Journal of the Ochanomizu University English Society
No. 13（*2023*）

Minimal Sufficiency Readings in English and Japanese

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Synopsis

This paper examines whether Japanese exclusives *tada* and *dake* trigger a minimal sufficiency reading which an English exclusive *just* does. For VP, NP, and NP with a numeral, I judge the acceptability and interpretation of sentences where *tada*, *dake*, or *-de* 'by' is removed and ones whose construction is different. The results indicate that not *tada* but *dake-de* plays an important role in inferring a minimal sufficiency reading in Japanese. Then by closely analyzing the process of this reading, I demonstrate that *tada* assists *dake-de* by its depreciatory and exclusive meaning.

This study also discusses two theoretical properties of minimal sufficiency readings and their constituents in Japanese, on the grounds of suggestions in previous studies on English. First, following Coppock and Beaver (2014) who provided a unified account for minimal sufficiency readings and exclusive ones, I compare minimal sufficient *dake-de* and exclusive *de-dake*, whose word order is opposite. I argue that the exclusivity of *dake* itself in *dake-de* is lexically identical to that in exclusive readings. Second, assuming Panizza and Sudo's (2020) hypothesis that minimal sufficiency readings in English involve both *even* and *just*, I replicate *even just* by adding an *even*-like focus particle *-mo* to *dake-de* to make *dake-de-mo*.

Keywords: minimal sufficiency readings, *just*, focus particles, exclusives

1. Introduction

Some English particles, such as *only* and *just*, are well known as words which have exclusive readings, called 'exclusives.' For example, according to Coppock and Beaver (2014), in (1) people except John and Mike are excluded from the set of entities who were invited by Mary. In (2), what is excluded is the possibility that John is higher ranked than a graduate student in terms of academic status. Both *only* and *just* can be used in (1) and (2).

(1) Mary only/just invited John and Mike.

(2) John is only/just a graduate student. (Coppock and Beaver 2014: 378)

Some exclusives have other meanings besides the exclusive reading. *Just*, for instance, can have what Grosz (2012) calls 'minimal sufficiency readings.' Coppock and Beaver (2014: 399) suggested that in (3), a sentence containing *just*, the thought of him "is (minimally) sufficient to induce the effect in question."

(3) Just the thought of him sends shivers down my spine. (Coppock and Beaver 2014: 399)

Notice that in this reading, events which are more likely to send shivers down one's spine (e.g. his presence or touch) will of course send shivers down the speaker's spine. Replacing *just* in (3) with *only* induces only an exclusive reading.[1] (4) implies that nothing other than the thought of him sends shivers down the speaker's spine.

(4) Only the thought of him sends shivers down my spine. (Coppock and Beaver 2014: 399)

As far as I know, there has been no detailed theoretical investigation of minimal sufficiency readings in Japanese expressions. The aim of this study is therefore to examine how to express minimal sufficiency readings in Japanese.

Japanese speakers will translate (3) into (3′). In (3′), words which seem to correspond to English *just* are *tada*...*dake-de*.

(3′) Tada kare-nituite kangaeru-dake-de, watasi-no sesuzi-ga zottosuru.[2]
just he-about think-only-by I-Gen spine-Nom shiver

Japanese *tada* and *dake* and English *just* and *only* have some uses in common, besides minimal sufficiency readings. This can be seen in (1′) and (2′), a translation of (1) and (2), respectively. *Dake* in (1′) and *tada* in (2′) are used as *only* or *just*.

(1′) Mary-wa John-to Mike-dake syootaisi-ta.
Mary-Top John-and Mike-only invite-Past

(2′) John-wa tada-no daigakuinsei da.
John-Top just-Gen graduate student Cop

However, in Japanese, *tada* and *dake* appear to induce minimal sufficiency readings together at least in (3′), whereas only one word *just* does so in English. It is possible that English and Japanese expressions do not have a one-to-one correspondence. Thus, the central questions in the present study ask whether both *tada* and *dake* are necessary to derive minimal sufficiency readings and how exactly these expressions trigger the readings. This paper also compares *tada* and *dake* to *just* in terms of their implications and the process of generating minimal sufficiency readings. I argue that *dake-de* plays an important role in minimal sufficiency readings in Japanese and that *tada* merely reinforces the interpretation.

This paper is organized in the following way. In section 2, I introduce two previous studies on minimal sufficiency readings of *just*. Section 3 investigates what kind of Japanese expression corresponds to *just* which triggers minimal sufficiency readings, based on the contents of section 2. Section 4 examines whether some ideas in the previous studies can be reproduced in Japanese. Section 5 gives the conclusion.

2. Previous Studies

This section summarizes two previous works on *just* having minimal sufficiency readings: Coppock and Beaver (2014) in section 2.1 and Panizza and Sudo (2020) in section 2.2.[3]

2.1. Coppock and Beaver (2014)

Coppock and Beaver (2014) explored semantic elements which all kinds of exclusives in English, such as *only*, *just*, and *merely*, have in common. The semantic content of (5) consists of two elements: a positive component, which implies that the prejacent *this is for fun* is true, and a negative component, which means that *this* has no purpose except for fun, i.e., *this is for no more than fun*. (The prejacent of *only* is the meaning of the phrase except *only*, derived from the sentence containing *only*.)

(5) This is only for fun. (Coppock and Beaver 2014: 372)

They called these semantic components shared by diverse exclusives "$[\![\text{only}]\!]^S$." This symbol presupposes "MIN" in (6) denoting "at least" and asserts "MAX" in (7) denoting "at most." In these definitions, "S" stands for a contextually relevant scale, and "p" is a proposition which a prejacent describes. An alternative proposition of p is notated as "p′." "CQ" denotes 'a current question under discussion,' the set of propositions which can be an answer to the question at the utterance. (6) implies that there is p′ that is true in a world w and is the same or higher than p on the scale. (7) means that p is ranked the same or higher than every p′ on the scale if p′ holds at w. In other words, there should be no p′ that is higher than p and is true.

(6) $\text{MIN}_S(p) = \lambda w.\exists p' \in CQ_S\ [p'(w) \wedge p' \geq_S p]$

(7) $\text{MAX}_S(p) = \lambda w.\forall p' \in CQ_S\ [p'(w) \rightarrow p \geq_S p']$ (Coppock and Beaver 2014: 394)

Coppock and Beaver analyzed various exclusives using (6) and (7). Among them, *just* with minimal sufficiency readings is regarded as a kind of "P-ONLY" (8), a modifier of type ⟨e, p⟩ which describes properties.

(8) Core meaning for adjectival exclusives

$\text{P-ONLY}_S = \lambda P_{\langle e, p\rangle}.\ \lambda x\text{: } \text{MIN}_S(P(x)).\ \text{MAX}_S(P(x))$ (Coppock and Beaver 2014: 397)

Consider (3) (repeated in (9)), for example.

(9) Just the thought of him sends shivers down my spine. (Coppock and Beaver 2014: 399)

Here *the thought of him* is a minimal condition to send shivers down the speaker's spine, as I mentioned in section 1. Thus, *just* means an "at least" component as a presupposition that the content of the expression focused by *just* is a minimum to have a property described in VP. At the same time, *just* signifies an "at most" component as an at-issue meaning (the main, explicit meaning of the sentence) that the content of the focused expression has a property described in VP and no further meanings. (9) can be paraphrased by *only* as "Something that is only the thought of him sends shivers down my spine." This paraphrase proves that this *just* is a sort of P-ONLY and has a semantic scope within a noun phrase.

2.2. Panizza and Sudo (2020)

The main proposal by Panizza and Sudo (2020) is that there is a covert, unpronounced *even* in sentences where *just* triggers minimal sufficiency readings. They took (10a) as an example and (10b, c) as

its alternatives. (A subscript "$_F$" denotes an expression which *just* focuses.)

(10) a. Just one$_F$ cat will make Patrick happy.
b. Just two$_F$ cats will make Patrick happy.
c. Just three$_F$ cats will make Patrick happy. (Panizza and Sudo 2020: 13)

They established a semantic scope of *just* and covert *even* separately, regardless of their syntactic position. *Just* takes its scope at a DP level, since otherwise it will exclude situations ranked higher than the minimum when excluding at a sentence level. The definition (11) indicates that *just* has only an exclusive meaning and no scalar components.

(11) 'Just φ' asserts that 'φ' is true and that all focus alternatives in Alt(φ) that are not entailed by 'φ' are false. (Panizza and Sudo 2020: 8)

"φ" denotes a prejacent and "Alt(φ)" the set of alternative propositions to φ. Assuming (11), if *just* takes its scope at a sentence-level, alternatives ranked higher than φ in (10a), such as (10b, c), are wrongly predicted to be false because they are not entailed by φ. Restricting the semantic effect of *just* to DP will let us avoid this problem and make the meaning of *just* consistent with *even* explained below.

Covert *even* has a scope over a whole sentence, wider than that of *just*. The reason for this is to differentiate sentences with minimal sufficiency readings from ones which have the same subject DP but no such readings. One example of this is (12), where a distributive predicate *is in the room* forces the sentence to have only an exclusive reading.

(12) Just one$_F$ cat is in the room. (Panizza and Sudo 2020: 6)

The presuppositions of *even* were defined as what Karttunen and Peters (1979) proposed: a scalar presupposition in (13a) and an additive presupposition in (13b).

(13) 'Even φ' presupposes:
a. that φ is relatively unlikely to be true among Alt(φ); and
b. that there is ψ ∈ Alt(φ) that is not entailed by φ and is true. (Panizza and Sudo 2020: 11)

For instance, in (14) containing overt *even* and *just*, the set of alternatives on which *even* operates includes the sentences with *just* in (10), since *even* takes scope over the whole sentence. In (10), *just* has a scope within DP and excludes the alternatives to the focused DP. This feature enables (10a) to mean that exactly one cat (neither two nor three cats) will make Patrick happy.

(14) Even just one$_F$ cat will make Patrick happy. (Panizza and Sudo 2020: 2)

The scalar presupposition from *even* is that (10a) is less possible among these alternatives, and the additive presupposition conveys that at least one more proposition in the alternatives besides (10a) is true. Then the semantic contribution of *just* will be insignificant for the whole sentence. The covert version of *even* works in the same way as this.

3. Examination of Data on Minimal Sufficiency Readings in Japanese

As seen in section 2, *just* is felicitously used as a particle which triggers minimal sufficiency readings. This section investigates exactly what expression in Japanese corresponds to this use of *just*. From sentences with minimal sufficiency readings in Japanese, I delete morphemes which are probably relevant to this

reading, namely, *tada* 'just,' *dake* 'only,' and *-de* 'by,' respectively. Then I judge whether the resulting sentences still obtain this reading. Section 3.1 deals with verb phrases and section 3.2 with noun phrases.

3.1. A Japanese Equivalent to *Just* Which Focuses on VP

In this subsection, I apply a nominalized VP focused by *just* to Japanese. To begin with, (3) (repeated in (15)) can be translated into the Japanese sentence (3′) (repeated in (16a)), as in section 1.

(15) Just the thought of him sends shivers down my spine. (Coppock and Beaver 2014: 399)

(16) a. Tada kare-nituite kangaeru-dake-de, watasi-no sesuzi-ga zottosuru.
just he-about think-only-by I-Gen spine-Nom shiver

(16a), which contains *tada ... dake-de*, is certainly felicitous with a minimal sufficiency reading.[4] I make some alterations to *tada…dake-de* and its sentence structure. In (16b), *tada* 'just' is removed from (16a). (16b) is natural as a sentence with a minimal sufficiency reading.

(16) b. Kare-nituite kangaeru-dake-de, watasi-no sesuzi-ga zottosuru.
he-about think-only-by I-Gen spine-Nom shiver

(16c) removes *dake* 'only' and inserts a complementizer *koto* 'that' to nominalize the VP *kare-nituite kangaeru* 'think of him.' Henceforth, this insertion will be applied to sentences where *dake* following VP is deleted.

(16) c. ?Tada kare-nituite kangaeru-koto-de, watasi-no sesuzi-ga zottosuru.
just he-about think-Comp-by I-Gen spine-Nom shiver

(16c) might have a minimal sufficiency reading, but the hearer will feel that this lacks the word *dake* and therefore is unnatural. The most dominant interpretation here is rather an exclusive reading that the speaker will shiver if he or she concentrates on thinking of him without doing anything. This reading differs from the one for (4) in section 1 (repeated in (17)).

(17) Only the thought of him sends shivers down my spine. (Coppock and Beaver 2014: 399)

(16c) does not necessarily exclude the possibility that acts which are more likely to send shivers down the speaker's spine (e.g. his presence) will actually do so. In fact, (16c) can be followed by both a negative sentence *Kare-ni au-koto-de-wa zottosi-nai* 'his presence does not send shivers down my spine' and a sentence with the additive particle *-mo* 'also,' that is, *Kare-ni au-koto-de-mo zottosuru* 'his presence also sends shivers down my spine.' I call this type of interpretation 'the exclusive reading 2' to distinguish it from the one for (17) which I call 'the exclusive reading 1.'

(16d) without *-de* 'by' is unacceptable. This judgment remains in (16e) which lacks *tada* and *-de*. (16f), where *tada* and *dake* are removed, is a natural sentence but does not have a minimal sufficiency reading. This is equivalent to a sentence where *just* is deleted from (15).

(16) d. *Tada kare-nituite kangaeru-dake, watasi-no sesuzi-ga zottosuru.
just he-about think-only I-Gen spine-Nom shiver

e. *Kare-nituite kangaeru-dake, watasi-no sesuzi-ga zottosuru.
he-about think-only I-Gen spine-Nom shiver

f. Kare-nituite kangaeru-koto-de, watasi-no sesuzi-ga zottosuru.
he-about think-Comp-by I-Gen spine-Nom shiver

(16g) lacking *dake* and *-de* and (16h) lacking *tada*, *dake*, and *-de* are unacceptable because their NP whose head is *koto* 'that' cannot adjoin to the remaining predicate phrase.

(16) g. *Tada kare-nituite kangaeru-koto, watasi-no sesuzi-ga zottosuru.
just he-about think-Comp I-Gen spine-Nom shiver
h. *Kare-nituite kangaeru-koto, watasi-no sesuzi-ga zottosuru.
he-about think-Comp I-Gen spine-Nom shiver

Next, I change the nominalized VP with *-de* to a subject with a nominative case marker *-ga*. (The main predicate phrase here involves a causative particle *-saseru* to be consistent with *-ga*.) The results of this change are shown in (18). (18a) is grammatical but only has an exclusive reading 1 that nothing except the thought of him sends shivers down the speaker's spine, the same as (17). This reading remains regardless of the presence of *tada*. (18b) without *dake* has no grammatical problems but conveys only an 'exclusive reading 2' as in (16c).

(18) a. (Tada) kare-nituite kangaeru-koto-dake-ga, watasi-no sesuzi-o zottosa-seru.
just he-about think-Comp-only-Nom I-Gen spine-Acc shiver-Caus
b. Tada kare-nituite kangaeru-koto-ga, watasi-no sesuzi-o zottosa-seru.
just he-about think-Comp-Nom I-Gen spine-Acc shiver-Caus

I argue that the exclusive reading 1 of (18a) and 2 of (18b) are related to the nominative case marker *-ga*.[5] According to Kuno (1973: 53), *-ga* must receive an 'exhaustive-listing' interpretation if a predicate contains a stative verb, such as habitual or generic ones, or an adjective or nominal which expresses a permanent state. This interpretation means that as for a subject X, it is "X and only X" that is true of the content of the predicate. (18a) and (18b) obviously describe the static property which the act of the thought of him possesses, not a single dynamic situation, and exclude the other acts. However, Noda (1996: 231) suggested that the exclusivity is slightly weak if the alternatives are not explicitly uttered. This weakening may be a factor in the inability to completely exclude the possibility that other acts will send shivers down the speaker's spine in the exclusive reading 2 of (18b). In contrast to this, *dake* in (18a) gives rise to the exclusive reading 1, which excludes every act except the thought of him.

The third sentence structure to be observed is replacing *dake-de* 'only + by' in (16a) with *-eba* and *-to* corresponding to the English *if*-clause, as in (19).

(19) a. *Tada kare-nituite kangaer-eba, watasi-no sesuzi-ga zottosuru.
just he-about think-Cond I-Gen spine-Nom shiver
b. Tada kare-nituite kangaeru-to, watasi-no sesuzi-ga zottosuru.
just he-about think-Cond I-Gen spine-Nom shiver

(19a) is not acceptable as a sentence because of the oddity of the combination of "*tada* + verb + *-eba*."[6] On the other hand, in (19b) with the construction "*tada* + verb + *-to*," the presence of *tada* increases the degree of concentration on the thought of him. Nonetheless, it cannot entirely eliminate the simultaneous act of thinking of him and other things. This interpretation would be a variation on the exclusive reading 2 with less exclusivity. (19b) does not necessarily also exclude the possibility that other acts will send shivers down the speaker's spine. I believe that such a weak exclusivity is derived from the absence of the exclusive nominative case marker *-ga* above.

The sentences in (16), (18), and (19) clearly show that *tada...dake-de* in (16a) and *dake-de* in (16b) are the most felicitous sentences to gain a minimal sufficiency reading without ambiguity. (16c) with *tada... koto-de* might have this reading, but the sentence itself is unnatural and more likely to have the exclusive reading 2. These results indicate that *dake-de* serves a central role in minimal sufficiency readings in Japanese like English *just*. *Tada* is inadequate to establish this reading by itself. It is also revealed that the form *dake-de*, not *dake* alone, is required to avoid the oddity in (16d, f).

Then what role does *tada* have in minimal sufficiency readings? In the following, I provide the meaning of *tada*, *dake*, and *-de*, and further examine the possible outcome of combining these morphemes. *Tada* itself has a 'depreciatory meaning' (following Lee (1987) for English *just*) which undervalues the contents of the focus of *tada*. This meaning ranks the thought of him at (or near) the bottom of the scale of the degree of contact among the acts about him. *Tada* also carries an exclusive meaning which eliminates other acts, as mentioned in (18) and (19). Moreover, the hearer will intuitively feel that *dake* possesses stronger exclusivity than *tada* due to slightly different fields of alternatives that the exclusives eliminate. This distinction is illustrated in (20).

(20) a. John-wa tada sakkaa-no rensyuu-o suru.
John-Top just soccer-Gen practice-Acc do
b. John-wa sakkaa-no rensyuu-o suru-dake da.
John-Top soccer-Gen practice-Acc do-only Cop
'John just/only practices soccer.'

Here a natural context expected before the utterance is different. In (20a) including *tada*, the soccer practice is inferior in quality since John does not devise any successful ways of practicing. In (20b) including *dake*, John practices soccer hard even though no games are scheduled. The exclusives eliminate fruitful contents of the practice in (20a) and other acts except practicing soccer (e.g. playing in a game) in (20b). (20a, b) show that *tada* excludes remarkable properties or qualities of the modified expression, whereas *dake* excludes other things in a contextually relevant category except the modified expression. This difference leads the hearer to get a stronger impression of exclusivity from *dake* than *tada*.

The depreciatory and exclusive meanings of *tada* and *dake* above produce an effect of focusing on the thought of him, which is ranked at or near the bottom of the scale, and excluding other actions related to him. To have this effect, the exclusivity needs to be as strong as that of *dake*. A particle *-de* denotes means or methods, similar to English *by*. Combining this *-de* with *tada...dake* results in the meaning of "by a certain thing ranked at or near the bottom of the scale." The whole sentence including the predicate conveys that by the thought of him with the lowest degree of contact, the speaker shivers. From this interpretation, we can assume that other acts with a higher degree of contact will of course send shivers down the speaker's spine. If this process is the case, it can be suggested that *tada* plays the role of semantically assisting *dake-de* by its depreciatory and exclusive meaning.

This process can also account for the interpretations of (18a, b) besides minimal sufficiency readings. The case marker *-ga* in (18a, b) has an exclusive meaning unlike *-de*. Using *tada*, *dake*, and *-ga* at the same time, therefore, makes exclusivity too strong. This exclusivity cannot be relieved even at a sentential level, so we cannot make the assumption to induce minimal sufficiency readings. Despite this, (18b) can slightly

reduce its exclusivity and have some room for the minimal sufficiency reading, due to the absence of *dake*. (19b) has an even weaker exclusivity than (18b), since *tada* is the only exclusive element in (19b). In this time, however, the exclusivity is too weak to produce the necessary effect of excluding other acts for a while for a minimal sufficiency reading. Then the sentence will be interpreted as the weaker version of the exclusive reading 2.

The operation of temporarily excluding the other things ranked higher than the modified expression on the scale agrees with the claim of Panizza and Sudo (2020), where *just* means neither more nor less than the modified phrase like *exactly* and does not include higher-ranked alternatives like *at least*. The exclusivity of *tada* is also supported by the proposal by Aizawa and Sato (2008) that the adverbial use of *tada* expresses a state of the modified predicate phrase, excluding the other elements.

3.2. A Japanese Equivalent to *Just* Which Focuses on NP

This subsection addresses sentences where exclusives modify a non-deverbal noun phrase. As an example, I translate (10a) in section 2.2 (repeated in (21)) into Japanese.

(21) Just one$_F$ cat will make Patrick happy. (Panizza and Sudo 2020: 13)

The first to be considered is the (un)acceptability of (22a) with *tada...dake-de* and (22b-h) which remove *tada*, *dake*, or *-de*. The pattern of the word deletion in (22b-h) corresponds to that in (16b-h).

(22a) is slightly unnatural with *tada*, since the hearer will feel the sentence redundant. *Tatta*, a variant of *tada*, improves the acceptability, but the redundancy remains.

(22) a. {?Tada/Tatta} ip-piki-no neko-dake-de, Patrick-wa uresiku-naru.
{just/single} one-Cl-Gen cat-only-by Patrick-Top happy-become

(22b) is felicitous with a minimal sufficiency reading, the same as (16a, b).

(22) b. Ip-piki-no neko-dake-de, Patrick-wa uresiku-naru.
one-Cl-Gen cat-only-by Patrick-Top happy-become

(22c) with *tada* sounds as slightly unnatural as (22a) with *tada*, but it has no redundancy. (22c) with *tatta* is both grammatical and natural, which is considered equivalent to (22b). (22c) is more acceptable than (16c) although the basic structure is the same.

(22) c. {?Tada/Tatta} ip-piki-no neko-de, Patrick-wa uresiku-naru.
{just/single} one-Cl-Gen cat-by Patrick-Top happy-become

Dake in (22d, e) possibly represents the amount of happiness, which can be paraphrased as *Patrick becomes as happy as if he encountered just one cat*. In such cases, however, the sentences are unacceptable unless we add *bun* 'as much as' to the NP to make *ip-piki-no neko-no bun-dake* 'as much as one cat.'

(22) d. #{Tada/Tatta} ip-piki-no neko-dake, Patrick-wa uresiku-naru.
{just/single} one-Cl-Gen cat-only Patrick-Top happy-become
e. # Ip-piki-no neko-dake, Patrick-wa uresiku-naru.
one-Cl-Gen cat-only Patrick-Top happy-become

The judgment on (22f) will be the same as (16f) in that it corresponds to the sentence which removes *just* from (21). It is grammatical but does not have a minimal sufficiency reading.

(22) f. Ip-piki-no neko-de, Patrick-wa uresiku-naru.

one-Cl-Gen cat-by Patrick-Top happy-become

(22g, h) are unacceptable for the same reason as (16g, h). The NP whose head is *neko* 'cat' cannot be attached to the remaining predicate phrase.

(22) g. *{Tada/Tatta} ip-piki-no neko, Patrick-wa uresiku-naru.
{just/single} one-Cl-Gen cat Patrick-Top happy-become
h. *Ip-piki-no neko, Patrick-wa uresiku-naru.
one-Cl-Gen cat Patrick-Top happy-become

Second, I examine (23a, b) containing a nominative case marker *-ga* and a causative particle *-saseru*, which correspond to (18a, b).

(23) a. {?Tada/Tatta} ip-piki-no neko-dake-ga, Patrick-o uresiku-saseru.
{just/single} one-Cl-Gen cat-only-Nom Patrick-Acc happy-Caus
b. {?Tada/Tatta} ip-piki-no neko-ga, Patrick-o uresiku-saseru.
{just/single} one-Cl-Gen cat-Nom Patrick-Acc happy-Caus

(23a) is too wordy with both *tada* and *tatta*. Using *tada* sounds odd as well. This judgment is similar to that on (18a). Furthermore, (23a) has only an exclusive reading 1 that no more than one cat will make Patrick happy. From (23b), the addressee will not think that this statement is true of any cat but that *ip-piki-no neko* 'one cat' refers to a specific cat. It conveys that the cat which was actually in the event illustrated in (23b) made Patrick happy. This sense could be attributed to another function of *-ga*. According to Kuno (1973: 58), when a subject includes a numeral or a quantifier, the interpretation of *-ga* becomes ambiguous between an exhaustive-listing reading and a 'neutral description' one, even with a permanent-state predicate. In the neutral description reading, the sentence neutrally depicts an event which is happening right before the speaker's eyes or a fact about the subject containing a quantifier, without any exclusive intentions. This usage of *-ga* can apply to (23b). This is not triggered by *tada* nor *tatta*. In fact, sentences without these words can give rise to this reading. A role of *tada* and *tatta* in (23b) is emphasizing the small number *ip-piki* 'one-Cl.' This sentence itself does not entail that more than one cat will make Patrick happy. These features thus indicate that (23b) does not have a minimal sufficiency reading.

There is no need to consider sentences with *-eba* and *-to* 'if' corresponding to (19a, b), since *-eba* and *-to* cannot directly adjoin to NP.

Next, I investigate cases where the exclusives operate on NP without numerals. Note here that Japanese does not require morphemes to distinguish singular and plural number like English. For example, when uttering a bare noun *neko* 'cat,' the hearer will not care about the number of cats unless it is used in an episodic sentence or a description right before the speaker's eyes in (23b). This form rather denotes cats as a species in a generic sentence. With this fact in mind, consider sentences where the numeral *ip-piki* 'one-Cl' is removed from (22a-h), as shown in (24a-h). (24a) could be started with *tada*, but it sounds slightly odd. I do not put a question mark on *tada* in (24a) because it appears better than *tada neko-de* in (24c) below. Another point to observe in (24a) is that using *tatta* is far less natural than *tada*.

(24) a. {Tada/??Tatta} neko-dake-de, Patrick-wa uresiku-naru.
{just/single} cat-only-by Patrick-Top happy-become

(24b) is felicitous with a minimal sufficiency reading in the same way as (22b).

(24) b. Neko-dake-de, Patrick-wa uresiku-naru.
cat-only-by Patrick-Top happy-become

Tada in (24c) has the same kind of strangeness as *tada* in (22c). Besides, uttering *tatta* in (24c) is odder than *tatta* in (24a).

(24) c. {?Tada/??Tatta} neko-de, Patrick-wa uresiku-naru.
{just/single} cat-by Patrick-Top happy-become

(24d, e) cannot receive a minimal sufficiency reading. Due to the absence of the numeral *ip-piki* 'one-Cl,' they also lack the interpretation which regards one cat as a degree of happiness as in (22d, e). However, unlike (22d, e), they have the exclusive reading 1 that nothing other than cats (e.g. other animals) will make Patrick happy. In this reading, (24d) with *tada* needs a specific context such as *I do not know the reason, but ...* With *tatta*, (24d) is as unacceptable as (24c) with *tatta*.

(24) d. {?Tada/??Tatta} neko-dake, Patrick-wa uresiku-naru.
{just/single} cat-only Patrick-Top happy-become

e. Neko-dake, Patrick-wa uresiku-naru.
cat-only Patrick-Top happy-become

(24f) is considered natural but does not contain a minimal sufficiency reading, like (22f).

(24) f. Neko-de, Patrick-wa uresiku-naru.
cat-by Patrick-Top happy-become

Again, (24g, h) are unacceptable, since the NP cannot be directly followed by the predicate phrase.

(24) g. *{Tada/Tatta} neko, Patrick-wa uresiku-naru.
{just/single} cat Patrick-Top happy-become

h. *Neko, Patrick-wa uresiku-naru.
cat Patrick-Top happy-become

From these examples in (22)-(24), it is apparent that the best ways to induce minimal sufficiency readings are *iti* 'one' + a noun + *dake-de* 'only-by' in (22b) and *tatta* 'single' + *iti* + a noun + *-de* in (22c) for NP with a numeral and *dake-de* in (24b) for one without a numeral. *Tatta* is much more suitable to a numeral than *tada* is, but it is infelicitous with a bare noun. These results and those for VP with exclusives have not only similarities but also some differences.

Let us start with a detailed analysis of NP unaccompanied by a numeral, since it will be more straightforward to explain. The semantic contents of the relevant particles and the process of generating the minimal sufficiency reading can be accounted for in basically the same way as the case where *tada... dake-de* modifies VP. Take *neko-dake-de* 'by only cats' in (24b) for example. First, the strong exclusivity by *dake* focuses on *neko* 'cat' and removes other things (e.g. other animal species) for a while. Adding *-de*, the particle denoting methods, to this implies *by cats, one single kind of animal*. Thus the entire sentence with the predicate phrase conveys that by cats, one single kind of animal, Patrick will become happy. Then other possible factors or animals which might make Patrick happy get released from the removal. Generally, the

more factors there are to make someone happy, the more likely the person is to become happy. It can be therefore assumed that other joyful things in addition to cats will certainly make Patrick happy.

On the other hand, hearers will feel that *tada neko-dake-de* in (24a) and *tada neko-de* in (24c) are strange. This may be derived from the word choice of *neko* 'cat.' Cats are known as popular pets and liked by quite a few people. Again, *tada* has a depreciatory meaning as well as an exclusive one. A mismatch between the depreciatory meaning of *tada* and the image of cats may cause a slight strangeness in (24a, c). Let us replace *neko* in (24a) with *ari* 'ant,' as shown in (24a′).

(24) a′. Tada ari-dake-de, Patrick-wa uresiku-naru.
just ant-only-by Patrick-Top happy-become

Some Japanese speakers feel (24a′) a little more natural than (24a). Ants tend to be considered insignificant, so it is less likely that ants will make someone happy. This image of ants may help to understand the sentence readily. Besides, comparison between (24a) and (24c) reveals that a strong exclusive meaning of *dake* in (24a) is significant for giving rise to minimal sufficiency readings smoothly. Hence (24a) is still more acceptable than (24c).

One difference in the results between NP with a numeral and VP is that *tatta ip-piki-no neko-dake-de* 'by only one single cat' in (22a), which includes all relevant particles (*tatta*, *dake*, and *-de*), sounds too wordy. It is more natural to use *iti* + a noun + *dake-de* in (22b) or *tatta* + *iti* + a noun + *-de* in (22c), as I highlighted above. This difference resulted from a numeral *ip-piki* 'one-Cl.' *One* is lexically the lowest number to count things. Therefore, the word *iti* 'one' allows *ip-piki-no neko* 'one cat' to be the lowest on the scale of the number of cats. Moreover, by the scalar implicature, uttering *one* excludes all numbers higher than one unless it is followed by some expressions to cancel this implicature such as *possibly two*. As a result, a numeral denoting a tiny number fills a similar role to a depreciatory meaning of *tada* 'just' and an exclusive meaning of *tada* and *dake* 'only' for VP as in section 3.1. Adding either *tatta* or *dake* emphasizes the depreciatory and/or exclusive meaning. However, attaching both of them to make a phrase *tatta ip-piki-no neko-dake-de* will highlight these meanings too much and convey the impression that the sentence is redundant.

In conclusion, the results from section 3 show that the presence of *dake-de* is essential for gaining minimal sufficiency readings, at least in the scope of this investigation. This section also explains how *tada*, *dake*, and *-de* interact with each other to give rise to this interpretation.

4. A Theoretical Analysis Based on the Data

This section discusses minimal sufficiency readings from a theoretical perspective based on the results in section 3. In section 4.1, I claim that the lexical meaning of *dake* is the same between exclusive readings and minimal sufficiency readings which seem to have opposite characteristics. This claim will support the idea of Coppock and Beaver (2014) that various uses involving exclusives can be explained by the unified semantic schema. With Japanese words, section 4.2 reproduces the English word combination which Panizza and Sudo (2020) proposed to create minimal sufficiency readings.

4.1. The Relationship Between Minimal Sufficiency Readings and Exclusive Readings

Coppock and Beaver (2014) proposed a uniform account for diverse uses of different exclusives, including minimal sufficiency readings and exclusive readings. In Japanese, *dake-de*, which is essential for minimal sufficiency readings, contains a major exclusive particle *dake*. This fact raises a question whether *dake* in *dake-de* and an exclusive *dake* can be regarded as the same lexical item. They seem totally opposite usages. In exclusive readings, exclusives eliminate all alternatives ranked higher than the modified expression on the contextually relevant scale (see also Horn 1969; Rooth 1985; and others). In minimal sufficiency readings, on the other hand, the contents of the predicate phrase will be true not only for the focused words but also for the alternatives. The important point here is that this interpretation does not exclude such higher alternatives but affirms them despite the presence of exclusives. In section 3, I argued that the exclusivity of *dake* is lifted at the sentence-level and at the inference in minimal sufficiency readings in Japanese. By contrast, in exclusive readings, such a state of excluding never ends. However, I suggest that the lexical meaning of *dake* in itself is shared by these two readings and that the word order as *dake-de* is crucial in minimal sufficiency readings.

(22b) in section 3.2 containing *dake-de* (repeated in (25a)) has a minimal sufficiency reading.

(25) a. Ip-piki-no neko-dake-de, Patrick-wa uresiku-naru.
one-Cl-Gen cat-only-by Patrick-Top happy-become
'Just one cat will make Patrick happy.'

Here *-de* takes a wider scope than *dake*, at least at the surface structure. This is because Japanese has the opposite syntactic structure to English; a head always follows its complement and adjuncts. *Dake* attached to NP removes alternatives to that NP. By adding *-de*, which shows methods, to NP + *dake*, the resulting phrase means "in the state where there is only the content of NP." Then the whole sentence conveys that "the event in the predicate phrase occurs in the state where there is only the content of NP." Other situations are not explicitly asserted in the sentence, so the hearer does not know whether the content of NP is the only factor to bring about the event in the predicate phrase at the moment. That is, he or she is unsure whether NP is a necessary condition for the predicate phrase, namely, whether the content of NP is necessarily true if the event in the predicate phrase is true (which is not the case). Nevertheless, the hearer will infer that if the event is caused by the content of NP in itself, things placed higher than it on the scale will surely bring about that event. From this inference, the NP becomes the minimal requirements for the predicate phrase. In this way, minimal sufficiency readings are generated.

Reversing the word order from *dake-de* to *de-dake* leads to an exclusive reading 1. (25b) with *de-dake* means that no more than one cat will make Patrick happy.

(25) b. Ip-piki-no neko-de-dake, Patrick-wa uresiku-naru.
one-Cl-Gen cat-by-only Patrick-Top happy-become
'Only one cat will make Patrick happy.'

In (25b), *dake* has a wider scope than *-de*. *-De* and its complement NP indicate a certain method or condition. Then *dake* restricts the factors which contribute to the event in the following predicate phrase to that method or condition. The entire sentence says that the event will happen only when there is a content of NP. In other words, this is the only factor for the event, and NP is a necessary condition for the predicate

phrase. Thus the other conditions excluded by *dake* remain eliminated at a sentence-level. This is how the exclusive reading can be created.

This explanation can apply to VP uttered as a condition. (16b) in section 3.1 including *dake-de* (repeated in (26a)) has a minimal sufficiency reading whereas (26b) containing *de-dake* has an exclusive reading 1. I add a complementizer *koto* after a verb *kangaeru* 'think,' since *-de* is a postposition and can be only attached to NP. These readings can be derived through the same process as (25).

(26) a. Kare-nituite kangaeru-dake-de, watasi-no sesuzi-ga zottosuru.
he-about think-only-by I-Gen spine-Nom shiver
'Just the thought of him sends shivers down my spine.'
b. Kare-nituite kangaeru-koto-de-dake, watasi-no sesuzi-ga zottosuru.
he-about think-Comp-by-only I-Gen spine-Nom shiver
'Only the thought of him sends shivers down my spine.'

This analysis of *dake-de* and *de-dake* suggests that both minimal sufficiency readings and exclusive ones have a step of excluding alternatives by *dake*. It is therefore reasonable to conclude that *dake* works as an exclusive particle even in minimal sufficiency readings.

4.2. *Even* + *Just* in Japanese

As mentioned in section 2.2, Panizza and Sudo (2020) claimed that *just* and an implicit *even* trigger minimal sufficiency readings. This section attempts to replicate this combination of a covert *even* + *just* in Japanese.

Based on the results in section 3, I assume that *dake-de* corresponds to *just*. Several translations could be offered for *even* in Japanese, such as *-sae* and *-sura*, but I argue that a particle *-mo* is the most suitable word here. *-Mo* can have the same implication as *even*, although it has another usage as *also*.[7] In (27), for example, the presence of *-mo* contributes to the implication that little children are unlikely to know the thing in the context but actually they know it.

(27) Kono koto-wa tiisana kodomo-mo sitteiru.
this thing-Top little child-also know
'Even a little child knows this.'

I propose that an expression *dake-de-mo* composed of *dake-de* and *-mo* is equivalent to (*even*) + *just*. The three sentences in (28) with *dake-de-mo* have the same minimal sufficiency readings as (29a) for (28a), (29b) for (28b), and (29c) for (28c) which all include *dake-de*.

(28) a. Kare-nituite kangaeru-dake-de-mo, watasi-no sesuzi-ga zottosuru.
he-about think-only-by-even I-Gen spine-Nom shiver
b. Ip-piki-no neko-dake-de-mo, Patrick-wa uresiku-naru.
one-Cl-Gen cat-only-by-even Patrick-Top happy-become
c. Neko-dake-de-mo, Patrick-wa uresiku-naru.
cat-only-by-even Patrick-Top happy-become

(29) a. Kare-nituite kangaeru-dake-de, watasi-no sesuzi-ga zottosuru. (= (26a))
he-about think-only-by I-Gen spine-Nom shiver

b. Ip-piki-no neko-dake-de, Patrick-wa uresiku-naru. (= (25a))
one-Cl-Gen cat-only-by Patrick-Top happy-become
c. Neko-dake-de, Patrick-wa uresiku-naru. (= (24b))
cat-only-by Patrick-Top happy-become

Some other options for *even* + *just*, such as *dake-de-sae* and *dake-de-sura*, are rarely uttered and their acceptability is extremely low, in spite of some examples on Google. Thus it is safe to conclude that *dake-de-mo* can be used as *even just* in Japanese.

Panizza and Sudo pointed out that the implications are unchanged when *just* is removed from the sentence including an overt *even* + *just*. This point can also be reproduced by manipulating *dake-de-mo*. In (30a-c), *dake* has been deleted from (28a-c). *-De* is left in (30a-c) since it represents a method or condition and is irrelevant to the meaning of *just* which Panizza and Sudo proposed. These sentences show the same minimal sufficiency readings as (28a-c) containing *dake-de-mo* and (29a-c) containing *dake-de*.

(30) a. Kare-nituite kangaeru-koto-de-mo, watasi-no sesuzi-ga zottosuru.
he-about think-Comp-by-even I-Gen spine-Nom shiver
b. Ip-piki-no neko-de-mo, Patrick-wa uresiku-naru.
one-Cl-Gen cat-by-even Patrick-Top happy-become
c. Neko-de-mo, Patrick-wa uresiku-naru.
cat-by-even Patrick-Top happy-become

One may doubt that the expression *-demo* can be composed of *-de* and *-mo* in (30). The reason for this doubt will be that some researchers regard *-demo* as a focus particle consisting of one morpheme. The way of combining here is supported by Numata (2007). She argued that *-demo* is divided into *-de* and *-mo* which implies that the expression focused by *-mo* is unexpected. The combination of *-de* and *-mo* is therefore not too far from the truth.

Adding *-mo* 'even' to the sentence may be useful for *sika...nai* (a synonym of *dake*) to have minimal sufficiency readings (see endnote 4). The resulting sentences are shown in (31a-c). Despite a little unnaturalness with *si-nai-de-mo*, they mean the same contents as (28a-c) containing *dake-de-mo*. Nevertheless, unlike *dake-de*, sentences with *sika* denote only exclusive reading 2 and cannot have minimal sufficiency readings unless *-mo* is overtly pronounced after *-de* 'by.'

(31) a. Kare-nituite kangaeru-koto-sika {?si-nai-de-mo/ si-naku-te-mo}, watasi-no sesuzi-ga
he-about think-Comp-only {do-Neg-by-even/ do-Neg-and-even} I-Gen spine-Nom
zottosuru.
shiver
b. Ip-piki-no neko-sika {?i-nai-de-mo/ i-naku-te-mo}, Patrick-wa uresiku-naru.
one-Cl-Gen cat-only {exist-Neg-by-even/ exist-Neg-and-even} Patrick-Top happy-become
c. Neko-sika {?i-nai-de-mo/ i-naku-te-mo}, Patrick-wa uresiku-naru.
cat-only {exist-Neg-by-even/ exist-Neg-and-even} Patrick-Top happy-become

5. Conclusion

The main goal of the present paper was to determine whether Japanese exclusives *tada* and *dake* trigger minimal sufficiency readings on the basis of English *just*. I judged the acceptability and possible interpretations of sentences where the exclusives focus on VP, NP, and NP with numerals after removing *tada*, *dake*, or *-de* 'by' from them. Then, based on the results there and the characteristics of *tada* and *dake*, I suggested the process of generating this type of reading from each meaning of these three particles in the sentence. The findings show that *dake-de* has a crucial function for minimal sufficiency readings in Japanese and that *tada* semantically supports *dake-de* with its depreciatory and exclusive meaning. The current study has also theoretically discussed minimal sufficiency readings in Japanese, namely, the exclusivity of *dake* and *dake-de-mo* as *even just*, on the basis of the previous studies on English *just*.

Further research is required to comprehensively investigate expressions and sentence structures which can induce minimal sufficiency readings. For instance, as Panizza and Sudo (2020) pointed out for *even*, section 4.2 demonstrated that *-mo* 'even' can derive minimal sufficiency readings without overtly pronounced exclusives. Future studies should explore whether minimal sufficiency readings can be produced from other kinds of expressions in English and Japanese besides *just*, *dake-de-*(*mo*), and *tada*.

Endnotes

[1] There are some exceptional cases where *only* triggers minimal sufficiency readings, as in Coppock and Beaver (2014: 401). They suggested that the difference between *just* and *only* lies in the tendency of their scale (p.425).

[2] The following abbreviations are used in this paper: Acc = Accusative, Caus = Causative, Cl = Classifier, Comp = Complementizer, Cop = Copula, Gen = Genitive, Neg = Negation, Nom = Nominative, Top = Topic marker.

[3] Another important analysis on minimal sufficiency readings was presented by Grosz (2012). He defined two lexical entries of exclusives: one which amounts to exclusive meanings and the other used for optatives (as in *If only …!*) and minimal sufficiency readings. This work cannot be included here for lack of space.

[4] A negative polarity exclusive *sika*, a synonym of *dake*, presumably does not have minimal sufficiency readings. In (i) with *sika...si-nai-de* 'by doing only,' replacing *dake* with *sika* only conveys what I call 'the exclusive reading 2' in section 3.1 with low acceptability. (To connect a *sika*-phrase to *nai*, I added a verb *suru* 'do.') This holds true for sentences with NP and ones with a slightly natural phrase *si-naku-te* instead of *si-nai-de*.

(i) Kare-nituite kangaeru-koto-sika {??si-nai-de/ ?si-naku-te}, watasi-no sesuzi-ga zottosuru.
he-about think-Comp-only {do-Neg-by/ do-Neg-and} I-Gen spine-Nom shiver
'In the case where I only think about him, it sends shivers down my spine.'

Nevertheless, it is possible that *sika* can bring minimal sufficiency readings by adding another focus particle *-mo* 'even.' We will look at this in detail in section 4.2.

[5] Heycock (2008: 58) claimed that it is only in a main clause that *-ga* with a stable or habitual predicate obligatorily receive an exhaustive-listing interpretation and that this rule is eased in a subordinate clause. Nevertheless, she did not mention cases where the subject is a *koto* 'that' clause as in (18a, b). Unlike English *it…that…*, Japanese naturally allows a *koto*-clause to be a subject at the beginning of the sentence. Since *-ga* in (18a, b) is a nominative case marker of the main clause, it is considered as an exhaustive-listing interpretation here.

[6] There are some cases where the phrase of *tada* + a verb + *-eba* can be felicitously used. As proof of this, in (i) which has a minimal sufficiency reading, the edibility will remain with acts ranked higher than pouring hot water on the scale of complexity of cooking, such as adding toppings after pouring it.

(i) Tada(≈tanni) oyu-o kaker-eba taber-areru.
just(≈merely) hot water-Acc pour-Cond eat-can
'You can eat it if you just pour hot water.' (Aizawa and Sato 2008: 61)

The acceptability of (19a) will be improved if its main predicate phrase contains positive contents. The resulting sentence (ii) can have a minimal sufficiency reading as well as an exclusive reading 2. The relation among exclusives, main predicates, and conditional clauses should be considered in more detail.

(ii) ?Tada kare-nituite kangaer-eba, {genki-ga deru/ uresiku-naru}.
just he-about think-Cond {energy-Nom appear/ happy-become}
'Just the thought of him {cheers me up/ makes me happy}.'

The acceptability of (ii) will not change the conclusion that *tada...dake-de* and *dake-de* are the best ways to convey a minimal sufficiency reading. Some reasons for this are that *tada...-eba* can obtain other interpretations and that its acceptability is affected by the predicate phrase.

[7] *-Mo* also has an additive meaning as *also*. However, additive particles have an anaphoric presupposition which requires that its preceding context includes some information parallel to the sentence (see e.g., Kripke 2009). (28) with *dake-de-mo* can be uttered out of the blue, so I assume that this *-mo* is not additive.

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Acknowledgments

I am indebted to my former supervisor Professor Kimiko Nakanishi for her invaluable guidance and support throughout my master's program. I am also deeply grateful to Professor Tohru Noguchi, Professor Kyoko Yamakoshi, Professor Teruyuki Mizuno, and two anonymous reviewers for their insightful comments that helped to significantly improve the manuscript. I also wish to thank Professor Robert Lowe for revising my English. All the remaining errors are my own.