillo et al., 2019; Meng and Bader, 2020). Paolazzi et al. (2021) also showed that participants responded less accurately to comprehension questions in active voice asking about thematic relations after they read passive targets.

2.2 Previous findings on the processing load for Japanese V-(*r*)*are* passives compared to V-∅ actives

Experimental results in Japanese also suggest that passives have a higher processing load than actives. In particular, several studies have suggested that passives make sentence comprehension (Tamaoka et al., 2005) and syntactic processing (Kinno et al., 2008; Tanaka et al., 2017) more difficult than actives, and that passive verbs put a greater load on morphological processing than active verbs (Yokoyama et al., 2006).

2.2.1 Behavioural response study using a correct sentence decision task

Tamaoka et al. (2005) presented various constructions —including actives and passives in the canonical order (subject-to-non-subject) and scrambled order (non-subject-to-subject)—to participants and had them perform a correct sentence decision task, asking them to judge whether each sentence made sense. Their results indicate that in both scrambled and canonical conditions, the reaction times for passives were noticeably longer than for actives, even though the error rates of both constructions were comparable, and suggest that human parsers encounter more processing difficulties with passives than actives.

Nonetheless, further evidence is called for to confirm whether Japanese passives are in fact more cognitively demanding than actives. It is necessary 1. to directly compare actives and passives, both in accuracy and reading time, and 2. to elaborate the task to measure the processing load of passives. Since Tamaoka et al. (2005) used ungrammatical or implausible sentences for the targets, the processing load measured in the task might only reflect that general syntactico-semantic anomalies are less detectable in passives. Therefore, a different experiment is required to detect the cognitive load specific to passives.

2.2.2 fMRI studies

Kinno et al. (2008) and Tanaka et al. (2017) conducted a picture-sentence matching task to capture the differences in brain activation elicited by Japanese V-∅ actives and V-(*r*)are passives, using functional magnetic resonance imaging (fMRI) and the reaction times. In a trial, they showed participants a picture depicting one of two stick figures acting on the other (e.g. to push) along with a written sentence. Participants were asked to judge whether the sentence correctly described the picture. The sentence described the picture either accurately or inaccurately by reversing the agent and patient. They found that passives induced more brain activation than actives. This neural activation tendency was statistically significant in Kinno et al. (2008), who concluded that this activation was due to the syntactic reanalysis required to comprehend that the patient was expressed by a nominative =*ga*-marked NP in passives.

However, processing difficulty in passive syntactic structures may not be the only factor that activates the left inferior frontal gyrus. Yokoyama et al. (2006) observed a similar activation pattern in a lexical decision task meant primarily to compare the cognitive demands of uninflected (i.e. morphologically unmarked) V-∅ active verbs and inflected (i.e. morphologically marked) V-(*r*)*are* passive verbs in Japanese. They concluded that the activation difference reflected that inflectionally unmarked active verbs are processed as a single word, whilst inflectionally marked passive verbs further require inflectional processing that decomposes them into morphological units. Therefore, it remains unclear whether this kind of neural activity reflects the cognitive load necessary for the processing of the diathesis (sentence level; whether a subject or object/oblique expresses the agent or patient) or the voice (verb chunk level; the verb form used to express the diathesis).

3 At what stage are Japanese passives difficult to understand?

So far, comprehension studies of Japanese sentence and verbal morpheme have demonstrated that reaction times to comprehension questions for V-(*r*)*are* passive sentences and verbs were longer than for their active counterparts V-∅, although the accuracy for passives had different results in the studies (Tamaoka et al., 2005; Kinno et al., 2008; Tanaka et al., 2017; Yokoyama et al., 2006). One question that remains unsolved is which phrases/parts in Japanese passives are more difficult for human parsers to comprehend, compared to their active counterparts. The current study aims to detect which parts of passive constructions demand greater cognitive loads from the human parsing system, by using a moving window self-paced reading (SPR) task. To minimise the impact of the morphological differences between active and passive voice found in V-(*r*)*are* passive and V-∅ active, we compare the reading times of V-*te morau* benefactive passive and V-*te ageru* benefactive active, which both overtly mark voice using the auxiliary verbs *morau* and *ageru* respectively.

The current research also aims to determine the extent of the effect of a voice (mis)match between targets and comprehension questions. Paolazzi et al. (2021) found that a voice (mis)match between target stimuli and comprehension questions impacted the accuracy in answering comprehension questions targeting passive stimuli. However, they did not report the changes in accuracy rate. Thus, our study tries to replicate a voice mismatch effect in Japanese.

4 Experiment: Self-paced reading task with comprehension question

We conducted an SPR experiment with a moving window paradigm (Just et al., 1982), followed by a comprehension question task to investigate whether Japanese V-*te morau* passive has a higher processing load than its active counterpart, V-*te ageru*. The SPR experiment specifically examined whether the processing load for passives becomes higher than that for actives at the verb and post-verb regions.

4.1 Methods and Designs

4.1.1 Participants

We recruited 262 native Japanese speakers online using the Japanese crowdsourcing service CrowdWorks (https://crowdworks.jp/) and jikken-baito.com. They gave informed consent and received ¥600 for their participation in the experiment, which took about 40 minutes. They were asked whether they lived in Japan for the first 13 years of their lives (except for short breaks) and whether their parents spoke Japanese to them for our assessment of their language history, as per Linzen and Oseki (2018). We excluded eight participants who answered no to one or both of the questions or who reported that they had compulsory education in a non-Japanese language from our analyses, but not from the paid participation, unlike Linzen and Oseki (2018). This was to prevent candidates from making false declarations in an attempt to participate for the monetary rewards (Sprouse and Almeida, 2012).

4.1.2 Stimuli

To observe the reading time differences, we manipulate the voice (active versus passive), by using V-*te ageru* benefactive active or V-*te morau* benefactive passive as the main verb chunk (R5), as illustrated in Table 1. A =*ni*$_{\text{DAT}}$-marked NP in R4 may contribute to the strong prediction of passives in Japanese and such a prediction may facilitate the reading of passives, if the =*ni*$_{\text{DAT}}$-marked NP contributes to the prediction and faster reading time of passives in a similar way to *be* and *by* in English did (Paolazzi et al., 2019, 2021). Thus, the reading time in the verb region (R5) may be shorter in V-*te morau* benefactive passive preceded by a =*ni*$_{\text{DAT}}$-marked NP than in V-*te ageru* benefactive active preceded by an =*o*$_{\text{ACC}}$-marked NP. The processing load encountered in the verb region (R5) may persist in the subsequent modal particle region (R6) (Spill-over, Just et al., 1982, pp. 232–233). Moreover, it may emerge later and be observed as an increase in the reading time in R6 (delay, Just et al., 1982, p.236). Therefore, the trend towards increased reading time would be observed only for verbs (R5), modal particles (R6), or both.

We used modal particles in R6 to capture the spillover or delay effect of the verb region (R5), keeping R5 in a matrix clause rather than in a subordinate clause, as previous Japanese SPR experiments also utilised them (Witzel and Witzel, 2011; Koizumi and Imamura, 2017). None of these studies reported that modals affected participants' truth value judgement of target sentences. In our study, participants would have to answer 'No' to every trial throughout the experiment, if inferential modals had influenced on participants' response to comprehension questions. However, since there were no such participants in our experiment, the modals possibly did not have an effect.

To measure the size of facilitatory effect caused by a voice match between a question and its target, which Paolazzi et al. (2021) did not examine, one of the questions shown in (3) was used for each V-*te morau* and V-*te ageru* target. To counterbalance whether 'yes' or 'no' is the correct answer, the order of NP1 and NP2 in the comprehension questions were same as or reversed from the target sentence presented in the SPR tasks. This resulted in four versions of a single question: an active question in NP1 → NP2 order whose correct answer is 'yes' when it appeared after V-*te ageru* condition of the SPR task, or whose correct answer is 'no' when it appeared after V-*te morau* condition of the SPR task, as shown in (3a); an active question in NP2 → NP1 order whose correct answer is 'no' when it appeared after V-*te ageru* condition, or whose correct answer is 'yes' when it appeared after V-*te morau* condition, as shown in (3b); a V-(*r*)*are* passive question in NP1 → NP2 order whose correct answer is 'yes' when it appeared after V-*te ageru* condition, or whose correct answer is 'no' when it appeared after V-*te morau* condition, as shown in (3c); a V-(*r*)*are* passive question in NP2 → NP1 order whose correct answer is 'no' when it appeared after V-*te ageru* condition, or whose correct answer is 'yes' when it appeared after V-*te morau* condition, as shown in (3d).

Two types of the target sentence (i.e. V-*te morau* and V-*te ageru*) and four versions of the comprehension question as shown in (3) resulted in eight conditions in total in the current experiment, as summarised in Table 6 in Appendix C..

Voice	R1: ADVP	R2: First NP [NP1]	R3: Second NP [NP2]	R4: ADV on action	R5: Verb	R6: Modal particle
benefactive active	*Sotsugyō-shiki=de* graduation. ceremony=LOC	*Mochizuki=ga* M.=NOM	*Kamimura=o* K.=ACC	*ōini* greatly	***home-te age-ta*** praise-CVB BEN.ACT-PST	*rasī* INFR
	'Mochizuki seems to have greatly praised Kamimura at the graduation ceremony.'					
benefactive passive	*Sotsugyō-shiki=de* graduation. ceremony=LOC	*Mochizuki=ga* M.=NOM	*Kamimura=ni* K.=DAT	*ōini* greatly	***home-te morat-ta*** praise-CVB BEN.PASS-PST	*rasī* INFR
	'Mochizuki seems to have been greatly praised by Kamimura at the graduation ceremony.'					

Table 1: Experimental conditions and an item sample for the SPR task (*home-ru* 'praise')

All 16 targets and 48 distractors in the main trials and 6 items for the practice session were grammatically correct. See Appendix C. for all targets.

(3) Sample for the comprehension question (*home-ru* 'praise')

a. **Active question in NP1 → NP2 order**
('Yes' for V-*te ageru* / 'No' for V-*te morau*)
Mochizuki=ga *Kamimura=o*
M.=NOM K.=ACC
home-mashi-ta-ka?
praise-POL-PST-Q
'Did Mochizuki praise Kamimura?'

b. **Active question in NP2 → NP1 order**
('No' for V-*te ageru* / 'Yes' for V-*te morau*)
Kamimura=ga *Mochizuki=o*
K.=NOM M.=ACC
home-mashi-ta-ka?
praise-POL-PST-Q
'Did Kamimura praise Mochizuki?'

c. **Passive question in NP1 → NP2 order**
('No' for V-*te ageru* / 'Yes' for V-*te morau*)
Kamimura=ga *Mochizuki=ni*
K.=NOM M.=DAT
homer-are-mashi-ta-ka?
praise-PASS-POL-PST-Q
'Was Kamimura praised by Mochizuki?'

d. **Passive question in NP2 → NP1 order**
('Yes' for V-*te ageru* / 'No' for V-*te morau*)
Mochizuki=ga *Kamimura=ni*
M.=NOM K.=DAT
homer-are-mashi-ta-ka?
praise-PASS-POL-PST-Q
'Was Mochizuki praised by Kamimura?'

4.1.3 Procedure

The experiment was conducted on a website for psycholinguistic experiments called PennController for Internet Based Experiments (PCIbex; https://farm.pcibex.net/). Participants accessed the site from their own computers. Any access from the tablets or smartphones was disabled.

The participants were told that one trial consists of an SPR and comprehension question task with a total of 64 trials, via an autoplayed video. Six practice trials were administered to familiarise participants with the procedure before the main experiment.

In the SPR task, stimuli were presented with the regions hidden by underscores. As in normal Japanese typesetting, sentences are presented without spaces between words/regions. Each press of the space bar displayed one region at a time. The stimuli were presented in black on a white background using Noto Sans Japanese font.

A comprehension question immediately followed after the participant finished reading the last region and pressed the space bar. The text of the entire question was immediately readable at once. Participants pressed the F key to answer 'yes' and the J key to answer 'no'. No feedback was provided even when the participant answered incorrectly. We counterbalanced whether 'yes' or 'no' was the correct answer throughout the targets and distractors, and thus throughout the experiment.

After responding to the question, a message appeared asking participants to press the space bar when they were ready to proceed. This screen remained visible until the participant pressed the space bar and started the next trial at their own pace.

As we counterbalanced the voice of the target sentence (i.e. V-*te ageru* active versus V-*te morau* passive), the voice of the comprehension question (i.e. V-∅ active versus V-(*r*)*are* passive), and the correct responses (i.e. whether 'yes' or 'no' was correct), one of eight lists of stimuli are presented following a Latin-square design (See Table 6 in Appendix C.).

4.1.4 Data analysis

4.1.4.1 Data exclusion criteria Since 55 participants participated or were suspected of participating in the experiment multiple times, their data were removed from our analyses. The data from 50 participants were also removed as the stimuli were not properly presented or were suspected of not being properly presented to them. Data from 2 participants were removed due to recording errors on the server. Data from 2 participants with overall accuracy for distractors is <75% were removed from the final analysis, following Paolazzi et al. (2019). Ultimately, the data from 145 participants were eventually analysed.

In PCIbex, a trial proceeds to the last region with little or no reading in the middle, if the space key is held down during a trial instead of pressing it each time a region is read. In such a case, the reading time of each region tends to be recorded as around 35 ms. Therefore, the reading times less than 50 ms were also excluded.

4.1.4.2 Statistical models We fit Bayesian generalised mixed effect models with by-participants and by-items correlated varying intercept and varying slopes using `R` (R Core Team, 2021). We used `brms` package (Burkner, 2021) for the model building, with the backend of `cmdstanr` (Gabry and Češnovar, 2021) for the coefficient calculation, and with the backend of `rstan` (Guo et al., 2021) to pass `stanfit` objects to `bridgesampling` (Gronau and Singmann, 2021) for the Bayes factor calculation. We fit every model using `brms::brm()` with 4 chains and 4 cores in parallel, 2000 warm-up and 50000 post-warm-up iterations, and a target mean acceptance probability $\delta = 0.9$ for the NUTS sampler.

We calculated the Bayes factors for the alternative over the null model (BF_{10}) to test whether each explanatory variable had a non-null effect on the response variables. For instance, to test the presence of voice effect (i.e. difference in reading time or accuracy between V-*te morau* versus V-*te ageru*), we compared an alternative model with the coefficient (parameter) of voice effect against a null model without that coefficient, by calculating a BF_{10}. The BF_{10} for voice effect larger than one indicates that the difference in voice affects the reading time or accuracy. On the other hand, the BF_{10} less than one means that there is no effect of voice on the reading time or accuracy. Lee and Wagenmakers' criteria (2013, derived from Jeffreys, 1939/1998) was used to determine the strength of the evidence for alternative models or null models:

- Evidence for the alternative model

$100 < BF_{10}$:	Extreme evidence
$30 < BF_{10} \leq 100$:	Very strong evidence
$10 < BF_{10} \leq 30$:	Strong evidence
$3 < BF_{10} \leq 10$:	Moderate evidence
$1 < BF_{10} \leq 3$:	Anecdotal evidence

- Evidence for the null model

$\frac{1}{3} < BF_{10} \leq 1$:	Anecdotal evidence
$\frac{1}{10} < BF_{10} \leq \frac{1}{3}$:	Moderate evidence

Since the priors of both the explanatory variables and intercept may radically affect the computation of Bayes factors (See Section 15.3 of Nicenboim et al., to appear), we calibrated those priors using prior predictive checks following Schad et al. (2020a) and Schad et al. (2022). To track changes in the values of coefficient and BF_{10} depending on priors, we calculated BF_{10} multiple times for each explanatory variable using normally-distributed priors with a mean of zero, but with different SDs, adapting the procedure of Nicenboim et al. (2020).

Reading time data Reading time was assumed to be log-normally distributed. The explanatory variables of interest, namely voice of the target, was sum-coded, with V-*te morau* benefactive passive coded as 1 and V-*te ageru* benefactive passive coded as -1. The number of characters in the region and the absolute trial order were also added to the models as covariates. The absolute trial order is the order in which one target is presented among all stimuli including distractors. Both the number of characters in the region and the trial order are z-transformed, following Nicenboim et al. (to appear, Section 9.2). Since the number of characters differed by condition of voice (i.e. the between-item factor), there was no random slope of items for the factor.

According to prior predictive checks, we used normally-distributed priors for target voice with varying SD of 0.5, 0.25, 0.1, 0.075, 0.05, 0.025, 0.01, 0.0075, 0.005, 0.0025, and 0.001. For other parameters, we used the priors summarised in Table 2.

Coefficient	R5: Verb	R6: Modal particle
Intercept	$N(6.8, 0.2)$	$N(6.5, 0.2)$
Region length	$N(0, 0.1)$	$N(0, 0.1)$
Trial order	$N(0, 0.1)$	$N(0, 0.1)$
Scale parameter σ	$N_+(0, 0.2)$	$N_+(0, 0.3)$
Parameters for random effects		
SD τ	$N(0, 0.2)$	$N(0, 0.1)$
Correlation parameter ρ	$LKJ(\eta = 2)$	$LKJ(\eta = 2)$

Table 2: Priors decided according to prior predicative checks

Accuracy of comprehension questions We fit mixed effects logistic regressions to the accuracy data. The voice of the target was sum-coded, with V-*te morau* benefactive passive coded as -1 and V-*te ageru* benefactive passive coded as 1. The NP order in comprehension questions was also sum-coded, with NP1 → NP2 (the same as the target) coded as 1 and NP2 → NP1 (reversed from the target) coded as -1. The voice (mis)match effect was coded using a nested sum contrast (Schad et al., 2020b), so that 1 is assigned if voice matches between target and question, as summarised in Table 3. The z-transformed absolute trial order was also added to the models as a covariate.

According to prior predictive checks, we used normally-distributed priors for target voice with varying SD of 0.5, 0.25, 0.1, and 0.05. We used $N(1.3, 0.2)$ priors for intercepts, $N(0, 0.1)$ priors for the slopes, and LKJ priors with $\eta = 2$ for the correlation matrices.

Target voice	Question voice	NP order in question (NP1 → NP2) Voice match	Voice match	NP order in question (NP2 → NP1) Voice match	Voice match
V-*te ageru* (active)	V-∅ (active)	1	0	0	0
	V-(*r*)*are* (passive)	-1	0	0	0
V-*te morau* (passive)	V-∅ (active)	0	-1	0	0
	V-(*r*)*are* (passive)	0	1	0	0
V-*te ageru* (active)	V-∅ (active)	0	0	1	0
	V-(*r*)*are* (passive)	0	0	-1	0
V-*te morau* (passive)	V-∅ (active)	0	0	0	-1
	V-(*r*)*are* (passive)	0	0	0	1

Table 3: Nested contrast coding for voice match

4.2 Predictions

4.2.1 Predictions for the reading time

As argued by Paolazzi et al. (2019) and Paolazzi et al. (2021), the shorter reading times for passives than for actives were attributed to differences in the predictability of upcoming words/phrases based on antecedents between passives and actives. In Japanese, a dative =*ni* marked NP may signal that the sentence is passive, and an accusative =*o* marked NP may signal that the sentence is active. Thus, if parsers of native Japanese speakers are actively predicting the upcoming elements based on antecedents, reading time differences between conditions can occur in the verb (R5) and the modal immediately following the verb (R6), as shown in Table 1.

Meanwhile, a =ni_{DAT}-marked NP may not be sufficient to predict that a passive verb follows, and the facilitatory effect for passives may not occur. In this case, the reading time would be longer in V-*te morau* passives than in V-*te ageru* actives. Since both active voice and passive voice were analytically marked using auxiliary verbs in this experiment, the longer reading time for passives can be attributed more to the processing load needed to resolve the mapping of the thematic roles and grammatical functions (i.e. diathesis processing) than morphological inflection in the passive verb (as found by Yokoyama et al., 2006). A spill-over and/or delay of the processing load encountered in the verb region (R5) may also occur, resulting in longer reading times in passives for verbs (R5), for modal particles immediately following verbs (R6), or for both regions.

4.2.2 Predictions for the comprehension question tasks

Paolazzi et al. (2021, Experiment 3) found that if both active and passive were used in the questions about thematic relations (i.e. who did something to whom), the difference in accuracy between actives and passives was neutralised, as the question and its target sentence matched by being in the passive voice and caused a facilitatory priming effect in favour of passive targets. Thus, a facilitatory effect caused by the voice match between the question and its target is also expected in Japanese.

4.3 Results

4.3.1 Reading time data

As illustrated in Table 4 (and Figure 4 in Appendix B.), the median and mean reading time for V-*te morau* benefactive passive was longer than V-*te ageru* benefactive active in both verb (R5) and modal (R6) region. However, Bayes factors moderately favoured the alternative models and the presence of the effect of target voice only when the prior SDs were very constrained (i.e. SD ≤ 0.1 for R5 and SD ≤ 0.025 for R6) and thus yielded tiny estimates of the coefficient for the target voice, as demonstrated in Figure 1. Furthermore, Bayes factors favoured the null models and the absence of the effect of the target voice when the prior SD was less constrained and thus yielded stable estimates of the coefficient for the target voice. This means that the voice contrast between V-*te morau* and V-*te ageru* had little impact on reading times.

	R5: Verb		R6: Modal particle	
Target voice	Median	Mean	Median	Mean
V-*te ageru* (active)	808	1074.7	499	631.9
V-*te morau* (passive)	909	1333.0	531	718.7

Table 4: Median and mean reading time (ms) by condition

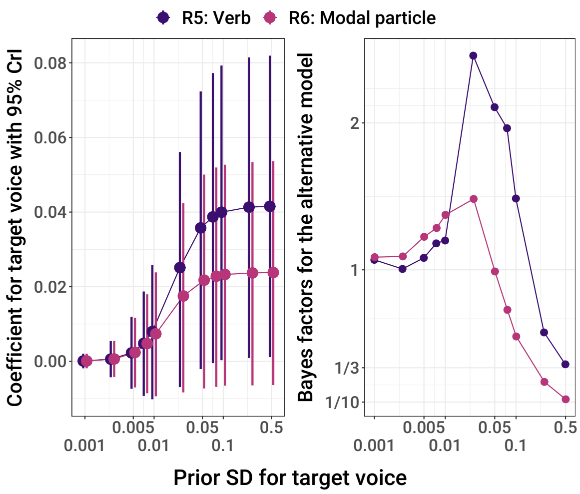

Figure 1: Change in estimate (with 95% Credible Interval) and Bayes factor for target voice by prior SD in the region of verb (R5) and the modal (R6)

4.3.2 Accuracy of comprehension questions

As Figure 2 illustrates, accuracy was lower for V-*te morau* passive targets than V-*te ageru* active targets. This is supported by strong evidence of BF_{10} as prior SD increases, as shown in Figure 3. Accuracy was lower for comprehension question whose NP order was NP1 → NP2 than for those whose NP order was NP2 → NP1, supported by strong evidence of BF_{10}. Moreover, when comprehension questions had NP1 → NP2 order, matching the voice between target sentences and their comprehension questions drastically increased the accuracy, both in V-*te ageru* actives and V-*te morau* passives. These voice matching effects were corroborated by the extreme evidence of BF_{10}. However, such voice matching effects were not supported in either V-*te ageru* actives or V-*te morau* passives with low BF_{10} when comprehension questions had a NP2 → NP1 order.

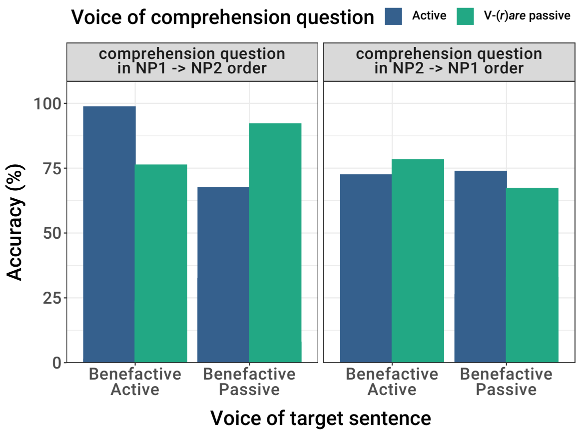

Figure 2: Raw accuracy for the comprehension question by condition

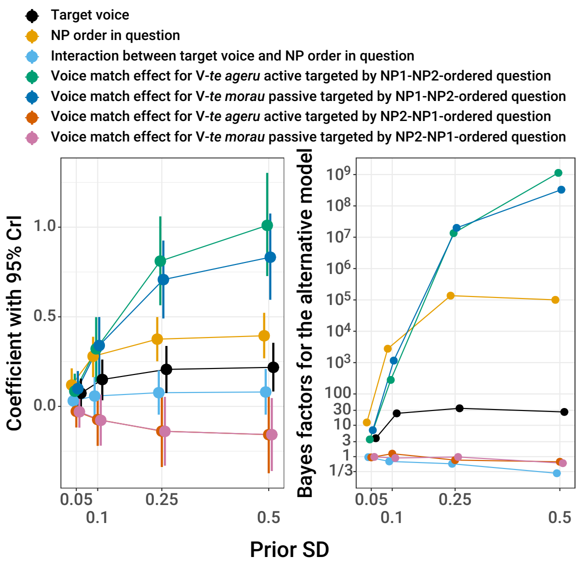

Figure 3: Change in estimate (with 95% Credible Interval) and Bayes factor for factors by prior SD

5 General discussion and conclusion

5.1 Comparable reading time difference between V-*te morau* benefactive passive and V-*te ageru* benefactive active

In the raw data, reading times for *V-te morau* passives were longer than *V-te ageru* actives. The current results differ from the results in English (Paolazzi et al., 2016, 2017, 2019) and in German (Grillo et al., 2019) showing that passives have numerically shorter reading times than actives. However, Bayes factors did not clearly support either the presence or absence of the effect of voice on reading time difference. These findings contradict to the prediction derived from the previous research in SVO languages that the elements prior to the verb region (e.g. a =*ni*DAT-marked NP in R4 in this experiment) may signal that the subsequent region and entire sentence is passive, leading to shorter reading times for passive compared to actives. Possible reasons for the lack of reading time differences could be due to sentence processing specific to V-*te morau* and V-*te ageru*.

Both V-*te morau* and V-*te ageru* overtly mark passive and active voice respectively, and they both analytically express voice in a similar morphological composition. Therefore, it is possible that the same processing load and time were required for the actives as the passives. In contrast, in the pair of V-∅ active and V-(*r*)*are* passive, as well as in the pair of English active and *be* passive (*be* V.PST.PTCP), only the passive has a morphosyntactically complex marker. Thus, only passives may tend to be more cognitively demanding, and this might have resulted in the clearer difference between active and passive in previous research. The manifestation of the processing load may differ when comparing the pair of V-*te morau* and V-*te ageru*, and when comparing the pair V-(*r*)*are* passive and V-∅ active, and the comparison of the former may not be measured by the reading times in this study. Therefore, further research that examines other behavioural measurements is necessary. In experiments comparing the processing of V-(*r*)*are* passive and V-∅ active, both morphological processing (Lexical decision task by Yokoyama et al., 2006) and processing involving syntax (picture-sentence matching task by Kinno et al., 2008; and Tanaka et al., 2017) showed activation of the left inferior frontal gyrus for V-(*r*)*are* passive. However, this alone does not tell us whether the left inferior frontal gyrus is more strongly activated by morphological processing (the internal process to form a verb base phrase/verb chunk) or syntactic processing (the whole VP/sentence level). It is not possible to determine whether the processing of the diathesis or the voice is more difficult. It is only with V-*te morau* and V-*te ageru*, which have a similar morphological processing, that it is possible to clarify the differences in brain activation on syntactic processing in the active and passive voice, after matching the morphological processing as much as possible.

5.2 Accuracy

In general, accuracy in the comprehension questions targeting V-*te morau* passive was lower than those targeting V-*te ageru* active. Since V-*te morau* and V-*te ageru* share a similar morphological composition, syntactic factors—namely, the mapping of patient to grammatical subject in passives—are more likely to induce this accuracy difference than morphological factors. Moreover, the accuracy in comprehension questions targeting V-*te morau* passives was significantly improved by questions in V-(*r*)*are* passives, compared to those in actives. This replicates what Paolazzi et al. (2021) found in thier study of English passives, and suggests that V-*te morau* primes V-(*r*)*are*, facilitating the processing of V-(*r*)*are* and alleviating the cognitive load required to maintain and retrieve the representation of V-*te morau*. This priming further implies that the patientive beneficiaries in V-*te morau* benefactive passive and normal patients in V-(*r*)*are* passive could be represented and processed as one broad patientive macrorole in the native speakers' parser.

Interestingly, accuracy for comprehension questions targeting V-*te ageru* active sharply decreased when the questions were in V-(*r*)*are* passive causing a voice mismatch. This indicates that V-(*r*)*are* passive intervened post-interpretive process (i.e. memorising the contents of a sentence and using them to do other action, Caplan and Waters, 1999), such as responding comprehension questions in our experiment, for V-*te ageru* active. Unlike what has previously been considered, both passive and active diathesis can possibly be prone to diathesis mismatch between the target and the question.

Moreover, a facilitating priming effect from V-*te morau* to V-(*r*)*are* was elicitable only when a V-*te morau* target and its question using V-(*r*)*are* have a same NP order (i.e. NP1 → NP2 order both in the targets and comprehension questions).

6 Conclusion and limitations

The Japanese analytical benefactive passive, V-*te morau*, is indeed more difficult to comprehend than its active counterpart V-*te ageru*, which was evident in accuracy in the comprehension questions, not reading times. In our experiment, we aligned the morphological features of passive and active voices. Consequently, it is unsurprising that the reading time for passive sentences did not decrease compared to the active ones. This contrasts with earlier findings in English (Paolazzi et al., 2016, 2017, 2019) and German (Grillo et al., 2019).

Previous studies suggested that the verb region is read faster in passive constructions due to the stronger morphological signals indicating passivisation (e.g. copula verbs and PPs denoting the agent). In the current study, there existed a morphological signal in passive sentences in R3 (the second NP), specifically the agentive NP marked by the dative =*ni*, which differed from the patientive NP marked by the accusative =*o* in actives within the same region. Nonetheless, we found no reduction in reading times for the subsequent verb (R5) and modal particle (R6) regions in passives.

Hence, the morphological cues that facilitate passive reading, as reported in prior studies, might have limited impact in Japanese passives. Future work will address this possibility by comparing reading times between V-(*r*)*are* passives and V-∅ actives.

Alternatively, this effect might be unobservable in experiments that control the morphological factors between passives and actives. For a more comprehensive understanding of this phenomenon, future research should replicate our results using languages in which pairs of passive-active constructions demonstrate an equipollent alternation, such as Finnish, Kafa, and Sinhala (Zúñiga and Kittilä, 2019), akin to Japanese *V-te morau* and *V-te ageru*. Considering the relative scarcity of this alternation pattern from a typological perspective (Zúñiga and Kittilä, 2019), such an approach would also contribute to a in-depth cross-linguistic validation in psycholinguistics.

Furthermore, the improvement in accuracy for comprehension questions targeting V-*te morau* sentences with V-(*r*)*are* questions gave a new insight on the range of the patientive macrorole. This results suggests that patientive beneficiaries in V-*te morau* benefactive passive and normal patients in V-(*r*)*are* passive could be categorised under a unified patientive macrorole within the cognitive process of native speakers' parser.

However, the generalisability of this result may be subject to certain limitations. One such constraint is that the priming effect became apparent only when both a V-*te morau* target and its corresponding V-(*r*)*are* question maintained identical NP order. Consequently, one might raise a question regarding whether the observed facilitating priming effect from V-*te morau* to V-(*r*)*are* is attributable to the circumstance in which the NP denoting a non-agentive semantic role emerges as the syntactic subject in both constructions.

Nevertheless, the increase in accuracy observed when the questions targeting V-*te morau* were formulated as V-(*r*)*are* would not have occurred if these semantic roles were considered entirely distinct entities. Any such distinction would have resulted in interference between these two passive constructions, leading to a decrease in accuracy despite the same word order between the two consturctions. Future research will explore whether the current findings are rooted in the primability between the beneficiary of V-*te morau* and the patient of V-(*r*)*are*, by comparing the primability of these roles, as well as the primability between the beneficiary and a role that falls outside both the agentive and patientive macroroles, or between the patient and such a role.

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Appendix A. Undergoer nucleatives, the non-passive use case of V-(*r*)*are* and V-*te morau*

Whilst V-(*r*)*are* and V-*te morau* are used as passive voice in passive diathesis that maps a thematic patient to a syntactic subject, these two voice can also be used in diatheses that contain the =o_{ACC}-marked NP, as illustrated in (A.1) and (A.2). These constructions in fact install a new argument, namely an undergoer/affectee, into the subject position and the installed argument denotes a referent that is not necessarily directly involved as shown in (A.1), or is originally unrelated as shown in (A.2) in the event described by a main verb. Japanese linguists have considered this construction a conventional passive, labelling it as 'possessive passive' (Suzuki, 1972, pp.280–281; Teramura, 1982; Kubo, 1992, inter alia). For example, Kubo (1992) assumed that both conventional passive and the construction like (A.1) are derived from the same mechanism (i.e. NP-movement), applying Government and Binding Theory. However, some typologists label (A.1) as 'possessive subjective undergoer nucleative' and classify it as an applicative-like construction, not as passive

(Zúñiga and Kittilä, 2019; see also Pylkkänen, 2008). The motivation for such a classification is that the subjective undergoer nucleatives (SUNUCL) install a new argument into the subject position to introduce the undergoer/affectee, unlike defocusing or removing the argument of agent as in the conventional passive. The current study focuses on the conventional passive in Japanese to cross-linguistically compare the processing difficulty of the conventional passive, leaving 'possessive passive' or 'possessive subjective undergoer nucleative' aside.

(A.1) Possessive passive (Kubo, 1992) /Possessive subjective undergoer nucleative (Zúñiga and Kittilä, 2019)
Tetsuo$_i$=ga *Kaneda=ni* *ude$_i$=o*
T.=NOM K.=DAT arm=ACC
ut-are-ta.
shoot-{pass/sunucl:poss}-PST
'Tetsuo was shot in the arm by Kaneda.'

The undergoer in subject position in (A.1), namely Tetsuo, can still be a patient, since the shooting event directly affects not only Tetsuo's arm but also Tetsuo himself. However, as shown in (A.2a, b), both V-(*r*)*are* and V-*te morau* can introduce an event participant that is not directly involved in the event denoted by the main verb. V-(*r*)*are* in (A.2a) and V-*te morau* in (A.2b) introduce a new argument in their subject position to a shelf-building event expressed by (A.2c). The new argument, Mochizuki, is unrelated to the original shelf-building event, since Mochizuki is not a shelf-maker (agent) or shelf (theme/patient).

(A.2) a. V-(*r*)*are* with insertion of maleficiary argument
Mochizuki=ga *Kamimura=ni* *tana=o*
M.=NOM K.=DAT shelf=ACC
*tsukur-***are***-ta.*
make-SUNUCL:MAL-PST
'Mochizuki is uncomfortable that Kamimura built the shelves.'

b. V-*te morau* with insertion of beneficiary argument
Mochizuki=ga *Kamimura=ni* *tana=o*
M.=NOM K.=DAT shelf=ACC
*tsukut-***te** **morat***-ta.*
make-CVB SUNUCL:BEN-PST
'Mochizuki had a shelf built by Kamimura (i.e. For Mochizuki, Kamimura made a shelf).'

c. Base event for (a)
Kamimura=ga tana=o *tsukut-ta.*
K.=NOM shelf=ACC make-PST
'Kamimura built a shelf.'

Appendix B. Raw reading times in the self-paced reading (SPR) task

Figure 4 shows the raw reading times for each region in our SPR task by condition.

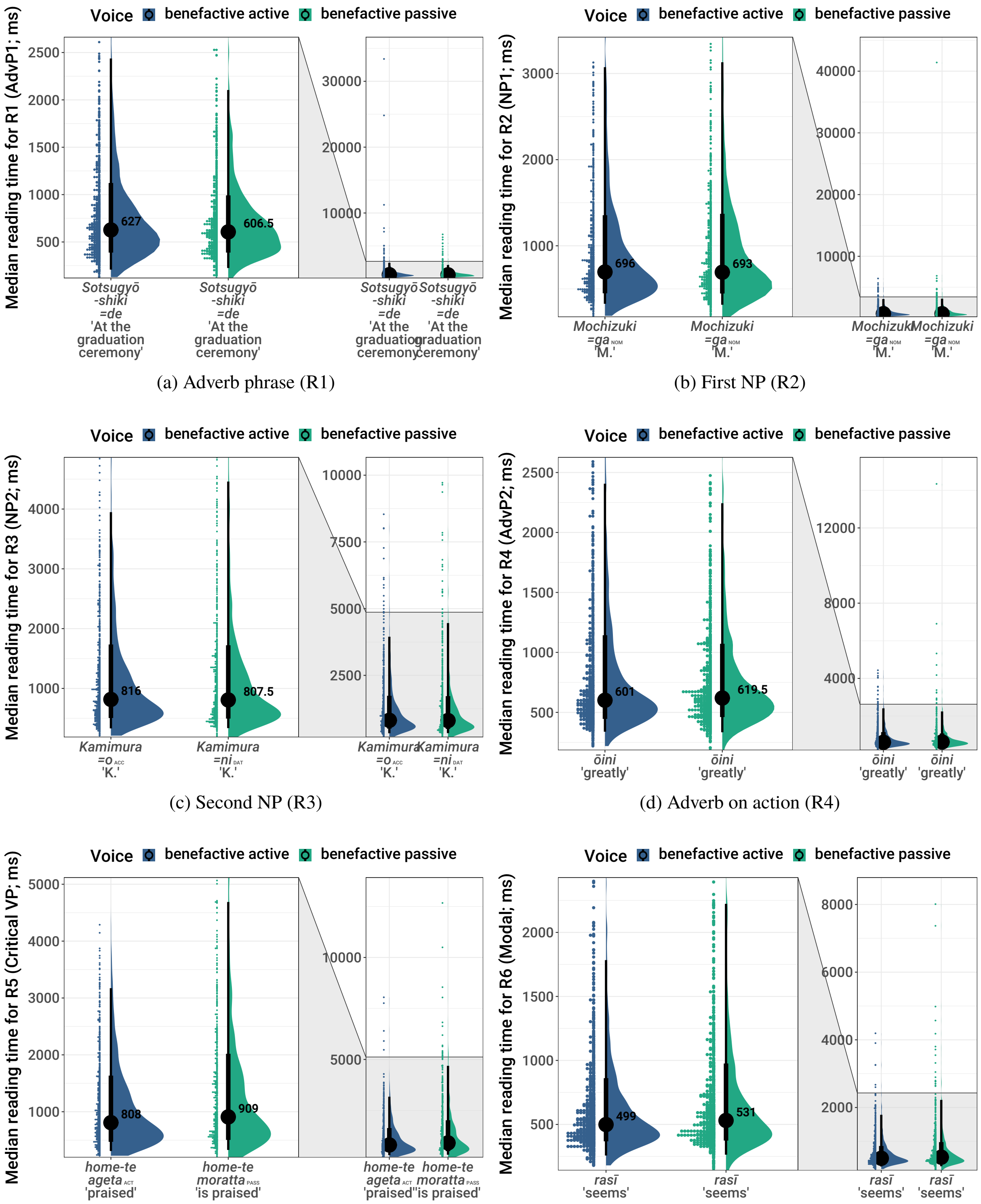
Appendix C. Stimuli

The stimuli used for the SPR task and comprehension question task are shown in (C.1)–(C.16). Throughout (C.1)–(C.16), the first one or two lines show the original Japanese texts of the stimuli, typeset in Noto Sans JP, which is the font used in the actual experiment; italicised texts are the romanised stimuli; each word of the romanised stimuli has a gloss underneath; lines enclosed in single quotes are translations of the stimuli. In each of (C.1)–(C.16), sub-example (a) shows V-*te ageru* condition, (b), V-*te ageru* condition of the stimuli used in the SPR task. Slashes (/) in the examples indicate the region boundary of these stimuli and how they were presented region by region in the trials, although these slashes were not displayed in the experiment. Table 5 illustrates the segmentation of the stimuli.

Sub-examples (c)–(f) demonstrate the interrogative sentences used for the comprehension question task. Each (c) shows an active question in NP1 → NP2 order, whose correct answer is 'yes' when it appeared after V-*te ageru* condition of the SPR task, or whose correct answer is 'no' when it appeared after V-*te morau* condition of the SPR task. Each (d) shows an active question in NP2 → NP1 whose correct answer is 'no' when it appeared after V-*te ageru* condition, or whose correct answer is 'yes' when it appeared after V-*te morau* condition. Each (e) shows a V-(*r*)*are* passive question in NP1 → NP2 order whose correct answer is 'yes' when it appeared after V-*te ageru* condition, or whose correct answer is 'no' when it appeared after V-*te morau* condition. Each (f) shows a V-(*r*)*are* passive question in NP2 → NP1 order whose correct answer is 'no' when it appeared after V-*te ageru* condition, or whose correct answer is 'yes' when it appeared after V-*te morau* condition. The correspondence between the stimuli of the SPR task (i.e. (a) and (b)) and comprehension questions (i.e. (c)–(f)) is summarised in Table 6.

(C.1) *home-ru* 'praise'
a. 卒業式で / 望月が / 上村を / 大いに / 褒めてあげた / らしい。
Sotsugyōshiki=de / *Mochizuki=ga*
graduation.ceremony=LOC / M.=NOM
/ *Kamimura=o* / *ōini* / *home-te*
/ K.=ACC / greatly / praise-CVB
age-ta / *rashī.*
BEN.ACT-PST / INFR
'Mochizuki seems to have greatly praised Kamimura at the graduation ceremony.'

b. 卒業式で / 望月が / 上村に / 大いに / 褒めてもらった / らしい。



(a) Adverb phrase (R1)

(b) First NP (R2)

(c) Second NP (R3)

(d) Adverb on action (R4)

(e) Verb region (R5)

(f) Modal particle region (R6)

Figure 4: Raw reading time for each region; Thick bars and thin bars indicate the 66% and 95% quantile intervals of data respectively, and bullets indicate the median reading time.

Table 5: Segmentation of the stimuli for V-*te ageru* and V-*te ageru* condition in the SPR task

Region	V-*te ageru*	V-*te morau*
R1	LOC ADVP	LOC ADVP
R2	First NP [NP1]	First NP [NP1]
R3	Second NP [NP2]	Second NP [NP2]
R4	ADV on action	ADV on action
R5	***V-te ageru***	***V-te morau***
R6	Modal particle	Modal particle

Table 6: Correspondence between the stimuli of SPR task and questions

Condition of SPR	→	Condition of Comprehension Question	Correct answer
(a) V-*te ageru*	→	(c) active NP1 NP2	Yes
(a) V-*te ageru*	→	(d) active NP2 NP1	No
(a) V-*te ageru*	→	(e) V-(*r*)*are* passive NP1 NP2	No
(a) V-*te ageru*	→	(f) V-(*r*)*are* passive NP2 NP1	Yes
(b) V-*te morau*	→	(c) active NP1 NP2	No
(b) V-*te morau*	→	(d) active NP2 NP1	Yes
(b) V-*te morau*	→	(e) V-(*r*)*are* passive NP1 NP2	Yes
(b) V-*te morau*	→	(f) V-(*r*)*are* passive NP2 NP1	No

Sotsugyōshiki=de / *Mochizuki=ga*
graduation.ceremony=LOC / M.=NOM
/ *Kamimura=ni* / *ōini* / *home-te*
/ K.=DAT / greatly / praise-CVB
morat-ta / *rashī.*
BEN.PASS-PST / INFR
'Mochizuki seems to have been greatly praised by Kamimura at the graduation ceremony.'

c. 望月が上村を褒めましたか？
Mochizuki=ga *Kamimura=o*
M.=NOM K.=ACC
home-mashi-ta-ka?
praise-POL-PST-Q
'Did Mochizuki praise Kamimura?'

d. 上村が望月を褒めましたか？
Kamimura=ga *Mochizuki=o*
K.=NOM M.=ACC
home-mashi-ta-ka?
praise-POL-PST-Q
'Did Kamimura praise Mochizuki?'

e. 上村が望月に褒められましたか？
Kamimura=ga *Mochizuki=ni*
K.=NOM M.=DAT
homer-are-mashi-ta-ka?
praise-PASS-POL-PST-Q
'Was Kamimura praised by Mochizuki?'

f. 望月が上村に褒められましたか？
Mochizuki=ga *Kamimura=ni*
M.=NOM K.=DAT
homer-are-mashi-ta-ka?
praise-PASS-POL-PST-Q
'Was Mochizuki praised by Kamimura?'

(C.2) *hagemas-u* 'cheer'

a. 壮行会で / 松村が / 青山を / ずいぶん / 励ましてあげた / ようだ。
Sōkōkai=de / *Matsumura=ga*
send-off.party=LOC / M.=NOM
/ *Aoyama=o* / *zuibun* / *hagemashi-te*
/ A.=ACC / very / cheer-CVB
age-ta / *yōda.*
BEN.ACT-PST / INFR
'Matsumura seems to have encouraged Aoyama a lot at the send-off party.'

b. 壮行会で / 松村が / 青山に / ずいぶん / 励ましてもらった / ようだ。
Sōkōkai=de / *Matsumura=ga*
send-off.party=LOC / M.=NOM
/ *Aoyama=ni* / *zuibun* / *hagemashi-te*
/ A.=DAT / very / cheer-CVB
morat-ta / *yōda.*
BEN.PASS-PST / INFR
'Matsumura seems to have been much encouraged by Aoyama at the send-off party.'

c. 松村が青山を励ましましたか？
Matsumura=ga *Aoyama=o*
M.=NOM A.=ACC
hagemashi-mashi-ta-ka?
cheer-POL-PST-Q
'Did Matsumura encourage Aoyama?'

d. 青山が松村を励ましましたか？
Aoyama=ga *Matsumura=o*
A.=NOM M.=ACC
hagemashi-mashi-ta-ka?
cheer-POL-PST-Q
'Did Aoyama encourage Matsumura?'

e. 青山が松村に励まされましたか？
Aoyama=ga *Matsumura=ni*
A.=NOM M.=DAT
hagemas-are-mashi-ta-ka?
cheer-PASS-POL-PST-Q
'Was Aoyama encouraged by Matsumura?'

f. 松村が青山に励まされましたか？
Matsumura=ga *Aoyama=ni*
M.=NOM A.=DAT

hagemas-are-mashi-ta-ka?
cheer-PASS-POL-PST-Q
'Was Matsumura encouraged by Aoyama?'

(C.3) *tasuke-ru* 'help'

a. 泥沼で / 大島が / 今村を / ギリギリで / 助けてあげた / そうだ。
Doronuma=de / Ōshima=ga / Imamura=o / girigiri-de / tasuke-te age-ta / sōda.
quagmire=LOC / Ō.=NOM / I.=ACC / barely-ADV / help-CVB BEN.ACT-PST / INFR
'Ōshima seems to have saved Imamura in the mud at the last minute.'

b. 泥沼で / 大島が / 今村に / ギリギリで / 助けてもらった / そうだ。
Doronuma=de / Ōshima=ga / Imamura=ni / girigiri-de / tasuke-te morat-ta / sōda.
quagmire=LOC / Ō.=NOM / I.=DAT / barely-ADV / help-CVB BEN.PASS-PST / INFR
'Ōshima seems to have been saved by Imamura in the mud at the last minute.'

c. 大島が今村を助けましたか？
Ōshima=ga Imamura=o tasuke-mashi-ta-ka?
O.=NOM I.=ACC help-POL-PST-Q
'Did Ōshima help Imamura?'

d. 今村が大島を助けましたか？
Imamura=ga Ōshima=o tasuke-mashi-ta-ka?
I.=NOM O.=ACC help-POL-PST-Q
'Did Imamura help Ōshima?'

e. 今村が大島に助けられましたか？
Imamura=ga Ōshima=ni tasuke-rare-mashi-ta-ka?
I.=NOM O.=DAT help-PASS-POL-PST-Q
'Was Imamura helped by Ōshima?'

f. 大島が今村に助けられましたか？
Ōshima=ga Imamura=ni tasuke-rare-mashi-ta-ka?
O.=NOM I.=DAT help-PASS-POL-PST-Q
'Was Ōshima helped by Imamura?'

(C.4) *yurus-u* 'forgive'

a. 調停で / 早川が / 白石を / あっさり / 許してあげた / みたいだ。
Chōtei=de / Hayakawa=ga / Shiraishi=o / assari / yurushi-te age-ta / mitaida.
conciliation=LOC / H.=NOM / S.=ACC / easily / forgive-CVB BEN.ACT-PST / INFR
'Hayakawa seems to have easily forgiven Shiraishi at the mediation.'

b. 調停で / 早川が / 白石に / あっさり / 許してもらった / みたいだ。
Chōtei=de / Hayakawa=ga / Shiraishi=ni / assari / yurushi-te morat-ta / mitaida.
conciliation=LOC / H.=NOM / S.=DAT / easily / forgive-CVB BEN.PASS-PST / INFR
'Hayakawa seems to have been easily forgiven by Shiraishi at the mediation.'

c. 早川が白石を許しましたか？
Hayakawa=ga Shiraishi=o yurushi-mashi-ta-ka?
H.=NOM S.=ACC forgive-POL-PST-Q
'Did Hayakawa forgive Shiraishi?'

d. 白石が早川を許しましたか？
Shiraishi=ga Hayakawa=o yurushi-mashi-ta-ka?
S.=NOM H.=ACC forgive-POL-PST-Q
'Did Shiraishi forgive Hayakawa?'

e. 白石が早川に許されましたか？
Shiraishi=ga Hayakawa=ni yurus-are-mashi-ta-ka?
S.=NOM H.=DAT forgive-PASS-POL-PST-Q
'Was Shiraishi forgiven by Hayakawa?'

f. 早川が白石に許されましたか？
Hayakawa=ga Shiraishi=ni yurus-are-mashi-ta-ka?
H.=NOM S.=DAT forgive-PASS-POL-PST-Q
'Was Hayakawa forgiven by Shiraishi?'

(C.5) *mats-u* 'wait'

a. 喫茶店で / 西山が / 平山を / じっと / 待ってあげた / らしい。
Kissaten=de / Nishiyama=ga / Hirayama=o / jitto / mat-te age-ta / rashī.
coffee.shop=LOC / N.=NOM / H.=ACC / patiently / wait-CVB BEN.ACT-PST / INFR
'Nishiyama seems to have waited patiently for Hirayama in the coffee shop.'

b. 喫茶店で / 西山が / 平山に / じっと / 待ってもらった / らしい。
Kissaten=de / Nishiyama=ga / Hirayama=ni / jitto / mat-te morat-ta / rashī.
coffee.shop=LOC / N.=NOM / H.=DAT / patiently / wait-CVB BEN.PASS-PST / INFR
'Nishiyama seems to have been patiently awaited by Hirayama in the coffee shop.'

c. 西山が平山を待ちましたか？
Nishiyama=ga *Hirayama=o*
N.=NOM H.=ACC
machi-mashi-ta-ka?
wait-POL-PST-Q
'Did Nishiyama wait for Hirayama?'

d. 平山が西山を待ちましたか？
Hirayama=ga *Nishiyama=o*
H.=NOM N.=ACC
machi-mashi-ta-ka?
wait-POL-PST-Q
'Did Hirayama wait for Nishiyama?'

e. 平山が西山に待たれましたか？
Hirayama=ga *Nishiyama=ni*
H.=NOM N.=DAT
mat-are-mashi-ta-ka?
wait-POL-PST-Q
'Was Hirayama awaited by Nishiyama?'

f. 西山が平山に待たれましたか？
Nishiyama=ga *Hirayama=ni*
N.=NOM H.=DAT
mat-are-mashi-ta-ka?
wait-POL-PST-Q
'Was Nishiyama awaited by Hirayama?'

(C.6) *negira-u* 'appreciate the effort/pain'

a. 送別会で / 栗原が / 北川を / 心から / ねぎらってあげた / ようだ。
Sōbetsukai=de / *Kurihara=ga*
farewell.party=LOC / K.=NOM
/ *Kitagawa=o* / *kokoro=kara* /
/ K.=ACC / heart=ABL /
negirat-te *age-ta* /
appreciate.the.effort-CVB BEN.ACT-PST /
yōda.
INFR
'At the farewell party, Kurihara seems to have heartily thanked Kitagawa for the effort.'

b. 送別会で / 栗原が / 北川に / 心から / ねぎらってもらった / ようだ。
Sōbetsukai=de / *Kurihara=ga*
farewell.party=LOC / K.=NOM
/ *Kitagawa=ni* / *kokoro=kara* /
/ K.=DAT / heart=ABL /
negirat-te *morat-ta* /
appreciate.the.effort-CVB BEN.PASS-PST /
yōda.
INFR
'Kurihara seems to have been heartily thanked for the effort by Kitagawa at the farewell party.'

c. 栗原が北川をねぎらいましたか？
Kurihara=ga *Kitagawa=o*
K.=NOM K.=ACC
negirai-mashi-ta-ka?
appreciate.the.effort-POL-PST-Q
'Did Kurihara thank Kitagawa for the effort?'

d. 北川が栗原をねぎらいましたか？
Kitagawa=ga *Kurihara=o*
K.=NOM K.=ACC
negirai-mashi-ta-ka?
appreciate.the.effort-POL-PST-Q
'Did Kitagawa thank Kurihara for the effort?'

e. 北川が栗原にねぎらわれましたか？
Kitagawa=ga *Kurihara=ni*
K.=NOM K.=DAT
negiraw-are-mashi-ta-ka?
appreciate.the.effort-PASS-POL-PST-Q
'Was Kitagawa thanked for the effort by Kurihara?'

f. 栗原が北川にねぎらわれましたか？
Kurihara=ga *Kitagawa=ni*
K.=NOM K.=DAT
negiraw-are-mashi-ta-ka?
appreciate.the.effort-PASS-POL-PST-Q
'Was Kurihara thanked for the effort by Kitagawa?'

(C.7) *itawar-u* 'care for'

a. 病院で / 石橋が / 松永を / そっと / いたわってあげた / そうだ。
Byōin=de / *Ishibashi=ga* / *Matsunaga=o*
hospital=LOC / I.=NOM / M.=ACC
/ *sotto* / *itawat-te* *age-ta* / *sōda.*
/ gently / care.for-CVB BEN.ACT-PST / INFR
'Ishibashi seems to have gently cared for Matsunaga at the hospital.'

b. 病院で / 石橋が / 松永に / そっと / いたわってもらった / そうだ。
Byōin=de / *Ishibashi=ga* / *Matsunaga=ni*
hospital=LOC / I.=NOM / M.=DAT
/ *sotto* / *itawat-te* *morat-ta* / *sōda.*
/ gently / care.for-CVB BEN.PASS-PST / INFR
'At the hospital, Ishibashi seems to have been gently cared for by Matsunaga.'

c. 石橋が松永をいたわりましたか？
Ishibashi=ga *Matsunaga=o*
I.=NOM M.=ACC
itawari-mashi-ta-ka?
care.for-POL-PST-Q
'Did Ishibashi care for Matsunaga?'

d. 松永が石橋をいたわりましたか？
Matsunaga=ga *Ishibashi=o*
M.=NOM I.=ACC
itawari-mashi-ta-ka?
care.for-POL-PST-Q
'Did Matsunaga care for Ishibashi?'

e. 松永が石橋にいたわられましたか？
Matsunaga=ga *Ishibashi=ni*
M.=NOM I.=DAT
itawar-are-mashi-ta-ka?
care.for-POL-PST-Q
'Was Matsunaga cared for by Ishibashi?'

f. 石橋が松永にいたわられましたか？
Ishibashi=ga *Matsunaga=ni*
I.=NOM M.=DAT
itawar-are-mashi-ta-ka?
care.for-PASS-POL-PST-Q
'Was Ishibashi cared for by Matsunaga?'

(C.8) *nagusame-ru* 'comfort'

a. 同窓会で / 岩本が / 杉浦を / ひたすら / 慰めてあげた / みたいだ。
Dōsōkai=de / *Iwamoto=ga* /
alumni.meeting=LOC / I.=NOM /
Sugiura=o / *hitasura* / *nagusame-te*
S.=ACC / sheerly / comfort-CVB
age-ta / *mitaida.*
BEN.ACT-PST / INFR
'Iwamoto seems to have solely comforted Sugiura at the reunion.'

b. 同窓会で / 岩本が / 杉浦に / ひたすら / 慰めてもらった / みたいだ。
Dōsōkai=de / *Iwamoto=ga* /
alumni.meeting=LOC / I.=NOM /
Sugiura=ni / *hitasura* / *nagusame-te*
S.=DAT / sheerly / comfort-CVB
morat-ta / *mitaida.*
BEN.PASS-PST / INFR
'Iwamoto seems to have been solely comforted by Sugiura at the reunion.'

c. 岩本が杉浦を慰めましたか？
Iwamoto=ga *Sugiura=o*
I.=NOM S.=ACC
nagusame-mashi-ta-ka?
comfort-POL-PST-Q
'Did Iwamoto comfort Sugiura?'

d. 杉浦が岩本を慰めましたか？
Sugiura=ga *Iwamoto=o*
S.=NOM I.=ACC
nagusame-mashi-ta-ka?
comfort-POL-PST-Q
'Did Sugiura comfort Iwamoto?'

e. 杉浦が岩本に慰められましたか？
Sugiura=ga *Iwamoto=ni*
S.=NOM I.=DAT
nagusame-rare-mashi-ta-ka?
comfort-PASS-POL-PST-Q
'Was Sugiura comforted by Iwamoto?'

f. 岩本が杉浦に慰められましたか？
Iwamoto=ga *Sugiura=ni*
I.=NOM S.=DAT
nagusame-rare-mashi-ta-ka?
comfort-PASS-POL-PST-Q
'Was Iwamoto comforted by Sugiura?'

(C.9) *tatae-ru* 'give high praise to someone'

a. 講演会で / 片山が / 川島を / それとなく / たたえてあげた / らしい。
Kōenkai=de / *Katayama=ga* / *Kawashima=o*
lecture=LOC / K.=NOM / K.=ACC
/ *soretonaku* / *tatae-te* *age-ta* /
/ obliquely / compliment-CVB BEN.ACT-PST /
rashī.
INFR
'Katayama seems to have implicitly praised Kawashima at a lecture.'

b. 講演会で / 片山が / 川島に / それとなく / たたえてもらった / らしい。
Kōenkai=de / *Katayama=ga* / *Kawashima=ni*
lecture=LOC / K.=NOM / K.=DAT
/ *soretonaku* / *tatae-te* *morat-ta*
/ obliquely / compliment-CVB BEN.PASS-PST
/ *rashī.*
/ INFR
'At the lecture, Katayama was implicitly praised by Kawashima.'

c. 片山が川島をたたえましたか？
Katayama=ga *Kawashima=o*
K.=NOM K.=ACC
tatae-mashi-ta-ka?
compliment-POL-PST-Q
'Did Katayama praise Kawashima?'

d. 川島が片山をたたえましたか？
Kawashima=ga *Katayama=o*
K.=NOM K.=ACC
tatae-mashi-ta-ka?
compliment-POL-PST-Q
'Did Kawashima praise Katayama?'

e. 川島が片山にたたえられましたか？
Kawashima=ga *Katayama=ni*
K.=NOM K.=DAT
tatae-rare-mashi-ta-ka?
compliment-PASS-POL-PST-Q
'Was Kawashima praised by Katayama?'

f. 片山が川島にたたえられましたか？
Katayama=ga *Kawashima=ni*
K.=NOM K.=DAT
tatae-rare-mashi-ta-ka?
compliment-PASS-POL-PST-Q
'Was Katayama praised by Kawashima?'

(C.10) *iwa-u* 'congratulate'

a. 宴会で / 萩原が / 片岡を / かなり / 祝ってあげた / ようだ。
Enkai=de / *Hagiwara=ga* / *Kataoka=o* /
banquet=LOC / H.=NOM / K.=ACC /
kanari / *iwat-te* *age-ta* /
considerably / celebrate-CVB BEN.ACT-PST /
yōda.
INFR
'Hagiwara seems to have celebrated Kataoka considerably at the banquet.'

b. 宴会で / 萩原が / 片岡に / かなり / 祝ってもらった / ようだ。
Enkai=de / *Hagiwara=ga* / *Kataoka=ni* /
banquet=LOC / H.=NOM / K.=DAT /

kanari / iwat-te morat-ta /
considerably / celebrate-CVB BEN.PASS-PST /
yōda.
INFR
'Hagiwara seems to have been celebrated considerably by Kataoka at the banquet.'

c. 萩原が片岡を祝いましたか？
Hagihara=ga Kataoka=o
H.=NOM K.=ACC
iwai-mashi-ta-ka?
celebrate-POL-PST-Q
'Did Hagiwara celebrate Kataoka?'

d. 片岡が萩原を祝いましたか？
Kataoka=ga Hagihara=o
K.=NOM H.=ACC
iwai-mashi-ta-ka?
celebrate-POL-PST-Q
'Did Kataoka celebrate Hagiwara?'

e. 片岡が萩原に祝われましたか？
Kataoka=ga Hagihara=ni
K.=NOM H.=DAT
iwaw-are-mashi-ta-ka?
celebrate-PASS-POL-PST-Q
'Was Kataoka celebrated by Hagiwara?'

f. 萩原が片岡に祝われましたか？
Hagihara=ga Kataoka=ni
H.=NOM K.=DAT
iwaw-are-mashi-ta-ka?
celebrate-PASS-POL-PST-Q
'Was Hagiwara celebrated by Kataoka?'

(C.11) *suku-u* 'resque'

a. 沖合で / 関口が / 桑原を / 間一髪で / 救ってあげた / そうだ。
Okiai=de / Sekiguchi=ga / Kuwabara=o
offshore=LOC / S.=NOM / K.=ACC
/ kan'ippatsu-de / sukut-te age-ta /
/ hairbreadth-ADV / save-CVB BEN.ACT-PST /
sōda.
INFR
'Sekiguchi seems to have saved Kuwabara in the nick of time offshore.'

b. 沖合で / 関口が / 桑原に / 間一髪で / 救ってもらった / そうだ。
Okiai=de / Sekiguchi=ga / Kuwabara=ni
offshore=LOC / S.=NOM / K.=DAT
/ kan'ippatsu-de / sukut-te morat-ta /
/ hairbreadth-ADV / save-CVB BEN.PASS-PST /
sōda.
INFR
'Sekiguchi seems to have been saved by Kuwabara in the nick of time offshore.'

c. 関口が桑原を救いましたか？
Sekiguchi=ga Kuwabara=o
S.=NOM K.=ACC
sukui-mashi-ta-ka?
save-POL-PST-Q
'Did Sekiguchi save Kuwabara?'

d. 桑原が関口を救いましたか？
Kuwabara=ga Sekiguchi=o
K.=NOM S.=ACC
sukui-mashi-ta-ka?
save-POL-PST-Q
'Did Kuwabara save Sekiguchi?'

e. 桑原が関口に救われましたか？
Kuwabara=ga Sekiguchi=ni
K.=NOM S.=DAT
sukuw-are-mashi-ta-ka?
save-PASS-POL-PST-Q
'Was Kuwabara saved by Sekiguchi?'

f. 関口が桑原に救われましたか？
Sekiguchi=ga Kuwabara=ni
S.=NOM K.=DAT
sukuw-are-mashi-ta-ka?
save-PASS-POL-PST-Q
'Was Sekiguchi saved by Kuwabara?'

(C.12) *yato-u* 'hire'

a. 事務所で / 大石が / 内山を / なんとか / 雇ってあげた / みたいだ。
Jimusho=de / Ōishi=ga / Uchiyama=o /
office=LOC / O.=NOM / U.=ACC /
nantoka / yatot-te age-ta /
one.way.or.another / hire-CVB BEN.ACT-PST /
mitaida.
INFR
'Ōishi seems to have managed to hire Uchiyama at the office.'

b. 事務所で / 大石が / 内山に / なんとか / 雇ってもらった / みたいだ。
Jimusho=de / Ōishi=ga / Uchiyama=ni /
office=LOC / O.=NOM / U.=DAT /
nantoka / yatot-te morat-ta /
one.way.or.another / hire-CVB BEN.PASS-PST /
mitaida.
INFR
'Ōishi seems to have managed to be hired by Uchiyama at the office.'

c. 大石が内山を雇いましたか？
Ōishi=ga Uchiyama=o yatoi-mashi-ta-ka?
O.=NOM U.=ACC hire-POL-PST-Q
'Did Ōishi hire Uchiyama?'

d. 内山が大石を雇いましたか？
Uchiyama=ga Ōishi=o yatoi-mashi-ta-ka?
U.=NOM O.=ACC hire-POL-PST-Q
'Did Uchiyama hire Ōishi?'

e. 内山が大石に雇われましたか？
Uchiyama=ga Ōishi=ni
U.=NOM O.=DAT
yatow-are-mashi-ta-ka?
employ-PASS-POL-PST-Q
'Was Uchiyama hired by Ōishi?'

f. 大石が内山に雇われましたか？
Ōishi=ga *Uchiyama=ni*
O.=NOM U.=DAT
yatow-are-mashi-ta-ka?
employ-PASS-POL-PST-Q
'Was Ōishi hired by Uchiyama?'

(C.13) *mamo-ru* 'guard'

a. 襲撃地点で / 高山が / 奥村を / どうにか / 守ってあげた / らしい。
Shūgekichiten=de / *Takayama=ga* /
point.of.attack=LOC / T.=NOM /
Okumura=o / *dōnika* / *mamot-te*
O.=ACC / one.way.or.another / guard-CVB
age-ta / *rashī.*
BEN.ACT-PST / INFR
'Takayama seems to have managed to protect Okumura at the attack point.'

b. 襲撃地点で / 高山が / 奥村に / どうにか / 守ってもらった / らしい。
Shūgekichiten=de / *Takayama=ga*
point.of.attack=LOC / T.=NOM
/ *Okumura=ni* / *dōnika* /
/ O.=DAT / one.way.or.another /
mamot-te *morat-ta* / *rashī.*
guard-CVB BEN.PASS-PST / INFR
'Takayama seems to have somehow been protected by Okumura at the attack point.'

c. 高山が奥村を守りましたか？
Takayama=ga *Okumura=o*
T.=NOM O.=ACC
mamori-mashi-ta-ka?
guard-POL-PST-Q
'Did Takayama protect Okumura?'

d. 奥村が高山を守りましたか？
Okumura=ga *Takayama=o*
O.=NOM T.=ACC
mamori-mashi-ta-ka?
guard-POL-PST-Q
'Did Okumura protect Takayama?'

e. 奥村が高山に守られましたか？
Okumura=ga *Takayama=ni*
O.=NOM T.=DAT
mamor-are-mashi-ta-ka?
guard-PASS-POL-PST-Q
'Was Okumura protected by Takayama?'

f. 高山が奥村に守られましたか？
Takayama=ga *Okumura=ni*
T.=NOM O.=DAT
mamor-are-mashi-ta-ka?
guard-PASS-POL-PST-Q
'Was Takayama protected by Okumura?'

(C.14) *kaba-u* 'defend, harbour, cover for someone'

a. 会議で / 岡崎が / 小泉を / 精一杯 / かばってあげた / ようだ。
Kaigi=de / *Okazaki=ga* / *Koizumi=o*
meeting=LOC / O.=NOM / K.=ACC
/ *seiippai* / *kabat-te*
/ with.might.and.main / defend-CVB
age-ta / *yōda.*
BEN.ACT-PST / INFR
'Okazaki seems to have defended Koizumi with might and main at the meeting.'

b. 会議で / 岡崎が / 小泉に / 精一杯 / かばってもらった / ようだ。
Kaigi=de / *Okazaki=ga* / *Koizumi=ni*
meeting=LOC / O.=NOM / K.=DAT
/ *seiippai* / *kabat-te*
/ with.might.and.main / defend-CVB
morat-ta / *yōda.*
BEN.PASS-PST / INFR
'Okazaki seems to have been defended by Koizumi with might and main at the meeting.'

c. 岡崎が小泉をかばいましたか？
Okazaki=ga Koizumi=o kabai-mashi-ta-ka?
O.=NOM K.=ACC defend-POL-PST-Q
'Did Okazaki defend Koizumi?'

d. 小泉が岡崎をかばいましたか？
Koizumi=ga Okazaki=o kabai-mashi-ta-ka?
K.=NOM O.=ACC defend-POL-PST-Q
'Did Koizumi defend Okazaki?'

e. 小泉が岡崎にかばわれましたか？
Koizumi=ga *Okazaki=ni*
K.=NOM O.=DAT
kabaw-are-mashi-ta-ka?
defend-PASS-POL-PST-Q
'Was Koizumi defended by Okazaki?'

f. 岡崎が小泉にかばわれましたか？
Okazaki=ga *Koizumi=ni*
O.=NOM K.=DAT
kabaw-are-mashi-ta-ka?
defend-PASS-POL-PST-Q
'Was Okazaki defended by Koizumi?'

(C.15) *sasae-ru* 'support'

a. 工事現場で / 篠原が / 大森を / しっかり / 支えてあげた / そうだ。
Kōjigenba=de / *Shinohara=ga*
construction.site=LOC / S.=NOM
/ *Ōmori=o* / *shikkari* / *sasae-te*
/ Ō.=ACC / firmly / support-CVB
age-ta / *sōda.*
BEN.ACT-PST / INFR
'Shinohara seems to have supported Ōmori well at the construction site.'

b. 工事現場で / 篠原が / 大森に / しっかり / 支えてもらった / そうだ。
Kōjigenba=de / *Shinohara=ga*
construction.site=LOC / S.=NOM
/ *Ōmori=ni* / *shikkari* / *sasae-te*
/ Ō.=DAT / firmly / support-CVB

morat-ta / *sōda.*
ben.pass-pst / infr
'Shinohara seems to have been well supported by Ōmori at the construction site.'

c. 篠原が大森を支えましたか？
Shinohara=ga Ōmori=o sasae-mashi-ta-ka?
s.=nom Ō.=acc support-pol-pst-q
'Did Shinohara support Ōmori?'

d. 大森が篠原を支えましたか？
Ōmori=ga Shinohara=o sasae-mashi-ta-ka?
Ō.=nom s.=acc support-pol-pst-q
'Did Ōmori support Shinohara?'

e. 大森が篠原に支えられましたか？
Ōmori=ga Shinohara=ni
Ō.=nom s.=dat
sasae-rare-mashi-ta-ka?
support-pass-pol-pst-q
'Was Ōmori supported by Shinohara?'

f. 篠原が大森に支えられましたか？
Shinohara=ga Ōmori=ni
s.=nom Ō.=dat
sasae-rare-mashi-ta-ka?
support-pass-pol-pst-q
'Was Shinohara supported by Ōmori?'

(C.16) *kawaiga-ru* 'treat with kindness, cherish'

a. 職場で / 上原が / 松原を / とても / 可愛がってあげた / みたいだ。
Shokuba=de / *Uehara=ga* / *Matsubara=o*
workplace=loc / u.=nom / m.=acc
/ *totemo* / *kawaigat-te*
/ very / treat.with.kindness-cvb
age-ta / *mitaida.*
ben.act-pst / infr
'Uehara seems to have treated Matsubara very kindly at the workplace.'

b. 職場で / 上原が / 松原に / とても / 可愛がってもらった / みたいだ。
Shokuba=de / *Uehara=ga* / *Matsubara=ni*
workplace=loc / u.=nom / m.=dat
/ *totemo* / *kawaigat-te*
/ very / treat.with.kindness-cvb
morat-ta / *mitaida.*
ben.pass-pst / infr
'Uehara seems to have been treated very kindly by Matsubara at the workplace.'

c. 上原が松原を可愛がりましたか？
Uehara=ga Matsubara=o
u.=nom m.=acc
kawaigari-mashi-ta-ka?
treat.with.kindness-pol-pst-q
'Did Uehara treat Matsubara kindly?'

d. 松原が上原を可愛がりましたか？
Matsubara=ga Uehara=o
m.=nom u.=acc
kawaigari-mashi-ta-ka?
treat.with.kindness-pol-pst-q
'Did Matsubara treat Uehara kindly?'

e. 松原が上原に可愛がられましたか？
Matsubara=ga Uehara=ni
m.=nom u.=dat
kawaigar-are-mashi-ta-ka?
treat.with.kindness-pass-pol-pst-q
'Was Matsubara treated kindly by Uehara?'

f. 上原が松原に可愛がられましたか？
Uehara=ga Matsubara=ni
u.=nom m.=dat
kawaigar-are-mashi-ta-ka?
treat.with.kindness-pass-pol-pst-q
'Was Uehara treated kindly by Matsubara?'